



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/175,171	10/28/2014	8872624	3781/1017	6320

2101 7590 10/08/2014
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

M2M Solutions LLC, Stratford-upon-Avon, UNITED KINGDOM, Assignee (with 37 CFR 1.172 Interest);
Eveline Wesby-van Swaay, Stratford-upon-Avon, UNITED KINGDOM;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.



UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
14/175,171 02/07/2014 Eveline Wesby-van Swaay 3781/1017 6320

2101 7590 09/16/2014
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

EXAMINER

NGUYEN, NAM V

ART UNIT PAPER NUMBER

2682

NOTIFICATION DATE DELIVERY MODE

09/16/2014

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptomail@sunsteinlaw.com

Response to Rule 312 Communication	Application No. 14/175,171	Applicant(s) WESBY-VAN SWAAY, EVELINE
	Examiner NAM V. NGUYEN	Art Unit 2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. The amendment filed on 15 August 2014 under 37 CFR 1.312 has been considered, and has been:
- a) entered.
 - b) entered as directed to matters of form not affecting the scope of the invention.
 - c) disapproved because the amendment was filed after the payment of the issue fee.
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.
 - d) disapproved. See explanation below.
 - e) entered in part. See explanation below.

	/NAM V NGUYEN/ Primary Examiner, Art Unit 2682
--	---

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Wesby-van Swaay	Att'y Docket:	3781/1017
Appln. No.:	14/175,171	Filing Date:	February 7, 2014
Customer No.:	02101	Conf. No.:	6320
Examiner:	Nguyen, Nam V.	Art Unit:	2682
Invention:	PROGRAMMABLE COMMUNICATOR		

FILED BY USPTO ELECTRONIC FILING SYSTEM

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

Dear Sir:

Pursuant to 37 C.F.R. 1.312, Applicant respectfully submits this amendment following the Notice of Allowance dated August 11, 2014, on or before payment of the issue fee:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

OK TO ENTER: /N.N./

09/09/2014

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.: 14/175,171
Filed: February 7, 2014
For: Programmable Communicator

Group No.: 2682
Examiner: Nguyen, Nam V.

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF PAYMENT OF ISSUE FEE (37 C.F.R. § 1.311)

- 1. Applicant hereby pays the issue fee for the attached Issue Fee Transmittal PTOL-85.
2. Applicant
A. Asserted small entity status in this application on February 7, 2014 by payment of the basic filing fee as a small entity. (37 C.F.R. § 1.27(c)(3))
It is confirmed that small entity status for this application has been checked and it is still in effect and is being asserted.
B. Applicant hereby asserts small entity status for this application.

3. Fee (Issue):
Application status is small business entity with a utility fee of \$480.00.

4. Total Fees Due

The total amount of fees due is:

Table with 2 columns: Description, Amount. Row 1: Issue fee, \$480.00. Row 2: TOTAL FEE(S) DUE, \$480.00.

7. Assignee's Name and Address To Be Printed On Patent is as follows (37 C.F.R. § 3.81):

Name of Assignee: M2M Solutions LLC
Address: Camden House, School Lane
Residence (City and State or Country): Tiddington, Statford-Upon-Avon, United Kingdom

Assignee category or categories (not printed on patent): Corporation or other private group entity

8. Payment of total fee due:

Authorization is hereby made to charge the amount of \$480.00 to Deposit Account No. 19-4972.

Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

Date: August 22, 2014

/Robert M. Asher, #30,445/

Robert M. Asher

Registration No. 30,445

SUNSTEIN KANN MURPHY & TIMBERS LLP

125 Summer Street

Boston, MA 02110-1618

617-443-9292

Customer No. 02101

03781/01017 2159312.1

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

2101 7590 08/11/2014
Sunstein Kann Murphy & Timbers LLP
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 BOSTON, MA 02110-1618

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/175,171	02/07/2014	Eveline Wesby-van Swaay	3781/1017	6320

TITLE OF INVENTION: PROGRAMMABLE COMMUNICATOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/12/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, NAM V	2682	340-539120

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
 (1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
 (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Sunstein Kann Murphy
 & Timbers LLP
 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE M2M Solutions LLC
 (B) RESIDENCE: (CITY and STATE OR COUNTRY) Tiddington, Stratford-upon-Avon, United Kingdom

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

4a. The following fee(s) are submitted:
 Issue Fee
 Publication Fee (No small entity discount permitted)
 Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)
 A check is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 19-4972 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
 Applicant certifying micro entity status. See 37 CFR 1.29
 Applicant asserting small entity status. See 37 CFR 1.27
 Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
 NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
 NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Robert M. Asher, #30,445/ Date August 22, 2014
 Typed or printed name Robert M. Asher Registration No. 30,445

Electronic Patent Application Fee Transmittal

Application Number:	14175171
Filing Date:	07-Feb-2014
Title of Invention:	PROGRAMMABLE COMMUNICATOR
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Filer:	Robert Asher
Attorney Docket Number:	3781/1017

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Extension-of-Time:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	19936727
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	PROGRAMMABLE COMMUNICATOR
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Robert Asher
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	22-AUG-2014
Filing Date:	07-FEB-2014
Time Stamp:	13:26:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$480
RAM confirmation Number	9623
Deposit Account	194972
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	klw3781_1017_IssueFee.pdf	188165 284f920c235a4d42987d3d6e715889349a64ff3e	no	3

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30138 ebffc70c730b1244896036f3100fbaa5492c49ba	no	2
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Warnings:

Information:

Total Files Size (in bytes): 218303

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay
Application No.: 14/175,171
Filed: February 7, 2014
For: Programmable Communicator

Group No.: 2682
Examiner: Nguyen, Nam V.

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LETTER ACCOMPANYING AMENDMENT AFTER ALLOWANCE
(37 C.F.R. § 1.312)

1. Please make the amendments or consider the items shown in the attached papers in this application in the claims.
2. Type of amendment:

Correction of formal matters

As shown in the remarks of the attached paper, these (1) are needed for proper disclosure or protection of the invention and (2) require no substantial amount of additional work on the part of the PTO.
3. The issue fee has not been paid.
4. Additional Fees

For any additional fees that may be required by the filing of this paper please charge Deposit Account No. 19-4972.

Date: August 15, 2014

/Jonathan C. Lovely, #60,821/

Jonathan C. Lovely
Registration No. 60,821
SUNSTEIN KANN MURPHY & TIMBERS LLP
125 Summer Street
Boston, MA 02110-1618
US
617-443-9292
Customer No. 02101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Wesby-van Swaay	Att'y Docket:	3781/1017
Appln. No.:	14/175,171	Filing Date:	February 7, 2014
Customer No.:	02101	Conf. No.:	6320
Examiner:	Nguyen, Nam V.	Art Unit:	2682
Invention:	PROGRAMMABLE COMMUNICATOR		

FILED BY USPTO ELECTRONIC FILING SYSTEM

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

Dear Sir:

Pursuant to 37 C.F.R. 1.312, Applicant respectfully submits this amendment following the Notice of Allowance dated August 11, 2014, on or before payment of the issue fee:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

LISTING OF THE CLAIMS

1. (Currently Amended) A programmable communicator device comprising:

a programmable interface for establishing a wireless communication link with at least one monitored technical device, wherein the programmable interface is programmable by programming instructions received in wireless packet switched data messages; and

a processing module for authenticating one or more wireless transmissions sent from a programming transmitter and received by the programmable communicator device by determining if at least one transmission contains a coded number;

wherein the programmable communicator device is configured to use a memory to store at least one ~~telephone number~~ or IP address included within at least one of the transmissions as one or more stored ~~telephone numbers~~ or IP addresses if the processing module authenticates the at least one of the transmissions including the at least one ~~telephone number~~ or IP address and the coded number by determining that the at least one of the transmissions includes the coded number, the one or more stored ~~telephone numbers~~ or IP addresses being ~~numbers~~ addresses to which the programmable communicator device is configured to and permitted to send outgoing wireless transmissions;

wherein the programmable communicator device is configured to use an identity module for storing a unique identifier that is unique to the programmable communicator device; and

wherein the one or more wireless transmissions from the programming transmitter comprises a General Packet Radio Service (GPRS), or other wireless packet switched data message; and

wherein the programmable communicator device is configured to process data received through the programmable interface from the at least one monitored technical device in response to programming instructions received in an incoming wireless packet switched data message; and

wherein the programmable communicator is configured to send the processed data by General Packet Radio Service (GPRS), or other wireless packet switched data message; and

wherein the programmable communicator is configured to (1) communicate with a remote data monitoring device and/or (2) send data to and receive data from an Internet web page.

2. (Previously Presented) A programmable communicator device according to claim 1, wherein the programmable communicator device is a cellular telephone.

3. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is configured to send and/or receive wireless transmissions compliant with Bluetooth wireless air interface standards.

4. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to request that an at least one monitored technical device send data, via the wireless communication link with the programmable interface, for processing by the cellular telephone.

5. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to display the processed data and/or transmit the processed data to an at least one monitoring device and/or to the Internet web page.

6. (Previously Presented) A programmable communicator device according to claim 5, wherein the processing module is configured to cause the processed data to be transmitted to the at least one monitoring device and/or to the Internet web page.

7. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to determine whether the processed

received data indicates a change in status of the at least one monitored technical device that crosses a threshold parameter, or that otherwise indicates an alarm condition.

8. (Previously Presented) A programmable communicator device according to claim 7, wherein the cellular telephone is further configured to send an at least one transmission to an at least one monitoring device and/or to the Internet web page for alerting an at least one monitoring device of said change in status or other alarm condition.

9. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to request that an at least one monitored technical device send data, via the wireless communication link with the programmable interface, for receipt by the cellular telephone.

10. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to transmit the received data to an at least one monitoring device and/or to the Internet web page either periodically or in response to a change in status of at least one monitored technical device or in response to a data request initiated by the monitoring device and/or a data request initiated via the Internet web page.

11. (Previously Presented) A programmable communicator device according to claim 10, wherein the processing module is configured to cause the received data to be transmitted to the at least one monitoring device and/or to the Internet web page.

12-13. (Cancelled)

14. (Previously Presented) A programmable communicator device according to claim 2 wherein the monitored technical device is a sensor device.

15. (Currently Amended) A programmable communicator device according to claim 14

wherein the sensor device is attached to or integrated with an article of clothing, the article of clothing including at least one selected from the group consisting of a jacket, a ski jacket, and a life vest.

16. (Previously Presented) A programmable communicator device according to claim 14, wherein the monitored technical device is further configured to be integrated with at least one sensor device to form a smart clothes device.

17. (Previously Presented) A programmable communicator device according to claim 2 wherein the monitored technical device is a health monitoring system.

18. (Previously Presented) A programmable communicator device according to claim 17 wherein the cellular telephone is configured to receive data from the health monitoring system via the wireless communication link with the programmable interface, wherein the data represents at least one of body temperature, blood pressure, periodic or continuous electrocardiogram heart rhythm, blood glucose concentration, blood electrolyte concentration, kidney function, liver function, and labor contractions.

19-22. (Cancelled)

23. (Previously Presented) A programmable communicator device according to claim 2 wherein the monitored technical device is at least one of a pressure sensor, a heat sensor, a mechanical displacement sensor, a speed sensor, and a water sensor.

24-26. (Cancelled)

27. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to process data from sensors on a bicycle.

28. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to be reprogrammed with communications applications received over a wireless connection.

29. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to communicate with one or more technical devices via Bluetooth packet switched messages or other wireless packet switched messages.

30. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone comprises a location processing module configured to determine an at least one location of the cellular telephone, and wherein the cellular telephone is configured to cause the received data to be transmitted to the at least one monitoring device and or to the Internet web page.

31. (Previously Presented) A cellular telephone according to claim 30 wherein the location processing module comprises a Global Positioning System (GPS) module.

32. (Previously Presented) A programmable communicator device according to claim 1, wherein the programmable communicator device comprises the identity module.

33. (Previously Presented) A programmable communicator device according to claim 2, wherein cellular telephone comprises a movement sensor.

34. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone comprises a proximity detection sensor.

35. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to process proximity detection data.

36. (Currently Amended) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to communicate with a network of technical devices.

37. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone comprises at least one sensor.

38. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is configured to communicate with at least one of a home network and a home or domestic appliance.

39. (Previously Presented) A programmable communicator device according to claim 2, wherein the cellular telephone is also configured to communicate with one or more monitored technical devices using a wired connection.

REMARKS

Applicant greatly appreciates the Examiner's Notice of Allowance. Claim 1 is being amended to remove the phrase "telephone number." This amendment narrows the claims by limiting the claim to receiving transmissions containing IP addresses, and storing IP addresses (e.g., as opposed to telephone numbers or IP addresses). This amendment also more accurately depicts the claimed subject matter. Additionally, Applicant has amended claims 15 and 36 to include periods at the end of the claims. No new matter has been added.

Applicant does not believe that any extension of time is required. However, if an extension of time is required, please charge the associated fee and any additional fees required by this paper or credit any overpayment to deposit account number 19-4972. Applicant also requests that the examiner contact applicant's attorney, Jonathan Lovely, if it will assist in processing this application through issuance.

DATE: August 15, 2014

Respectfully submitted,
/Jonathan C. Lovely, #60,821/
Jonathan C. Lovely
Registration No. 60,821
Attorney for Applicant
Sunstein Kann Murphy & Timbers LLP
125 Summer Street

Boston, MA 02110-1618
(617) 443-9292
03781/01017 2155727.1

Electronic Acknowledgement Receipt

EFS ID:	19875772
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	PROGRAMMABLE COMMUNICATOR
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	15-AUG-2014
Filing Date:	07-FEB-2014
Time Stamp:	12:07:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment after Notice of Allowance (Rule 312)	DD37811017AfterAllowanceAmendment.pdf	162815 <small>1ab64582120dc50e4e9af8cf4a97c57088d898a9</small>	no	9

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



NOTICE OF ALLOWANCE AND FEE(S) DUE

2101 7590 08/11/2014
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

Table with 2 columns: EXAMINER (NGUYEN, NAM V), ART UNIT (2682), PAPER NUMBER (6320)

DATE MAILED: 08/11/2014

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

14/175,171 02/07/2014 Eveline Wesby-van Swaay 3781/1017 6320

TITLE OF INVENTION: PROGRAMMABLE COMMUNICATOR

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional SMALL \$480 \$0 \$0 \$480 11/12/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

2101 7590 08/11/2014
Sunstein Kann Murphy & Timbers LLP
 125 SUMMER STREET
 BOSTON, MA 02110-1618

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/175,171	02/07/2014	Eveline Wesby-van Swaay	3781/1017	6320

TITLE OF INVENTION: PROGRAMMABLE COMMUNICATOR

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	11/12/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, NAM V	2682	340-539120

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	--

5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
14/175,171 02/07/2014 Eveline Wesby-van Swaay 3781/1017 6320

2101 7590 08/11/2014
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

EXAMINER

NGUYEN, NAM V

ART UNIT PAPER NUMBER

2682

DATE MAILED: 08/11/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/175,171	Applicant(s) WESBY-VAN SWAAY, EVELINE	
	Examiner NAM V. NGUYEN	Art Unit 2682	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to 7/24/14.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-11, 14-18, 23 and 27-39. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>7/24/14</u> | 6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/NAM V NGUYEN/
Primary Examiner, Art Unit 2682

Art Unit: 2682

Allowable Subject Matter

This communication is in response to applicant's amendment which is filed July 24, 2014 in the application of Van Swaay for a "programmable communicator" filed February 7, 2014.

An amendment to amend the claims 1-11, 14, 16-18, 23 and 27-29 has been entered and made of record.

Claims 12-13, 19-22 and 24-26 have been cancelled.

A new set of Claims 30-39 is introduced.

Regarding the information disclosure statement (IDS) submitted on July 24, 2014, the submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. However, some documents in the IDS do not include the date have been cross out (or not considered).

Applicant submits six Terminal Disclaimers to overcome the rejection of the Claims Under the Doctrine of Double Patenting. The Terminal Disclaimers are approved on July 29, 2014. Therefore, examiner withdraws the Double Patenting rejections.

Claims 1-11, 14-18, 23 and 27-39 are allowed.

Art Unit: 2682

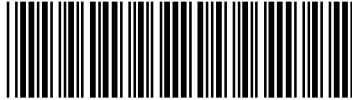
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam V Nguyen whose telephone number is 571-272-3061. The examiner can normally be reached on Mon-Fri, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, George Bugg can be reached on 571- 272-2998. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/NAM V NGUYEN/
Primary Examiner, Art Unit 2682

Index of Claims 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

✓	Rejected
=	Allowed

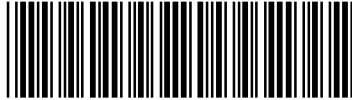
-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2014	08/06/2014						
1	1	✓	=						
2	2	✓	=						
3	3	✓	=						
4	4	✓	=						
5	5	✓	=						
6	6	✓	=						
7	7	✓	=						
8	8	✓	=						
9	9	✓	=						
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	13	✓	-						
12	14	✓	=						
13	15	✓	=						
14	16	✓	=						
15	17	✓	=						
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	20	✓	-						
	21	✓	-						
	22	✓	-						
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	25	✓	-						
	26	✓	-						
18	27	✓	=						
19	28	✓	=						
20	29	✓	=						
21	30		=						
22	31		=						
30	32		=						
23	33		=						
24	34		=						
25	35		=						
26	36		=						

Index of Claims 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

✓	Rejected
=	Allowed


-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47


CLAIM		DATE							
Final	Original	04/20/2014	08/06/2014						
27	37		=						
28	38		=						
29	39		=						

Issue Classification 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE	
	Examiner NAM V NGUYEN	Art Unit 2682	

CPC						
Symbol					Type	Version
H04M		1		663	I	2013-01-01
H04M		1		677	I	2013-01-01
H04W		12		06	I	2013-01-01
H04M		1		6775	A	2013-01-01
H04W		4		001	F	2013-01-01
H04W		4		12	I	2013-01-01
H04M		1		05	I	2013-01-01
H04M		2250		02	A	2013-01-01
H04M		1		7253	I	2013-01-01
H04M		1		275	I	2013-01-01
H04M		1		72538	I	2013-01-01
H04M		1		72547	A	2013-01-01
H04M		1		2535	A	2013-01-01
H04W		4		16	I	2013-01-01
H04W		8		22	I	2013-01-01
H04M		1		72563	I	2013-01-01


CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	30	
/NAM V NGUYEN/ Primary Examiner.Art Unit 2682	8/6/14	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

Issue Classification 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682


US ORIGINAL CLASSIFICATION					INTERNATIONAL CLASSIFICATION											
CLASS		SUBCLASS			CLAIMED				NON-CLAIMED							
340		7.29			H	0	4	M	3 / 00 (2006.01.01)							
CROSS REFERENCE(S)					H	0	4	Q	1 / 30 (2006.01.01)							
					G	0	8	B	1 / 08 (2006.01.01)							
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)															
340	7.33	7.52														
455	418	419	425													

NONE		Total Claims Allowed:	
		30	
(Assistant Examiner) /NAM V NGUYEN/ Primary Examiner.Art Unit 2682 (Primary Examiner)	(Date) 8/6/14 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47									
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	15	17	23	33										
2	2	16	18	24	34										
3	3		19	25	35										
4	4		20	26	36										
5	5		21	27	37										
6	6		22	28	38										
7	7	17	23	29	39										
8	8		24												
9	9		25												
10	10		26												
11	11	18	27												
	12	19	28												
	13	20	29												
12	14	21	30												
13	15	22	31												
14	16	30	32												

NONE		Total Claims Allowed:	
		30	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/NAM V NGUYEN/ Primary Examiner.Art Unit 2682	8/6/14	1	1
(Primary Examiner)	(Date)		

Search Notes 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

CPC- SEARCHED		
Symbol	Date	Examiner
H04M 3/00	4/20/14	NN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04Q 7/200; H04Q 1/30; G08B 1/08	8/6/14	NN

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	7.29; 7.33; 7.52; 529.12; 573.4; 693.5	8/6/14	NN
455	456; 456.2; 418; 419; 425	8/6/14	NN
379	142; 373; 375;	8/6/14	NN

SEARCH NOTES		
Search Notes	Date	Examiner
Search EAST: USPAT; US-PUB; EPO; JPO; and Derwent.	4/20/14	NN
Search TERMS; authorized list caller in cellular phone with monitoring device; sensor; monitoring central station with address/ code/number/IP address; code; or phone number. stored valid caller;	4/20/14	NN
updated search from CON APPLICATIONS.	4/20/14	NN
Updated search.	8/6/14	NN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
SAME AS	ABOVE	8/6/14	NN

	/N.V.N./ Primary Examiner.Art Unit 2682
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.:	14/175,171	Art Unit/Group No.:	2682
Filing Date:	February 7, 2014	Examiner:	Nam V. Nguyen
		Conf. No.:	6320

For: PROGRAMMABLE COMMUNICATOR

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

List of Sections Forming Part of This Supplemental Information Disclosure Statement

The following sections are being submitted for this Supplemental Information Disclosure Statement:

1. Preliminary Statements
2. Forms PTO/SB/08A and 08B (substitute for Form PTO-1449)
3. Statement as to Information Not Found in Patents or Publications
4. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted
5. Cumulative Patents or Publications
6. Copies of Listed Information Items Accompanying This Statement
7. Concise Explanation of Non-English Language Listed Information Items
 - 7A. International Search Report
 - 7B. English Language Version of International Search Report
8. Translation(s) of Non-English Language Documents
9. Concise Explanation of English Language Listed Information Items (Optional)
10. Identification of Person(s) Making This Supplemental Information Disclosure Statement

Section 1. Preliminary Statements

Applicants submit herewith patents, publications or other information, of which they are aware that they believe may be material to the examination of this application, and in respect of which, there may be a duty to disclose.

The filing of this supplemental information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this supplemental information disclosure statement shall not be construed as an admission against interest in any manner. *Notice of January 9, 1992, 1135 O.G. 13-25, at 25.*

(Supplemental Information Disclosure Statement—Page 2 of 31)

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /N.N./

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Group Unit: 2682
 Date Filed: February 7, 2014 Examiner Name: Nguyen, Nam V
 Conf. No.: 6320
 Invention: Programmable Communicator
 Date: July 24, 2014

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/ Subclass
	HX	US 5,689,825 A	Nov. 18, 1997	Averbuch et al.	455/89
	HY	US 5,699,513 A	Dec. 16, 1997	Feigen et al.	395/187.01
	HZ	US 5,901,320 A	May 4, 1999	Takahashi et al.	395/712
	IA	US 5,922,074 A	Jul. 13, 1999	Richard et al.	713/200
	IB	US 5,983,350 A	Nov. 9, 1999	Minear et al.	713/201
	IC	US 6,108,531 A	Aug. 22, 2000	Berg et al.	455/408
	ID	US 6,327,466 B1	Dec. 4, 2001	Savolainen	455/407
	IE	US 6,377,577 B1	Apr. 23, 2002	Bechtolsheim et al.	370/392
	IF	US 6,388,612 B1	May 14, 2002	Neher	342/357.07
	IG	US 6,396,416 B1	May 28, 2002	Kuusela et al.	340/870.28
	IH	US 6,463,474 B1	Oct. 8, 2002	Fuh et al.	709/225
	II	US 6,671,522 B1	Dec. 30, 2003	Beaudou	455/558
	IJ	US 6,751,452 B1	Jun. 15, 2004	Kupczyk et al.	455/345

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Reference Number	Country Code	Document Number	Publication Date	Patentee or Applicant	Class/ Subclass
	IK	EP	0 459 344 A1	Dec. 4, 1991	Alcatel CIT	H04Q 7/04
	IL	EP	0 459 344 A1 [English Abstract]	Dec. 4, 1991	Alcatel CIT	H04Q 7/04
	IM	CA	1,296,068 C	Feb. 18, 1992	Friesen	A61B 5/00
	IN	EP	0 632 629 A1	Jan. 4, 1995	Multi-Tech Systems, Inc.	H04L 29/06
	IO	WO	96/42175 A1	Dec. 27, 1996	NE-Products OY	H04Q 7/22

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	IP	WO	97/16938 A1	May 9, 1997	Nokia Telecommunications OY	H04Q 7/32
	IQ	EP	0 804 046 A2	Oct. 29, 1997	Nokia Mobile Phones Ltd.	H04Q 7/32
	IR	GB	2 313 519 A	Nov. 26, 1997	Motorola GmbH	H04Q 7/32
	IS	WO	98/38820 A2	Sep. 3, 1998	Telefonaktiebolaget LM Ericsson	H04Q 7/22
	IT	WO	99/20070 A2	Apr. 22, 1999	NE-Products OY	H04Q 7/38
	IU	WO	99/57875 A2	Nov. 11, 1999	NE-Products OY	H04M 3/42
	IV	WO	00/17021 A1	Mar. 30, 2000	Van Bergen	B60R 25/04
	IW	EP	0 996 299 A1	Apr. 26, 2000	Société Francaise du Radiotéléphone SRF	H04Q 7/22
	IX	WO	01/35686 A1	May 17, 2001	Wavecom	H04Q 7/32
	IY	WO	01/35686 A1 [English Abstract]	May 17, 2001	Wavecom	H04Q 7/32

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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	IZ		Lyhenteiden Ja Merkkin Selitykset, 57 pages
	JA		Legends of Abbreviations and Symbols, 57 pages (January, 2014) [English Translation]
	JB		Modbus/BSAP Configuration, 2 pages
	JC		Photo of METHOD Localization objects, 8604, 1 page
	JD	3GPP (3 rd Generation Partnership Project)	3 rd Generation Partnership Project; Technical Specification Group Services and System Aspects; International Mobile station Equipment Identities (IMEI) (Release 9), Version 9.0.0, 8 pages (September, 2009) 3GPP – TS 22.016
	JE	3GPP (3rd Generation Partnership Project)	The Mobile Broadband Standard, 3GPP Specification detail, Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) Interface, 4 pages, 3GPP TS 11.11
	JF	3GPP (3 rd Generation Partnership Project)	The Mobile Broadband Standard, 3GPP Specification detail, General Packet Radio Service (GPRS); Service description; Stage 2, 3 pages (April, 2014) 3GPP TS 03.60
	JG	AirLink Communications, Inc.	“AirLink Communications Releases New Wireless ACE,” 1 page (April, 1998)
	JH	AirLink Communications, Inc.	AirLink News / CDPD in the News, 1 page (December, 1998) (http://www.archive.org/web/19981212022616/http://www.airlink.com)

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	JI	AirLink Communications, Inc.	CDPD Raven, Raven Brochure, 2 pages (January, 1999) (http://www.archive.org/web/19990117024728/http://www.airlink.com/info/rav_mkt.html)
	JJ	AirLink Communications, Inc.	Airlink Raven/PinPoint CDPD Modem, User's Manual, 68 pages (February, 1999)
	JK	AirLink Communications, Inc.	PinPoint Vehicle Installation Guide, 6 pages (February, 2000)
	JL	AirLink Communications, Inc.	Raven Installation Guide, 8 pages (May, 2000)
	JM	AirLink Communications, Inc.	Wireless ACE Release Notes: "7/12/00 – ACE version 1.50," 3 pages (August, 2000)
	JN	AirLink Communications, Inc.	Proven Wireless Solutions, Intelligent Transportation System (ITS) Applications, 1 page (February, 2001)
	JO	AirLink Communications, Inc.	Proven Wireless Solutions, Telemetry Applications, 1 page (February, 2001)
	JP	AirLink Communications, Inc.	Press Release: "AirLink Announces New Raven II CDPD Modem," 1 page (April, 2001)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	JQ	AirLink Communications, Inc.	Press Release: "AirLink Communications & Novatel Wireless Enforce Better Communications for the Tampa Police Department," 2 pages (May, 2001)
	JR	AirLink Communications, Inc.	ACE Release Notes: "7/26/02 - ACE version 1.80.15," 5 pages (October, 2002)
	JS	AirLink Communications, Inc.	AirLink CDPD Modem AT Commands, Quick Reference, 24 pages (October, 2002)
	JT	AirLink Communications, Inc.	Raven Firmware Release Notes: "January 25, 2002 Raven II Release 200201D," 2 pages (October, 2002)
	JU	AirLink Communications, Inc.	Wireless ACE, User's Manual, 48 pages (December, 2002)
	JV	Auerbach	Handbook of Local Area Networks 1999, 67 pages (1996)
	JW	BioPhone	BIOPHONE 3502u, Instruction & Troubleshooting Manual, 149 Pages (May, 1978)
	JX	BioPhone	Photos of BIOPHONE, Model 3502, 5 pages
	JY	Blasch et al.	"Georgia Tech Aerial Robotics System Competition Entry," <i>Georgia Institute of Technology School of Aerospace</i> , 10 pages (March, 1994)
	JZ	CDPD Forum, Inc.	"Circuit Switched - Cellular Digital Packet Data," Part 1024, Release 1.5, 90 pages (June, 1995)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	KA	CDPD Forum, Inc.	"CS CDPD Modem Bank Management Protocol (MBMP)," Part 1025, Release 1.5, 48 pages (June, 1995)
	KB	CDPD Forum, Inc.	"CS CDPD Accounting Service and Protocol," Part 1026, Release 1.5, 20 pages (June, 1995)
	KC	Eagle Cross	"For Cellular Data Transmission, It's Either THE OUTBACK or This," 4 pages
	KD	Davies	"A Brief History of Cryptography," <i>Information Security Technical Report</i> , Vol. 2, No. 2, pp. 14-17 (1997)
	KE	DeRose	"The Wireless Data Handbook," 4 th Edition, 399 pages (1999)
	KF	Doelz et al.	"Binary Data Transmission Techniques for Linear Systems*," <i>Proceedings of the IRE</i> , pp. 656-661 (May, 1957)
	KG	Electronic Compliance Laboratories, Inc.	EMI Test Report on Symphony ISA Card; Prepared for Proxim, Test Report No. A806003, 42 pages (June, 1998)
	KH	European Telecommunications Standards Institute (ETSI)	<i>Release Note: Recommendation GSM 02.16, International MS Equipment Identities, European digital cellular telecommunication system (phase 1); GSM Technical Specification, Version 3.0.1, 9 pages (February, 1992)</i>

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	KI	European Telecommunications Standards Institute (ETSI)	<i>GSM Technical Specification: Digital cellular telecommunications system (Phase 2+); Physical Layer on the radio path; General description (GSM 05.01, version 5.0.0), 20 pages (May, 1996) Reference: TS/SMG-020501Q</i>
	KJ	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service description Stage 2 (GSM 03.60, version 6.3.2, Release 1997), 107 pages (July, 1997) EN 301 344</i>
	KK	European Telecommunications Standards Institute (ETSI)	<i>GSM Technical Specification – Digital cellular telecommunications system (Phase 2+); Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS) (GSM 07.05, version 5.5.0, Release 1998), 69 pages (January, 1998) Reference: GTS/SMG-040705QR</i>
	KL	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 7.3.0, Release 1998) 101 pages, (July, 1999) TS 101 267</i>

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	KM	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features (GSM 02.07, version 6.1.0, Release 97), 22 pages (July, 1998) TS 100 906</i>
	KN	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2 (GSM 03.48, version 6.1.0, Release 97), 20 pages (July, 1998) TS 101 181</i>
	KO	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11, version 6.1.0, Release 1997), 125 pages (July, 1998) TS 100 977</i>
	KP	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 7.1.0, Release 1998), 98 pages (November, 1998)</i>

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	KQ	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2 (GSM 03.48, version 7.0.1, Release 1998), 21 pages (July, 1999) ETSI TS 101 181</i>
	KR	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) supporting GPRS (GSM 07.60, version 7.0.0, Release 1998), 47 pages (July, 1999) ETSI TS 101 356</i>
	KS	European Telecommunications Standards Institute (ETSI)	<i>Technical specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 7.3.0, Release 1998), 125 pages (July, 1999) ETSI TS 100 916</i>
	KT	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); GSM Release 1999 Specifications (GSM 01.01, version 0.4.0, Release 1999), 22 pages (October, 1999)</i>
	KU	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); GSM Release 1999 Specifications (GSM 01.01, version 1.0.0, Release 1999), 23 pages (November, 1999)</i>

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	KV	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Subscriber Identity Module Application Programming Interface (SIM API); SIM API for Java Card™; Stage 2 (GSM 03.19, version 7.0.0, Release 1998), 22 pages (November, 1999) ETSI TS 101 476</i>
	KW	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 6.4.0, Release 1997), 116 pages (November, 1999) ETSI TS 100 916</i>
	KX	European Telecommunications Standards Institute (ETSI)	<i>Technical specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 7.5.0, Release 1998), 127 pages (December, 1999) ETSI TS 100 916</i>
	KY	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 5.9.1, Release 1996), 98 pages (December, 1999) ETS 300 916</i>

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	KZ	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Use of Data Terminal Equipment – Data Circuit terminating; Equipment (DTE-DCE) interface for Cell Broadcast Service (CBS) (3G TS 27.005, version 3.1.0, Release 1999), 70 pages (January, 2000) ETSI TS 127 005</i>
	LA	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); AT command set for 3GPP User Equipment (UE) (3G TS 27.007, version 3.3.0, Release 1999), 147 pages (January, 2000) ETSI TS 127 007</i>
	LB	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); AT command set for 3GPP User Equipment (UE) (3G TS 27.007, version 3.4.0, Release 1999), 156 pages (March, 2000) ETSI TS 127 007</i>
	LC	European Telecommunications Standards Institute (ETSI)	<i>GSM Technical Specification: Digital cellular telecommunications system (Phase 2+); International Mobile station Equipment Identities (IMEI) (GSM 02.16, version 5.2.0, Release 1996), 12 pages (August, 2000) Reference: RGTS/SMG-010216QR2</i>

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	LL	Falcon	Falcon® 330 & 335, Portable Data Terminals, "Setting a New Standard for Industrial Portable Data Collection Terminals," 2 pages
	LM	Federal Communications Commission	Wavecom Inc. - Grant of Equipment Authorization, 1 page, dated February 16, 2000
	LN	Finkel et al.	VIC 20 Programmer's Reference Guide, <i>Commodore Business Machines, Inc.</i> , First Edition, 307 pages (1982)
	LO	Fluke	Wireless Logger, User's Manual, PN 936562, Rev. 2, 212 pages (June, 1993)
	LP	Foxboro®	I/A Series® Hardware Mobile Workstation Indoor Unit, PSS 21-4W2 B4, 8 pages
	LQ	Funkanlagen Leipoldt OHG	Falcom A23- Programming Manual, Version 1.02, 32 pages (September, 1999)
	LR	Funkanlagen Leipoldt OHG	Falcom A2 (Including A2-A, A2-B, A2-1 and Evaluation Board), User Manual / Command List, 99 pages (October, 1999)
	LS	George	"HC05 MCU Software Driven Asynchronous Serial Communication Techniques Using the MC68HC705J1A," Freescale Semiconductor, AN1240 (22 pages)

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	LT	GPS Navstar	Global Positioning System, Standard Positioning Service Signal Specification, Second Edition, 51 pages (June, 1995)
	LU	GRAFIK Eye®	GRX-RS232 Interface Control, GRX-PRG Programming Interface, Class 2/PELV Devices, Installation and Operation Instructions, 4 pages (1999)
	LV	Harris Corp.	Photos of the RF-5000, 3 pages
	LW	Harris Corp. RF Communications Group	RF-5020 RT Maintenance Manual, 270 pages (October, 1991)
	LX	Hearst Electronics Products	“Wireless LAN adapter brings 1.6-Gbit/s connectivity to handheld PCs” Proxim, 1 page (May, 1997)
	LY	HomeRF	HomeRF: Bringing Wireless Connectivity Home, 27 pages (March, 1999)
	LZ	HomeRF	Interference Immunity of 2.4 Ghz Wireless LANs, 10 pages (2001)
	MA	HomeRF	A Comparison of Security in HomeRF versus IEEE802.11b, 7 pages (2001)

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	MB	Hong Kong Awards	2013 Hong Kong Awards for Industry awarded Sierra the "Technological Achievement Certificate of Merit" for the AirPrime® WS6318 Embedded Wireless Module as the "world's smallest cellular module", 4 pages (http://www.sierrawireless.com/Newsroom/Awards/product_awards.aspx)
	MC	Hunkins	"Emergence of Consumer Solutions in Vehicle Telematics," <i>Telcontar</i> , 13 pages (December, 2003)
	MD	Intel	8251A Programmable Communication Interface, Order No. 205222-002, 25 pages (November, 1996)
	ME	Intermec Technologies Corporation	"5055 Data Collection PC, Technical Reference," Revision C, P/N 978-054-002, 194 pages (May, 2001)
	MF	International Telecommunication Union	<i>ITU-T: Telecommunication Standardization Sector of ITU, Data Communication over the Telephone Network, Serial Asynchronous Automatic Dialling and Control (V.25 ter)</i> , 74 pages (August, 1995)
	MG	Kinetic	PC/Piranha™, Driving the Network Economy, Wireless Solutions for Mobile Operations, 2 pages
	MH	Korba	"Security System for Wireless Local Area Networks," <i>National Research Council of Canada</i> , pp. 1550-1554 (1998)

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Applicants:	Wesby-van Swaay	Attorney Docket:	3781/1017
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Date Filed:	February 7, 2014	Examiner Name:	Nguyen, Nam V
		Conf. No.:	6320
Invention:	Programmable Communicator		
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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	MI	Kramer	“Cellular Combos Differ in Heft, Abilities - <i>Eagle Cross Device Is Fast but Heavy; PowerTek and Vital Offer Cheaper, Lighter Products,</i> ” <i>PC Week</i> , Vol. 8, No. 42, pp. 160-164 (October, 1991)
	MJ	Kyocera – North America	“Kyocera Wireless Corp. Announces New CDMA Module Product Line,” 2 pages (March, 2001)
	MK	Lexis Nexis	“Sierra Wireless Expands Data Product Line with New 3-Watt Telemetry Modem,” 2 pages (October, 1997)
	ML	Luhowy	“Advances In HF Parallel Tone Modem Technology,” Harris Corporation, RF Communications Group, 5 pages (1988)
	MM	Lutron®	“RF-Modem Installation for HomeWorks™,” Application Note #37, 6 pages (1997)
	MN	Lynch et al.	“Piezoelectric Structural Excitation using a Wireless Active Sensing Unit,” 9 pages
	MO	Lynch et al.	“The Design of a Wireless Sensing Unit for Structural Health Monitoring,” <i>Proc. of the 3rd Int. Workshop on Structural Health Monitoring, Stanford, CA</i> , 10 pages (September, 2001)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Wesby-van Swaay	Attorney Docket:	3781/1017
Serial No:	14/175,171	Art Group Unit:	2682
Date Filed:	February 7, 2014	Examiner Name:	Nguyen, Nam V
		Conf. No.:	6320
Invention:	Programmable Communicator		
Date:	July 24, 2014		

**LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	MP	Medical Device & Diagnostic Industry Magazine	“Wireless Technologies Fine Niche in Patient Care,” <i>Medical Device & Diagnostic Industry Magazine</i> , 11 pages (August, 1998)
	MQ	Mobile Merit Award	Mobile Merit Award for the “Mobile Health” category was awarded to Vgo for using the Novatel E362 (http://investor.novatelwireless.com/releasedetail.cfm?ReleaseID=668463) (2012)
	MR	Mobile Merit Award	Mobile Merit Award for the “Connected Life Category” was awarded to Novatel Wireless for its “SA 2100 M2M Device,” 2 pages (2013) (http://investor.novatelwireless.com/releasedetail.cfm?ReleaseID=790042)
	MS	Myles et al.	“A Mobile Host Protocol Supporting Route Optimization and Authentication,” <i>IEEE J. Sel. Area Comm.</i> , Vol. 13, No. 5, pp. 839-849 (June, 1995)
	MT	National Semiconductor	PC165550D Universal Asynchronous Receiver/Transmitter with FIFOs, 22 pages (June, 1995)
	MU	National Semiconductor	PC16450C/NS16450, PC8250A/INS8250A Universal Asynchronous Receiver/Transmitter, 18 pages (July, 1990)
	MV	Nigus et al.	“HomeRF™ Wireless Networking for the Connected Home,” 10 pages

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
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 Invention: Programmable Communicator
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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	MW	Negus et al.	“History of Wireless Local Area Networks (WLANs) In the Unlicensed Bands,” <i>George Mason University Law School Conference, Information Economy Project, Arlington, VA</i> , pp. 1-13 (April, 2008)
	MX	Nokia	NOKIA PremiCell, Operator’s Guide, 58 pages (December, 1997)
	MY	Nokia	Nokia Card Phone 1.0, 3 pages (June, 1997)
	MZ	Nokia	User’s Guide, 22 pages (1998)
	NA	Nokia	Nokia Card Phone 2.0, 1 page (June, 1999)
	NB	Nokia	Nokia Card Phone; Quick guide for a Windows terminal window with the Nokia Card Phone 2.0, 6 pages (April, 2000)
	NC	Nokia	Nokia Card Phone; Support Guide for Using the Nokia Cardphone 2.0 in a Windows CE Device, Version 1.0, 9 pages (March, 2001)
	ND	Nokia	Nokia Premicell 18i, 2 pages (April, 2014)
	NE	Nomadic Corp.	“Mercury User’s Guide,” Version 2.3, 96 pages (1996)
	NF	Professional PC Companion	NEC MobilePro™ 780, 2 pages (April, 2000)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	NG	Proxim	Harmony™, Harmony OpenAir™ PC Card Datasheet, Rev. B, 2 pages (July, 2001)
	NH	Proxim	Harmony™, Harmony Access Point Controller Datasheet, Rev. B, 2 pages (June, 2002)
	NI	Proxim	Proxim Antennas and Accessories, Product Guide, Rev. B, 4 pages (January, 2000)
	NJ	Proxim	Symphony™; Create a Wireless Network for Your Home, Rev. A, 4 pages (September, 2001)
	NK	Proxim	Symphony-HRF Cordless Gateway; <i>Simple Reliable Home and Small Office Computer Networking Without Wires</i> , 2 pages (June, 2000)
	NL	Proxim	“Pediatric Software and ReangeLAN2™ Keep Pediatricians On The Move, <i>A Wireless LAN Case Study</i> ,” 2 pages (September, 1999)
	NM	Proxim	RangeLAN2: Extension Point Technical Guide; Configuring and using Extension Points in wireless LAN installations, <i>White Paper</i> , 16 pages (January, 1998)
	NN	Proxim	RangeLAN2™ Ethernet and Token Ring Access Points; <i>Wireless Mobile Access to Wired LAN Services</i> , Data Sheet, 2 pages (March, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	NO	Proxim, Inc.	RangeLAN2 7420 Series PC Card Wireless LAN Adaptor Product Information, 101 pages (2000)
	NP	Proxim	RangeLAN2/ISA, <i>Wireless LAN Adapter for ISA Bus Computers</i> , User's Guide, 65 pages (1993)
	NQ	Proxim	RangeLAN2 Model 7500, User's Guide, 72 pages (1993)
	NR	Proxim	"What is a Wireless LAN?", <i>White Paper</i> , 5 pages (March, 1998)
	NS	Proxim	RangeLAN2 Access Point Models 7510 and 752x, User's Guide, 103 pages (1999)
	NT	Proxim	RangeLAN2 Extension Point Models 7540 and 7541, User's Guide, 84 pages (1999)
	NU	Proxim	RangeLAN2™ 7910 Series Serial Adapter, <i>Enabling the Portability of RS-232 Devices</i> , Data Sheet, 2 pages (June 1999)
	NV	Proxim	RangeLAN2™ 7410 CE PC Card, <i>Mobilizing the Workforce with Handheld PCs</i> , Data Sheet, 2 pages (November, 1999)
	NW	Proxim	RangeLAN2™ 7110 PCI Card, Data Sheet, 2 pages (December, 1999)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	NX	Proxim	RangeLAN2™ 7420 Series PC Card, <i>Networking Laptops and Handhelds Without Wires</i> , Data Sheet, 2 pages (April, 2000)
	NY	Proxim	Case Study, Wlan Healthcare, Kadlec Medical Center, 1 page (2002)
	NZ	Proxim	Harmony Access Point Controller, User's Guide, 123 pages (2002)
	OA	Reiter et al.	"Data on The Go: Three Cellular Modems," <i>PC Magazine</i> , pp. 365-382 (December, 1990)
	OB	Savolainen	Solukkoverkon maksupuhelin, 64 pages (February, 2014)
	OC	Savolainen	Cellular Payphone, 64 pages (February, 2014) [English Translation]
	OD	Security Escort Training	"A Guide to assist you in estimating, installing, operating and maintaining Security Escort Systems," 142 pages
	OE	Sierra Wireless	"Sierra Wireless Combines Cellular Data, GPS; MP 200-GPS Modem Provides Both in a Single Package," <i>The Free Library</i> , 3 pages (January, 1997)
	OF	Sierra Wireless	MP215 Modem; Installation Configuration and User's Guide," Rev. 1.0, Part No. 2110036, 38 pages (June, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Applicants:	Wesby-van Swaay	Attorney Docket:	3781/1017
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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	OG	Sierra Wireless	SB300 OEM Modem, Product Specification, Rev. C, Part No. 2110049, Preliminary, 22 pages (July, 1998)
	OH	Sierra Wireless	MP200 Product Manual, Welcome to the MP200 Radio Modem, 2110026, Rev. 2.0, 84 pages (March, 2000)
	OI	Sierra Wireless	AirPrime SL9090 as the "Best Industrial M2M Wireless Module" 2012 Annual Best of Electric Design Awards, 1 page (2012) (http://www.sierrawireless.com/Newsroom/Awards.aspx)
	OJ	Sierra Wireless	Photos of PocketPlus 210, 3 pages
	OK	Sierra Wireless	Enlarged Photo of DART 200 CDPD Modem, FCC ID: LL9CMIM01, 1 page
	OL	Sierra Wireless	Photo of DART 200 CDPD Modem, 1 page
	OM	Sierra Wireless	Photo of DART 200 CDPD Modem, FCC ID: LL9CMIM01, 1 page
	ON	Sierra Wireless	Photo of PocketPlus 211
	OO	Sierra Wireless	PocketPlus from Sierra Wireless, Previewing the Full-Featured Wireless Modem for the Mobile Computer User, 2 pages (1993)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
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	OP	Siemens	S25 User Guide, 64 pages (August, 1999)
	OQ	Siemens	Photos of Siemens M20 Terminal / Nokia PremiCell / Sensaphone 2000 / Novatel Wireless Technologies Ltd. Modem / Sierra Wireless SB300, 13 pages
	OR	SOMA Technology, Inc.	Philips® PageWriter Touch ECG, 5 pages (April, 2008)
	OS	Trimble, The GPS Solution	SVeeSix-CM3™, GPS Model for Embedded OEM, 2 pages (March, 1995)
	OT	Trimble Navigation	SV eeSix-CM3™, Embedded GPS Core Module, System Designer, Reference Manual, 246 pages (July, 1997)
	OU	Trimble Navigation Limited	Lassen™ LP GPS – System Designer Reference Manual, Part Number: 39264-00, Firmware: 7.82, 210 pages (August, 1999)
	OV	WaveCom	WM02 G900 / G1800 / G1900, GSM Modem, Version 1.0, 96 pages (May, 1999)
	OW	WaveLan	Company Overview, WaveLAN Competitive Bulletin, WaveLAN versus Proxim Range LAN, 6 pages
	OX	Verizon Wireless News Center	“Philadelphia Police Department Goes On-Line With Mobile Data Terminals in Vehicles, National Law Enforcement Week Marks Debut of New Weapon Ensuring Officer Safety, Efficiency,” 5 pages (May, 1997)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
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 Invention: Programmable Communicator
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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	OY	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (22 pages)
	OZ	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix MM - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (140 pages)
	PA	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix NN - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (143 pages)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Group Unit: 2682
 Date Filed: February 7, 2014 Examiner Name: Nguyen, Nam V
 Conf. No.: 6320
 Invention: Programmable Communicator
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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	PB	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix OO - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (148 pages)
	PC	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix PP - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (156 pages)
	PD	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix QQ - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (82 pages)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
Serial No: 14/175,171 Art Group Unit: 2682
Date Filed: February 7, 2014 Examiner Name: Nguyen, Nam V
Conf. No.: 6320
Invention: Programmable Communicator
Date: July 24, 2014

**LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Examiner Signature: /Nam Nguyen/

Date Considered: 08/06/2014

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation *if not* in conformance and not considered. Include copy of this form with next communication to applicant.

Section 6. Copies of Listed Information Items Accompanying This Statement

Legible copies of all items listed in Forms PTO/SB/08A and 08B (substitute for Form PTO-1449) accompany this information statement.

Exception(s) to above:

U.S. patent citations are not included pursuant to the United States Patent and Trademark Office's September 21, 2004 waiver of the copy requirement in 37 CFR 1.98 for cited pending U.S. patent citations when the patent citations are available in the USPTO's IFW system.

Items in prior application, from which an earlier filing date is claimed for this application, as identified in Section 4.

Cumulative patents or publications identified in Section 5.

Section 8. Translation(s) of Non-English Language Documents

Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

Reference **II** is the counterpart that is in the English language of Reference **IW**;

Reference **IL** is an abstract that is in the English language of Reference **IK**;

Reference **IY** is an abstract that is in the English language of Reference **IX**;

Reference **JA** is believed to be a translation that is in the English language Reference **IZ**;

Reference **LK** is believed to be a translation that is in the English language Reference **LJ**; and

Reference **OC** is believed to be a translation that is in the English language Reference **OB**.

Section 10. Identification of Person Making This Supplemental Information Disclosure Statement

The person making this certification is the practitioner of record.

Dated: July 24, 2014

/Jonathan C. Lovely, #60,821/

SIGNATURE OF PRACTITIONER

Reg. No.: 60,821

Jonathan C. Lovely

(type or print name of practitioner)

Tel. No.: (617) 443-9292

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Customer No.: 002101

Boston, MA 02110-1618

Address

03781/01017 2142680.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Wesby-van Swaay	Att'y Docket:	3781/1017
Appln. No.:	14/175,171	Filing Date:	February 7, 2014
Customer No.:	02101	Conf. No.:	6320
Examiner:	Nguyen, Nam V.	Art Unit:	2682
Invention:	PROGRAMMABLE COMMUNICATOR		

FILED BY USPTO ELECTRONIC FILING SYSTEM

NOTICE OF LITIGATION

Dear Examiner Nguyen:

As you are aware from Applicant's disclosure of numerous litigation documents, U.S. Patent Nos. 7,583,197 and 8,094,010, to which the present application claims priority, have been involved in multiple litigations in the United States District Court for the District of Delaware.

The actions and corresponding statuses are as follows:

- M2M Solutions LLC v Sierra Wireless America, Inc., and Sierra Wireless, Inc.
 - Civil Action No. 12-030-RGA
 - Status: Active/Pending
- M2M Solutions LLC v Cinterion Wireless Modules GMBH, Cinterion Wireless Modules NAFTA LLC
 - Civil Action No. 12-031-RGA
 - Status: Administratively Closed
- M2M Solutions LLC v Enfora, Inc., Novatel Wireless Inc., and Novatel Wireless Solutions, Inc.
 - Civil Action No. 12-032-RGA
 - Status: Active/Pending
- M2M Solutions LLC v Motorola Solutions, Inc., Telit Communications PLC, and Telit Wireless Solutions Inc.

- Civil Action No. 12-033-RGA
- Status: Active/Pending
- M2M Solutions LLC v. Simcom Wireless Solutions Co. Ltd., Sim Technology Group Ltd., Micron Electronics L.L.C., and Kowatec Corporation
 - Civil Action No. 12-034-RGA
 - Status: Active/Pending
- Micron Electronics, LLC v. M2M Solutions LLC
 - Civil Action No. 9:12cv81183
 - Status: Closed

Additionally, U.S. Patent No. 8,648,717, also to which the present application claims priority, is involved in the following litigation in the United States District Court for the District of Delaware:

- Sierra Wireless America Inc. and Sierra Wireless Inc. v. M2M Solutions LLC
- Civil Action No. 1:14cv178
- Status: Closed

DATE: August 11, 2014

Respectfully submitted,
/Jonathan C. Lovely, #60,821/
Jonathan C. Lovely
Registration No. 60,821
Attorney for Applicant
Sunstein Kann Murphy & Timbers LLP
125 Summer Street

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03781/01017 2123826.1

Electronic Acknowledgement Receipt

EFS ID:	19826694
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	PROGRAMMABLE COMMUNICATOR
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	11-AUG-2014
Filing Date:	07-FEB-2014
Time Stamp:	13:50:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	klw3781_1017_NoticeLitigation.pdf	79318 <small>1ed23393a84e2a229de394bc11e56de8a76b88dd</small>	no	2

Warnings:

Information:

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111


If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Number 	Application/Control No. 14/175,171	Applicant(s)/Patent under Reexamination WESBY-VAN SWAAY, EVELINE

Document Code - DISQ	Internal Document – DO NOT MAIL
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TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : 07/24/14	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

6 - Tds all approved.

Angie Walker

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.:	14/175,171	Art Unit/Group No.:	2682
Filing Date:	February 7, 2014	Examiner:	Nam V. Nguyen
		Conf. No.:	6320

For: PROGRAMMABLE COMMUNICATOR

**Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

List of Sections Forming Part of This Supplemental Information Disclosure Statement

The following sections are being submitted for this Supplemental Information Disclosure Statement:

1. Preliminary Statements
2. Forms PTO/SB/08A and 08B (substitute for Form PTO-1449)
3. Statement as to Information Not Found in Patents or Publications
4. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted
5. Cumulative Patents or Publications
6. Copies of Listed Information Items Accompanying This Statement
7. Concise Explanation of Non-English Language Listed Information Items
 - 7A. International Search Report
 - 7B. English Language Version of International Search Report
8. Translation(s) of Non-English Language Documents
9. Concise Explanation of English Language Listed Information Items (Optional)
10. Identification of Person(s) Making This Supplemental Information Disclosure Statement

Section 1. Preliminary Statements

Applicants submit herewith patents, publications or other information, of which they are aware that they believe may be material to the examination of this application, and in respect of which, there may be a duty to disclose.

The filing of this supplemental information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this supplemental information disclosure statement shall not be construed as an admission against interest in any manner. *Notice of January 9, 1992, 1135 O.G. 13-25, at 25.*

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 Invention: Programmable Communicator
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U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/ Subclass
	HX	US 5,689,825 A	Nov. 18, 1997	Averbuch et al.	455/89
	HY	US 5,699,513 A	Dec. 16, 1997	Feigen et al.	395/187.01
	HZ	US 5,901,320 A	May 4, 1999	Takahashi et al.	395/712
	IA	US 5,922,074 A	Jul. 13, 1999	Richard et al.	713/200
	IB	US 5,983,350 A	Nov. 9, 1999	Minear et al.	713/201
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wesby-van Swaay Attorney Docket: 3781/1017
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 Date: July 24, 2014

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	IQ	EP	0 804 046 A2	Oct. 29, 1997	Nokia Mobile Phones Ltd.	H04Q 7/32
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	IX	WO	01/35686 A1	May 17, 2001	Wavecom	H04Q 7/32
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	JA		Legends of Abbreviations and Symbols, 57 pages (January, 2014) [English Translation]
	JB		Modbus/BSAP Configuration, 2 pages
	JC		Photo of METHOD Locollzation objects, 8604, 1 page
	JD	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; International Mobile station Equipment Identities (IMEI) (Release 9), Version 9.0.0, 8 pages (September, 2009) 3GPP – TS 22.016</i>
	JE	3GPP (3 rd Generation Partnership Project)	<i>The Mobile Broadband Standard, 3GPP Specification detail, Specification of the Subscriber Identity Module – Mobile Equipment (SIM-ME) Interface, 4 pages, 3GPP TS 11.11</i>
	JF	3GPP (3 rd Generation Partnership Project)	<i>The Mobile Broadband Standard, 3GPP Specification detail, General Packet Radio Service (GPRS); Service description; Stage 2, 3 pages (April, 2014) 3GPP TS 03.60</i>
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	JJ	AirLink Communications, Inc.	Airlink Raven/PinPoint CDPD Modem, User's Manual, 68 pages (February, 1999)
	JK	AirLink Communications, Inc.	PinPoint Vehicle Installation Guide, 6 pages (February, 2000)
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Wesby-van Swaay	Attorney Docket:	3781/1017
Serial No:	14/175,171	Art Group Unit:	2682
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		Conf. No.:	6320
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**LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	JS	AirLink Communications, Inc.	AirLink CDPD Modem AT Commands, Quick Reference, 24 pages (October, 2002)
	JT	AirLink Communications, Inc.	Raven Firmware Release Notes: "January 25, 2002 Raven II Release 200201D," 2 pages (October, 2002)
	JU	AirLink Communications, Inc.	Wireless ACE, User's Manual, 48 pages (December, 2002)
	JV	Auerbach	Handbook of Local Area Networks 1999, 67 pages (1996)
	JW	BioPhone	BIOPHONE 3502u, Instruction & Troubleshooting Manual, 149 Pages (May, 1978)
	JX	BioPhone	Photos of BIOPHONE, Model 3502, 5 pages
	JY	Blasch et al.	"Georgia Tech Aerial Robotics System Competition Entry," <i>Georgia Institute of Technology School of Aerospace</i> , 10 pages (March, 1994)
	JZ	CDPD Forum, Inc.	"Circuit Switched - Cellular Digital Packet Data," Part 1024, Release 1.5, 90 pages (June, 1995)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	KC	Eagle Cross	"For Cellular Data Transmission, It's Either THE OUTBACK or This," 4 pages
	KD	Davies	"A Brief History of Cryptography," <i>Information Security Technical Report</i> , Vol. 2, No. 2, pp. 14-17 (1997)
	KE	DeRose	"The Wireless Data Handbook," 4 th Edition, 399 pages (1999)
	KF	Doelz et al.	"Binary Data Transmission Techniques for Linear Systems*," <i>Proceedings of the IRE</i> , pp. 656-661 (May, 1957)
	KG	Electronic Compliance Laboratories, Inc.	EMI Test Report on Symphony ISA Card; Prepared for Proxim, Test Report No. A806003, 42 pages (June, 1998)
	KH	European Telecommunications Standards Institute (ETSI)	<i>Release Note: Recommendation GSM 02.16, International MS Equipment Identities, European digital cellular telecommunication system (phase 1); GSM Technical Specification, Version 3.0.1, 9 pages (February, 1992)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	KJ	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Service description Stage 2 (GSM 03.60, version 6.3.2, Release 1997), 107 pages (July, 1997) EN 301 344</i>
	KK	European Telecommunications Standards Institute (ETSI)	<i>GSM Technical Specification – Digital cellular telecommunications system (Phase 2+); Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS) (GSM 07.05, version 5.5.0, Release 1998), 69 pages (January, 1998) Reference: GTS/SMG-040705QR</i>
	KL	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 7.3.0, Release 1998) 101 pages, (July, 1999) TS 101 267</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	KM	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features (GSM 02.07, version 6.1.0, Release 97), 22 pages (July, 1998) TS 100 906</i>
	KN	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2 (GSM 03.48, version 6.1.0, Release 97), 20 pages (July, 1998) TS 101 181</i>
	KO	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11, version 6.1.0, Release 1997), 125 pages (July, 1998) TS 100 977</i>
	KP	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 7.1.0, Release 1998), 98 pages (November, 1998)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	KQ	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2 (GSM 03.48, version 7.0.1, Release 1998), 21 pages (July, 1999) ETSI TS 101 181</i>
	KR	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) supporting GPRS (GSM 07.60, version 7.0.0, Release 1998), 47 pages (July, 1999) ETSI TS 101 356</i>
	KS	European Telecommunications Standards Institute (ETSI)	<i>Technical specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 7.3.0, Release 1998), 125 pages (July, 1999) ETSI TS 100 916</i>
	KT	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); GSM Release 1999 Specifications (GSM 01.01, version 0.4.0, Release 1999), 22 pages (October, 1999)</i>
	KU	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); GSM Release 1999 Specifications (GSM 01.01, version 1.0.0, Release 1999), 23 pages (November, 1999)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	KV	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); Subscriber Identity Module Application Programming Interface (SIM API); SIM API for Java Card™; Stage 2 (GSM 03.19, version 7.0.0, Release 1998), 22 pages (November, 1999) ETSI TS 101 476</i>
	KW	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 6.4.0, Release 1997), 116 pages (November, 1999) ETSI TS 100 916</i>
	KX	European Telecommunications Standards Institute (ETSI)	<i>Technical specification: Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 7.5.0, Release 1998), 127 pages (December, 1999) ETSI TS 100 916</i>
	KY	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME) (GSM 07.07, version 5.9.1, Release 1996), 98 pages (December, 1999) ETS 300 916</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	KZ	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Use of Data Terminal Equipment – Data Circuit terminating; Equipment (DTE-DCE) interface for Cell Broadcast Service (CBS) (3G TS 27.005, version 3.1.0, Release 1999), 70 pages (January, 2000) ETSI TS 127 005</i>
	LA	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); AT command set for 3GPP User Equipment (UE) (3G TS 27.007, version 3.3.0, Release 1999), 147 pages (January, 2000) ETSI TS 127 007</i>
	LB	European Telecommunications Standards Institute (ETSI)	<i>Technical Specification: Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); AT command set for 3GPP User Equipment (UE) (3G TS 27.007, version 3.4.0, Release 1999), 156 pages (March, 2000) ETSI TS 127 007</i>
	LC	European Telecommunications Standards Institute (ETSI)	<i>GSM Technical Specification: Digital cellular telecommunications system (Phase 2+); International Mobile station Equipment Identities (IMEI) (GSM 02.16, version 5.2.0, Release 1996), 12 pages (August, 2000) Reference: RGTS/SMG-010216QR2</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	LE	Falcom GmbH	FALCOM A2D Evaluation Kit, Short Form, Version 1.00, 2 pages
	LF	Falcom GmbH	FALCOM A2D-3, A2D-3JP3, A3D & A3D-JP3, User's Manual, Version 1.08, 69 pages
	LG	Falcom GmbH	FALCOM A2D (Including A2D-A/B/C and A2D-1), Version 1.12, 94 pages
	LH	Falcom GmbH	FALCOM A2D-3, A2D-3JP3, A3D & A3DJP3 (Programming Manual), Version 1.17, 56 pages
	LI	Falcom	Alternative A2D3-GPS firmware, with more features and stability, Firmware revision 208, User Manual Revision DR0.11z, 25 pages (2001)
	LJ	Falcom	GSM Modul, GSM Modem und GSM Telefon für Daten, Fax, SMS und Sprache mit RS232, Falcom A2 GSM 900, 6 pages (January, 2014)
	LK	Falcom	GSM modul, GSM Modem and GSM phone for data, Fax, SMS and voice with RS232, Falcom A2 GSM 900, 6 pages (January, 2014) [English Translation]

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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	LM	Federal Communications Commission	Wavecom Inc. - Grant of Equipment Authorization, 1 page, dated February 16, 2000
	LN	Finkel et al.	VIC 20 Programmer’s Reference Guide, <i>Commodore Business Machines, Inc.</i> , First Edition, 307 pages (1982)
	LO	Fluke	Wireless Logger, User’s Manual, PN 936562, Rev. 2, 212 pages (June, 1993)
	LP	Foxboro®	I/A Series® Hardware Mobile Workstation Indoor Unit, PSS 21-4W2 B4, 8 pages
	LQ	Funkanlagen Leipoldt OHG	Falcom A23- Programming Manual, Version 1.02, 32 pages (September, 1999)
	LR	Funkanlagen Leipoldt OHG	Falcom A2 (Including A2-A, A2-B, A2-1 and Evaluation Board), User Manual / Command List, 99 pages (October, 1999)
	LS	George	“HC05 MCU Software-Driven Asynchronous Serial Communication Techniques Using the MC68HC705J1A,” <i>Freescale Semiconductor</i> , AN1240 (22 pages)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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	LT	GPS Navstar	Global Positioning System, Standard Positioning Service Signal Specification, Second Edition, 51 pages (June, 1995)
	LU	GRAFIK Eye®	GRX-RS232 Interface Control, GRX-PRG Programming Interface, Class 2/PELV Devices, Installation and Operation Instructions, 4 pages (1999)
	LV	Harris Corp.	Photos of the RF-5000, 3 pages
	LW	Harris Corp. RF Communications Group	RF-5020 RT Maintenance Manual, 270 pages (October, 1991)
	LX	Hearst Electronics Products	"Wireless LAN adapter brings 1.6-Gbit/s connectivity to handheld PCs" Proxim, 1 page (May, 1997)
	LY	HomeRF	HomeRF: Bringing Wireless Connectivity Home, 27 pages (March, 1999)
	LZ	HomeRF	Interference Immunity of 2.4 Ghz Wireless LANs, 10 pages (2001)
	MA	HomeRF	A Comparison of Security in HomeRF versus IEEE802.11b, 7 pages (2001)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

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	MB	Hong Kong Awards	2013 Hong Kong Awards for Industry awarded Sierra the "Technological Achievement Certificate of Merit" for the AirPrime® WS6318 Embedded Wireless Module as the "world's smallest cellular module", 4 pages (http://www.sierrawireless.com/Newsroom/Awards/product_awards.aspx)
	MC	Hunkins	"Emergence of Consumer Solutions in Vehicle Telematics," <i>Telcontar</i> , 13 pages (December, 2003)
	MD	Intel	8251A Programmable Communication Interface, Order No. 205222-002, 25 pages (November, 1996)
	ME	Intermec Technologies Corporation	"5055 Data Collection PC, Technical Reference," Revision C, P/N 978-054-002, 194 pages (May, 2001)
	MF	International Telecommunication Union	<i>ITU-T: Telecommunication Standardization Sector of ITU, Data Communication over the Telephone Network, Serial Asynchronous Automatic Dialling and Control (V.25 ter)</i> , 74 pages (August, 1995)
	MG	Kinetic	PC/Piranha™, Driving the Network Economy, <i>Wireless Solutions for Mobile Operations</i> , 2 pages
	MH	Korba	"Security System for Wireless Local Area Networks," <i>National Research Council of Canada</i> , pp. 1550-1554 (1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	MI	Kramer	“Cellular Combos Differ in Heft, Abilities - <i>Eagle Cross Device Is Fast but Heavy; PowerTek and Vital Offer Cheaper, Lighter Products,</i> ” <i>PC Week</i> , Vol. 8, No. 42, pp. 160-164 (October, 1991)
	MJ	Kyocera – North America	“Kyocera Wireless Corp. Announces New CDMA Module Product Line,” 2 pages (March, 2001)
	MK	Lexis Nexis	“Sierra Wireless Expands Data Product Line with New 3-Watt Telemetry Modem,” 2 pages (October, 1997)
	ML	Luhowy	“Advances In HF Parallel Tone Modem Technology,” Harris Corporation, RF Communications Group, 5 pages (1988)
	MM	Lutron®	“RF-Modem Installation for HomeWorks™,” Application Note #37, 6 pages (1997)
	MN	Lynch et al.	“Piezoelectric Structural Excitation using a Wireless Active Sending Unit,” 9 pages
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Wesby-van Swaay	Attorney Docket:	3781/1017
Serial No:	14/175,171	Art Group Unit:	2682
Date Filed:	February 7, 2014	Examiner Name:	Nguyen, Nam V
		Conf. No.:	6320
Invention:	Programmable Communicator		
Date:	July 24, 2014		

**LIST OF PATENTS AND PUBLICATIONS FOR
APPLICANT'S SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	MW	Negus et al.	“History of Wireless Local Area Networks (WLANs) In the Unlicensed Bands,” <i>George Mason University Law School Conference, Information Economy Project, Arlington, VA</i> , pp. 1-13 (April, 2008)
	MX	Nokia	NOKIA PremiCell, Operator’s Guide, 58 pages (December, 1997)
	MY	Nokia	Nokia Card Phone 1.0, 3 pages (June, 1997)
	MZ	Nokia	User’s Guide, 22 pages (1998)
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	NG	Proxim	Harmony™, Harmony OpenAir™ PC Card Datasheet, Rev. B, 2 pages (July, 2001)
	NH	Proxim	Harmony™, Harmony Access Point Controller Datasheet, Rev. B, 2 pages (June, 2002)
	NI	Proxim	Proxim Antennas and Accessories, Product Guide, Rev. B, 4 pages (January, 2000)
	NJ	Proxim	Symphony™; Create a Wireless Network for Your Home, Rev. A, 4 pages (September, 2001)
	NK	Proxim	Symphony-HRF Cordless Gateway; <i>Simple Reliable Home and Small Office Computer Networking Without Wires</i> , 2 pages (June, 2000)
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	NQ	Proxim	RangeLAN2 Model 7500, User's Guide, 72 pages (1993)
	NR	Proxim	"What is a Wireless LAN?", <i>White Paper</i> , 5 pages (March, 1998)
	NS	Proxim	RangeLAN2 Access Point Models 7510 and 752x, User's Guide, 103 pages (1999)
	NT	Proxim	RangeLAN2 Extension Point Models 7540 and 7541, User's Guide, 84 pages (1999)
	NU	Proxim	RangeLAN2™ 7910 Series Serial Adapter, <i>Enabling the Portability of RS-232 Devices</i> , Data Sheet, 2 pages (June 1999)
	NV	Proxim	RangeLAN2™ 7410 CE PC Card, <i>Mobilizing the Workforce with Handheld PCs</i> , Data Sheet, 2 pages (November, 1999)
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	NY	Proxim	Case Study, Wlan Healthcare, Kadlec Medical Center, 1 page (2002)
	NZ	Proxim	Harmony Access Point Controller, User's Guide, 123 pages (2002)
	OA	Reiter et al.	"Data on The Go: Three Cellular Modems," <i>PC Magazine</i> , pp. 365-382 (December, 1990)
	OB	Savolainen	Solukkoverkon maksupuhelin, 64 pages (February, 2014)
	OC	Savolainen	Cellular Payphone, 64 pages (February, 2014) [English Translation]
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	OE	Sierra Wireless	"Sierra Wireless Combines Cellular Data, GPS; MP 200-GPS Modem Provides Both in a Single Package," <i>The Free Library</i> , 3 pages (January, 1997)
	OF	Sierra Wireless	MP215 Modem; Installation Configuration and User's Guide," Rev. 1.0, Part No. 2110036, 38 pages (June, 1998)

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	OH	Sierra Wireless	MP200 Product Manual, Welcome to the MP200 Radio Modem, 2110026, Rev. 2.0, 84 pages (March, 2000)
	OI	Sierra Wireless	AirPrime SL9090 as the "Best Industrial M2M Wireless Module" <i>2012 Annual Best of Electric Design Awards</i> , 1 page (2012) (http://www.sierrawireless.com/Newsroom/Awards.aspx)
	OJ	Sierra Wireless	Photos of Pocketplus210, 3 pages
	OK	Sierra Wireless	Enlarged Photo of DART 200 CDPD Modem, FCC ID: LL9CMIM01, 1 page
	OL	Sierra Wireless	Photo of DART 200 CDPD Modem, 1 page
	OM	Sierra Wireless	Photo of DART 200 CDPD Modem, FCC ID: LL9CMIM01, 1 page
	ON	Sierra Wireless	Photo of PocketPlus 211
	OO	Sierra Wireless	PocketPlus from Sierra Wireless, Previewing the Full-Featured Wireless Modem for the Mobile Computer User, 2 pages (1993)

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	OQ	Siemens	Photos of Siemens M20 Terminal / Nokia PremiCell / Sensaphone 2000 / Novatel Wireless Technologies Ltd. Modem / Sierra Wireless SB300, 13 pages
	OR	SOMA Technology, Inc.	Philips® PageWriter Touch ECG, 5 pages (April, 2008)
	OS	Trimble, The GPS Solution	SVeeSix-CM3™, GPS Model for Embedded OEM, 2 pages (March, 1995)
	OT	Trimble Navigation	SV eeSix-CM3™, Embedded GPS Core Module, System Designer, Reference Manual, 246 pages (July, 1997)
	OU	Trimble Navigation Limited	<i>Lassen™ LP GPS – System Designer Reference Manual</i> , Part Number: 39264-00, Firmware: 7.82, 210 pages (August, 1999)
	OV	WaveCom	WM02 G900 / G1800 / G1900, GSM Modem, Version 1.0, 96 pages (May, 1999)
	OW	WaveLan	Company Overview, WaveLAN Competitive Bulletin, WaveLAN versus Proxim Range LAN, 6 pages
	OX	Verizon Wireless News Center	“Philadelphia Police Department Goes On-Line With Mobile Data Terminals in Vehicles, National Law Enforcement Week Marks Debut of New Weapon Ensuring Officer Safety, Efficiency,” 5 pages (May, 1997)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	OY	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (22 pages)
	OZ	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix MM - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (140 pages)
	PA	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix NN - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (143 pages)

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	PB	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix OO - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (148 pages)
	PC	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix PP - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (156 pages)
	PD	Connolly Bove Lodge & Hutz LLP and K&L Gates, LLP, <i>Counsel for Enfora, Inc.</i>	<i>Appendix QQ - Defendants Enfora, Inc. and Sierra Wireless America, Inc.'s Fourth Supplemental Invalidity Contentions</i> , M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al. – U.S. District Court for the District of Delaware, Civil Action No. 12-030-RGA and 12-032-RGA, dated May 5, 2014 (82 pages)

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Examiner Signature: _____

Date Considered: _____

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation *if not* in conformance and not considered. Include copy of this form with next communication to applicant.

Section 6. Copies of Listed Information Items Accompanying This Statement

Legible copies of all items listed in Forms PTO/SB/08A and 08B (substitute for Form PTO-1449) accompany this information statement.

Exception(s) to above:

U.S. patent citations are not included pursuant to the United States Patent and Trademark Office's September 21, 2004 waiver of the copy requirement in 37 CFR 1.98 for cited pending U.S. patent citations when the patent citations are available in the USPTO's IFW system.

Items in prior application, from which an earlier filing date is claimed for this application, as identified in Section 4.

Cumulative patents or publications identified in Section 5.

Section 8. Translation(s) of Non-English Language Documents

Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

Reference **II** is the counterpart that is in the English language of Reference **IW**;

Reference **IL** is an abstract that is in the English language of Reference **IK**;

Reference **IY** is an abstract that is in the English language of Reference **IX**;

Reference **JA** is believed to be a translation that is in the English language Reference **IZ**;

Reference **LK** is believed to be a translation that is in the English language Reference **LJ**; and

Reference **OC** is believed to be a translation that is in the English language Reference **OB**.

Section 10. Identification of Person Making This Supplemental Information Disclosure Statement

The person making this certification is the practitioner of record.

Dated: July 24, 2014

/Jonathan C. Lovely, #60,821/

SIGNATURE OF PRACTITIONER

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⑤④ **Dispositif de téléchargement de logiciel pour un terminal de télécommunication.**

⑤⑦ L'invention concerne un dispositif pour télécharger un terminal de télécommunication, par exemple un radiotéléphone (9), afin de changer son logiciel de fonctionnement, sans que l'utilisateur de ce radiotéléphone doive l'apporter à une agence commerciale de l'opérateur du réseau de radiotéléphonie. Dans un exemple de réalisation, chaque radiotéléphone comporte :

- une pluralité de mémoires vives (1, 2) pour stocker différents logiciels de fonctionnement;
- une mémoire morte (3) stockant un logiciel de téléchargement;
- un microprocesseur (4) exécutant soit le logiciel de téléchargement, soit l'un des programmes de fonctionnement;
- une interface radio classique (5), utilisée, d'une part, comme interface de téléchargement, et d'autre part, pour les liaisons radiotéléphoniques classiques.

Application à tous les terminaux de télécommunication, comportant un microprocesseur, notamment les terminaux répandus en très grand nombre dans le public.

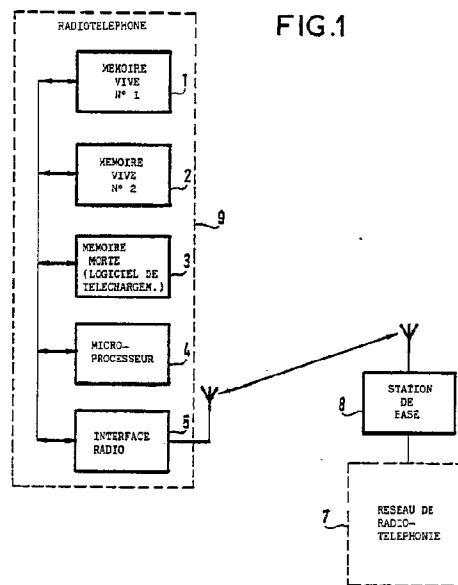


FIG.1

EP 0 459 344 A1

L'invention concerne un dispositif de téléchargement de logiciel pour un terminal de télécommunication, tel qu'un radiotéléphone mobile pour réseau cellulaire, ou un téléphone sans fil, ou un terminal fixe de réseau numérique à intégration de services. Ces terminaux ont des caractéristiques communes :

- ils exécutent un logiciel, car ils comportent un microprocesseur réalisant l'essentiel des opérations constituant leur fonctionnement;
- ils sont diffusés en très grand nombre dans le grand public.

Le logiciel exécuté par chacun des terminaux doit pouvoir évoluer au cours du temps, pour : corriger des anomalies de ce logiciel; ou améliorer le fonctionnement du terminal; ou offrir de nouveaux services aux abonnés; ou suivre l'évolution des spécifications techniques des réseaux de télécommunication; ou s'adapter à différents réseaux nécessitant l'exécution de logiciels différents, par exemple si un terminal est déplacé d'un pays à un autre.

Changer le logiciel exécuté par un terminal présente des difficultés importantes. Le logiciel est classiquement stocké dans une mémoire morte. Changer un logiciel nécessite de rapporter les terminaux à une agence commerciale et de remplacer des composants dans ces terminaux. Chaque terminal est donc indisponible à l'utilisateur pendant un certain temps. Ces opérations sont donc coûteuses pour l'opérateur du réseau.

L'article "Portable Telecommunication" dans "Proceedings of the national communications forum" vol 42 n° 2, 30 septembre 1988, page 1708, mentionne que des protocoles de réseau, des services et des possibilités d'accès peuvent être téléchargés dans un terminal portable de télécommunication. Cependant cette solution n'est pas bien adaptée au cas d'un terminal mobile qui franchit fréquemment une frontière entre deux territoires sur lesquels les protocoles de communications sont différents. En effet, il faut un certain délai pour chaque téléchargement de logiciel de fonctionnement.

Le délai de téléchargement peut être gênant pour l'abonné.

Un premier but de l'invention est de proposer un dispositif qui permettent non seulement de télécharger le logiciel de fonctionnement d'un terminal mais qui permette en outre des changements fréquents d'un logiciel de fonctionnement à un autre sans délais gênant par l'utilisateur.

Selon l'invention, un dispositif de téléchargement de logiciel pour un terminal de télécommunication raccordé à un réseau de télécommunication par une interface classique appelée interface de raccordement au réseau, ledit terminal comportant un microprocesseur commandant le fonctionne-

ment dudit terminal en exécutant un logiciel dit de fonctionnement, est caractérisé en ce qu'il comporte en outre :

- une pluralité de mémoires vive pour mémoriser plusieurs logiciels de fonctionnement;
- au moins une interface de téléchargement pour recevoir, et inscrire dans une mémoire vive, un logiciel de fonctionnement;
- une mémoire morte stockant un logiciel de téléchargement.
- des moyens pour sélectionner l'une de ces mémoires vives en écriture, pour télécharger un logiciel différent dans chacune de ces mémoires vives; et pour sélectionner l'un de ces mémoires vives en lecture, pour exécuter l'un de ces logiciels dans le microprocesseur.

Le dispositif ainsi caractérisé permet de changer le logiciel de fonctionnement sans avoir à le télécharger à chaque fois. Il simplifie donc l'adaptation d'un radiotéléphone ou d'un téléphone sans fil, à un changement de réseau. L'adaptation consiste seulement à sélectionner l'une des mémoires, si le logiciel correspondant à la zone où est situé le terminal, a déjà été téléchargé antérieurement.

Que le terminal comporte une seule mémoire ou plusieurs mémoires vives pour stocker un ou plusieurs logiciels de fonctionnement, il est nécessaire de relier ce terminal à un centre fournissant les logiciels à télécharger. Un moyen connu consiste à utiliser l'interface classique de raccordement du terminal au réseau de télécommunication, le logiciel à télécharger étant acheminé par ledit réseau via l'interface classique. Le dispositif ainsi caractérisé a pour avantage d'être particulièrement simple puisqu'il ne nécessite pas de rajouter une interface supplémentaire. Mais il a pour inconvénient de soumettre le téléchargement aux limitations du canal de transmission habituelle du terminal. Par exemple, le débit du téléchargement d'un radio-téléphone est limité par le débit de son canal vocal ou de son canal de signalisation.

Un second but de l'invention est de proposer un dispositif de téléchargement qui n'ai pas cet inconvénient. Un second objet de l'invention est un dispositif de téléchargement pour un radiotéléphone, ledit radiotéléphone comportant :

- un microprocesseur commandant le fonctionnement dudit radiotéléphone en exécutant un logiciel dit de fonctionnement;
- au moins une mémoire vive pour mémoriser au moins un logiciel de fonctionnement;
- au moins une interface de téléchargement pour recevoir, et inscrire dans une mémoire vive, un logiciel de fonctionnement;
- une mémoire morte stockant un logiciel de téléchargement;

caractérisé en ce que l'interface de téléchargement

est une interface spécifique pour le téléchargement constituée d'une interface permettant de raccorder ledit radiotéléphone à un accès normalisé d'un réseau numérique à intégration de service, le logiciel à télécharger étant acheminé par ledit réseau, jusqu'à cet accès normalisé.

Le dispositif ainsi caractérisé présente l'avantage de permettre le téléchargement d'un radiotéléphone tout à fait indépendamment du réseau de radiotéléphonie auquel le terminal est relié habituellement, ce qui permet d'éviter toute contrainte imposée par ce dernier, telle qu'une limitation du débit des informations transmises pour le téléchargement, ou telle que l'occupation d'un canal de transmission, pendant toute la durée nécessaire au téléchargement du logiciel.

L'invention sera mieux comprise et d'autres détails apparaîtront à l'aide de la description ci-dessous, et des figures l'accompagnant :

- les figures 1 à 3 représentent respectivement les schémas synoptiques de trois exemples de radiotéléphone comportant respectivement trois exemples de réalisation du dispositif selon l'invention;
- les figures 4 et 5 représentent respectivement les schémas synoptiques de deux exemples de terminaux fixes de réseau numérique à intégration de services, comportant respectivement deux exemples de réalisation du dispositif selon l'invention.

Le radiotéléphone 9 représenté sur la figure 1 comporte : une première mémoire vive 1; une seconde mémoire vive 2; une mémoire morte 3 stockant un logiciel de téléchargement; un microprocesseur 4; et une interface radio 5. Tous ces moyens sont reliés entre eux par un bus. Le radiotéléphone 9 est en relation radio avec une station de base, 8, reliée à un réseau de radiotéléphonie 7. L'interface radio 5 est une interface classique permettant au radiotéléphone de communiquer avec la station de base 8, mais elle est en outre utilisée pour télécharger un logiciel de fonctionnement, dans l'une des deux mémoires vives, 1 et 2. Les opérations de téléchargement sont réalisées par le microprocesseur 4 en exécutant le logiciel de téléchargement stocké dans la mémoire morte 3.

La présence de deux mémoires vives, 1 et 2, permet de stocker deux logiciels différents correspondant par exemple au logiciel en cours de validité et à un autre logiciel qui remplacera le précédent à une date prédéterminée. Ou bien, ces deux logiciels correspondent à deux types de réseau différents, exploités dans des pays différents. Naturellement, cet exemple n'est pas limitatif et il est possible de prévoir un plus grand nombre de mémoires vives, si la diversité des réseaux conduit à utiliser plus de deux logiciels différents.

Le radiotéléphone 9 comportant une pluralité

de mémoires vives, 1 et 2, il est prévu des moyens pour sélectionner l'une de ces mémoires vives en écriture, en vue de télécharger un logiciel différent dans chacune de ces mémoires vives; et des moyens pour sélectionner l'une de ces mémoires vives en lecture, pour exécuter seulement l'un de ces logiciels.

Les moyens pour sélectionner l'une des deux mémoires vives, en écriture, sont constitués essentiellement par le microprocesseur 4, commandé par : le logiciel de téléchargement contenu dans la mémoire morte 3, ou par un module prévu dans chaque logiciel de fonctionnement.

Lorsqu' aucun logiciel de fonctionnement n'est présent dans les mémoires vives, la sélection en écriture est commandée par le microprocesseur 4 en fonction des instructions du logiciel de téléchargement. Le logiciel de téléchargement fournit en outre des instructions pour permettre au radiotéléphone d'établir une liaison radio, puis télécharger un logiciel par cette liaison.

L'exécution du logiciel de téléchargement est lancée : soit par un message fourni par le réseau 7, soit par un ordre de l'utilisateur, au moyen d'un clavier incorporé au radiotéléphone 9 et non représenté.

La sélection du logiciel à exécuter pour le fonctionnement habituel, c'est-à-dire la sélection de l'une des deux mémoires vives en lecture est commandée soit par un message envoyé par le réseau 7, soit par un ordre donné par l'utilisateur.

Chaque logiciel de fonctionnement comporte un module pour prendre en compte : un message du réseau 7; ou un ordre de l'utilisateur; et l'identité des logiciels éventuellement stockés dans les deux mémoires vives, 2 et 3; et pour en déduire quelle mémoire vive doit être sélectionnée, en écriture ou en lecture.

L'interface radio définie par le Groupe Spécial Mobile de la Conférence Européenne des Télécommunications, prévoit des canaux de transmission de données entre le réseau et les radiotéléphones mobiles, pour une transmission de point à point ou une diffusion générale. Ces canaux autorisent un débit pouvant atteindre 9,6 kbits par seconde.

La diffusion générale est utilisable pour mettre à jour simultanément les logiciels des radiotéléphones de tout un parc. Au contraire, la transmission de point à point est utilisable pour télécharger un radiotéléphone particulier qui entre dans une zone géographique desservie par un réseau nécessitant l'exécution d'un logiciel de fonctionnement, qui n'est pas déjà stocké dans l'une des mémoires vives du radiotéléphone.

Le téléchargement est lancé à l'initiative du réseau, après analyse d'un paramètre appelé "Classmark Update" contenu dans un message

appelé "Loc Upd Request" envoyé par le radiotéléphone mobile pour initialiser une procédure dite de localisation, lorsqu'il entre dans la nouvelle zone. Ce paramètre indique la version du radiotéléphone. Il indique si ce radiotéléphone est téléchargeable et quel type de téléchargement il est susceptible d'accepter : partiel, pour certaines fonctions; ou total, pour toutes les fonctions sauf la localisation et le téléchargement. Le réseau 7 lance le téléchargement en envoyant au radiotéléphone 9, par radio, un message qui est interprété par le microprocesseur 4 en exécutant un module adéquat du logiciel de fonctionnement, qui est en cours d'exécution à l'instant considéré. Une fois l'opération de téléchargement terminée, la procédure de localisation est terminée. Le radiotéléphone dispose alors de toutes les informations nécessaires pour fonctionner dans la nouvelle zone.

La réalisation du logiciel de téléchargement est à la portée de l'Homme de l'Art. La partie assurant le chargement des mémoires vives est analogue au logiciel d'amorçage (bootstrap en anglais) utilisé pour charger un logiciel d'une disquette vers la mémoire centrale d'un ordinateur. La partie assurant l'établissement d'une liaison radio est une version simplifiée d'un logiciel classique commandant le fonctionnement d'un radiotéléphone.

Cette première variante du dispositif selon l'invention a pour avantage d'être simple et peu coûteuse, puisqu'il suffit de munir le radiotéléphone d'au moins une mémoire vive, et d'une mémoire morte contenant un logiciel de téléchargement, sans interface supplémentaire par rapport à un radiotéléphone classique. Les téléchargements de plusieurs terminaux peuvent être réalisés simultanément, ce qui permet une mise à niveau d'une partie ou de l'ensemble des terminaux d'un réseau de radiotéléphonie, en une seule opération. La diffusion de corrections d'un logiciel, ou le remplacement complet d'un logiciel est donc facile.

La figure 2 représente le schéma synoptique d'un radiotéléphone 10 comportant un second exemple de réalisation du dispositif selon l'invention. Le radiotéléphone 10 comporte : deux mémoires vives 11 et 12; une mémoire morte 13 contenant le logiciel de téléchargement; un microprocesseur 14; une interface radio classique 15; une interface de lecteur de carte à puce, 16; et un lecteur de carte à puce, 17. Les moyens 11 à 16 sont reliés entre eux par un bus.

L'interface de téléchargement est une interface spécifique, indépendante de l'interface radio 15, et constituée de l'interface de lecteur de carte à puce, 16. Cette variante de réalisation permet de télécharger un logiciel indépendamment du réseau de radiotéléphonie, ce qui présente l'avantage d'éviter les contraintes de celui-ci. D'autre part un logiciel de téléchargement par carte est plus simple qu'un

logiciel de téléchargement par relation radio, celle-ci nécessitant une procédure complexe pour son établissement. Le téléchargement est commandé par l'utilisateur au moyen d'un clavier incorporé au radiotéléphone 10, après que l'utilisateur ait introduit une carte à puce 18 dans le lecteur de carte à puce 17. La sélection de l'une des deux mémoires vives, 11 ou 12, en écriture est commandée par l'utilisateur au moyen de son clavier. La sélection de l'une des deux mémoires vives en lecture est commandée soit par l'utilisateur, soit par un module du logiciel de fonctionnement, en cours d'exécution, de la façon décrite précédemment pour le radiotéléphone 9, par exemple lors d'un changement de zone géographique.

Il est possible de réaliser un logiciel de téléchargement permettant un téléchargement alternativement par l'interface radio 15, comme décrit pour le radiotéléphone 9, ou par le lecteur de carte 17, comme décrit ci-dessus pour le radiotéléphone 10.

La carte à puce 18 est distribuée aux usagers par l'opérateur du réseau, soit directement par courrier, soit par l'intermédiaire d'un circuit de distribution telles que des agences commerciales, ou des commerces classiques. Il est à remarquer que le lecteur de carte à puce peut être remplacé par un lecteur de carte magnétique.

La figure 3 représente le schéma synoptique d'un radiotéléphone 20 comportant un troisième exemple de réalisation du dispositif selon l'invention. Il comporte : deux mémoires vives, 21 et 22; une mémoire 23 stockant un logiciel de téléchargement; un microprocesseur 24; une interface radio classique 25; et une interface 26 de raccordement à un accès normalisé d'un réseau numérique à intégration de services, 57. Le radiotéléphone 20 établit une liaison radiotéléphonique avec une station de base 59, reliée à un réseau de radiotéléphonie 58. Ce dernier est relié au réseau numérique à intégration de services, 57. Les moyens 21 à 26 sont reliés entre eux par un bus. L'interface radio 25 peut établir une relation radio avec la station de base 59 pour la transmission de signaux téléphoniques, par contre le téléchargement de logiciel est effectué au moyen d'un câble reliant temporairement l'interface 26 à un accès normalisé du réseau 57. Ce câble est muni d'un connecteur mâle normalisé 27 pouvant insérer dans un connecteur femelle normalisé 28 relié au réseau 57.

Quand l'utilisateur décide de télécharger un logiciel dans son radiotéléphone 20, il sélectionne en écriture l'une des deux mémoires vives, 21 ou 22, au moyen d'un clavier, après avoir connecté le câble reliant l'interface 26 au réseau 57. La sélection en lecture de l'une des deux mémoires vives, 21 ou 22, est réalisée de manière analogue à celle décrite pour le radio téléphone 9.

Cette variante a pour avantage d'utiliser un moyen de transmission du logiciel qui est plus facilement disponible qu'une carte à puce, dans la mesure où le nombre d'accès au réseau 57 est très élevé.

La figure 4 représente le schéma synoptique d'un terminal fixe 30 pour réseau numérique à intégration de services, ce terminal 30 comportant un quatrième exemple de réalisation du dispositif selon l'invention. Le terminal 30 comporte deux mémoires vives, 31 et 32, pour stocker respectivement deux logiciels de fonctionnement, différents, inscrits par téléchargement; une mémoire morte 33 stockant en permanence un logiciel de téléchargement; un microprocesseur 34; et une interface 35, de raccordement à un réseau numérique à intégration de services, constituant aussi une interface de téléchargement des logiciels de fonctionnement.

L'interface 35 est reliée en permanence à un accès normalisé d'un réseau numérique à intégration de services, 38, par un câble muni d'un connecteur mâle normalisé 36 enfiché dans un connecteur femelle normalisé 37 raccordé au réseau 38. Cette variante de réalisation, a pour avantage que les logiciels de fonctionnement sont téléchargés par l'intermédiaire d'une interface classique 35, ce qui évite de rajouter une interface spécifique.

Chaque accès normalisé 37 comporte un canal dit de signalisation d'utilisateur à usager, et plusieurs canaux pour la transmission proprement dite, acheminant des signaux vocaux, par exemple. Le téléchargement d'un logiciel peut être réalisé par l'intermédiaire de l'un de ces deux types de canaux, ou bien en combinant les deux; les canaux de transmission étant utilisés pour transmettre le logiciel à télécharger, et le canal de signalisation étant utilisé pour initialiser et pour conclure le téléchargement.

Le téléchargement de l'une des mémoires vives, 31 ou 32, est lancé par l'utilisateur, au moyen d'un clavier, ou par le logiciel de fonctionnement en cours d'exécution, lorsqu'il reçoit un ordre de téléchargement envoyé par le réseau 38. Chaque logiciel de fonctionnement comporte un module pour prendre en compte : un ordre de l'utilisateur, ou un ordre du réseau 38. La sélection de l'une des deux mémoires vives en écriture ou en lecture est commandée par le microprocesseur 34, en fonction des instructions du logiciel de téléchargement et en fonction des ordres donnés par l'utilisateur ou par le réseau.

Le téléchargement d'un nouveau logiciel de fonctionnement et le basculement d'un logiciel ancien au logiciel nouveau peuvent être entièrement télécommandés par l'opérateur du réseau 38, sans intervention de l'utilisateur.

La figure 5 représente le schéma synoptique

d'un autre exemple de terminal fixe, 40, pour réseau numérique à intégration de services, 51, ce terminal comportant un dispositif de téléchargement selon la seconde variante. Ce terminal 40 comporte : deux mémoires vives, 41 et 42, pour stocker respectivement deux logiciels de fonctionnement, différents, qui sont téléchargés; une mémoire morte 43 stockant en permanence un logiciel de téléchargement; un microprocesseur 44; une interface 45 de raccordement à un réseau numérique à intégration de services; une interface 46 pour lecteur de carte à puce; et un lecteur de carte à puce 47. Les moyens 41 à 46 sont reliés entre eux par un bus.

L'interface 45 est une interface classique reliée en permanence à un réseau numérique à intégration de services, 51, au moyen d'un câble muni d'un connecteur mâle normalisé, 49, enfiché dans un connecteur femelle normalisé, 50, relié au réseau 51. Le lecteur 47 de carte à puce est relié à une entrée de l'interface 46. Pour télécharger un logiciel de fonctionnement, l'utilisateur sélectionne l'une des deux mémoires vives, 41 ou 42, au moyen d'un clavier non représenté, puis introduit une carte à puce 48 dans le lecteur 47. La sélection de l'une des deux mémoires vives en lecture est réalisée de manière analogue à celle décrite précédemment, pour le terminal 30.

Il est possible de prévoir un logiciel de téléchargement permettant de télécharger alternativement par le réseau 51 ou par une carte 48, en fonction des circonstances. Le lecteur 47 peut être remplacé par un lecteur de carte magnétique.

La portée de l'invention n'est pas limitée aux exemples décrits ci-dessus. Elle est applicable à tout autre terminal de télécommunication comportant un microprocesseur, si la complexité de son logiciel et son évolution dans le temps justifient de changer occasionnellement ce logiciel.

Revendications

1. Dispositif de téléchargement de logiciel pour un terminal de télécommunication (9) raccordé à un réseau de télécommunication (7) par une interface classique (5) appelée interface de raccordement au réseau, ledit terminal comportant un microprocesseur (4) commandant le fonctionnement dudit terminal (9) en exécutant un logiciel dit de fonctionnement; caractérisé en ce qu'il comporte en outre :
 - une pluralité de mémoires vive (1, 2) pour mémoriser plusieurs logiciels de fonctionnement;
 - au moins une interface de téléchargement (5) pour recevoir, et inscrire dans une mémoire vive (1, 2), un logiciel de fonctionnement;

- une mémoire morte (3) stockant un logiciel de téléchargement.
 - des moyens (4) pour sélectionner l'une de ces mémoires vives en écriture, pour télécharger un logiciel différent dans chacune de ces mémoires vives; et pour sélectionner l'une de ces mémoires vives en lecture, pour exécuter l'un de ces logiciels dans le microprocesseur (4).
2. Dispositif selon la revendication 1, caractérisé en ce que les moyens pour sélectionner (4) sont commandés par un message du réseau, acheminé par l'interface (5) de raccordement au réseau de télécommunication (7).
3. Dispositif selon la revendication 2, caractérisé en ce que les moyens pour sélectionner (4) sont commandés au moyen d'un clavier manipulé par l'utilisateur du terminal (9).
4. Dispositif pour télécharger un logiciel dans un radiotéléphone (20), caractérisé en ce qu'il comporte une interface spécifique pour le téléchargement constituée d'une interface (26) permettant de raccorder ledit radiotéléphone (20) à un accès normalisé (28) d'un réseau numérique à intégration de service (57), le logiciel à télécharger étant acheminé par ledit réseau, jusqu'à cet accès normalisé (28).

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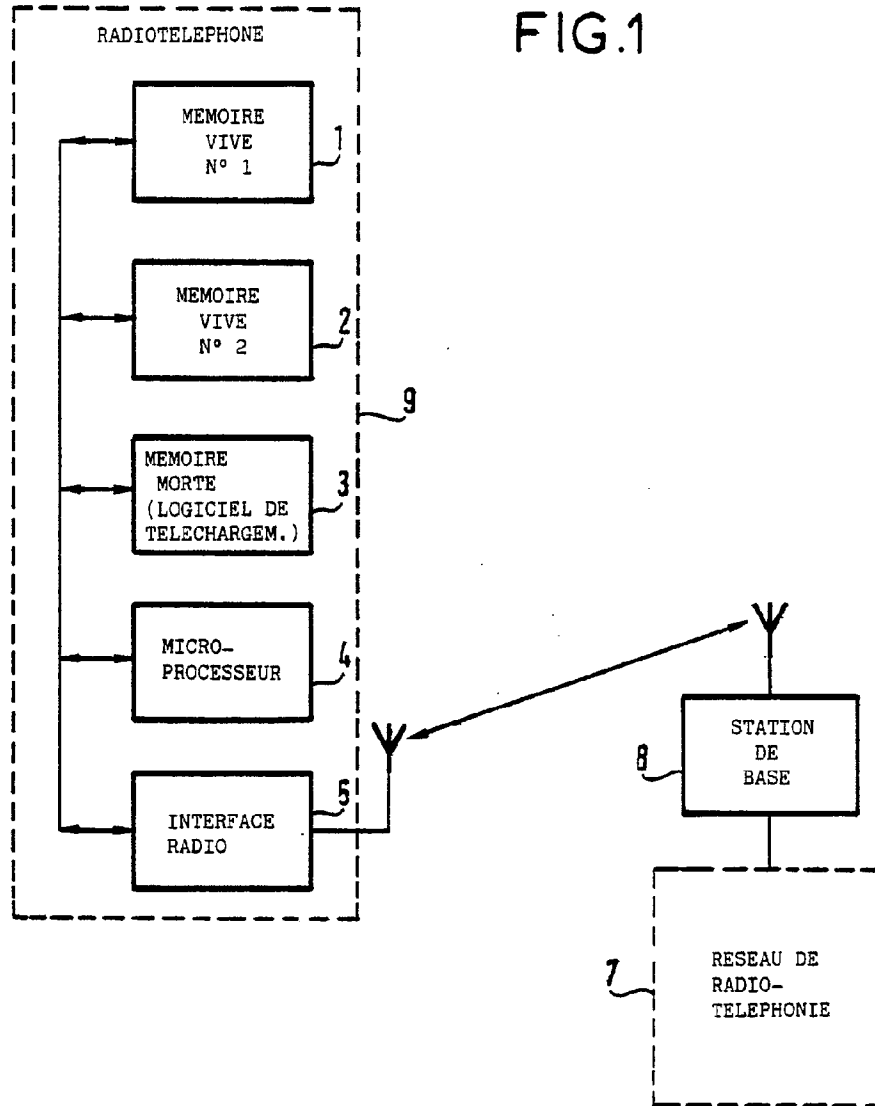


FIG. 2

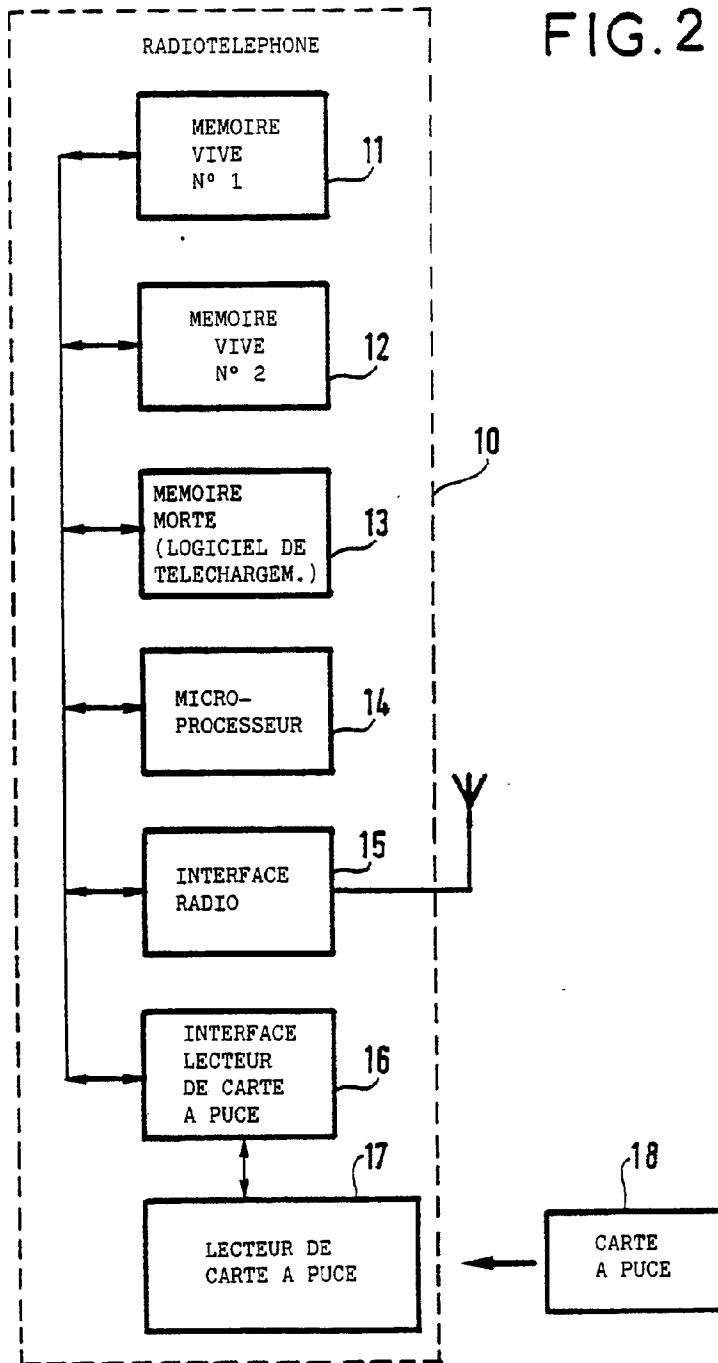


FIG. 3

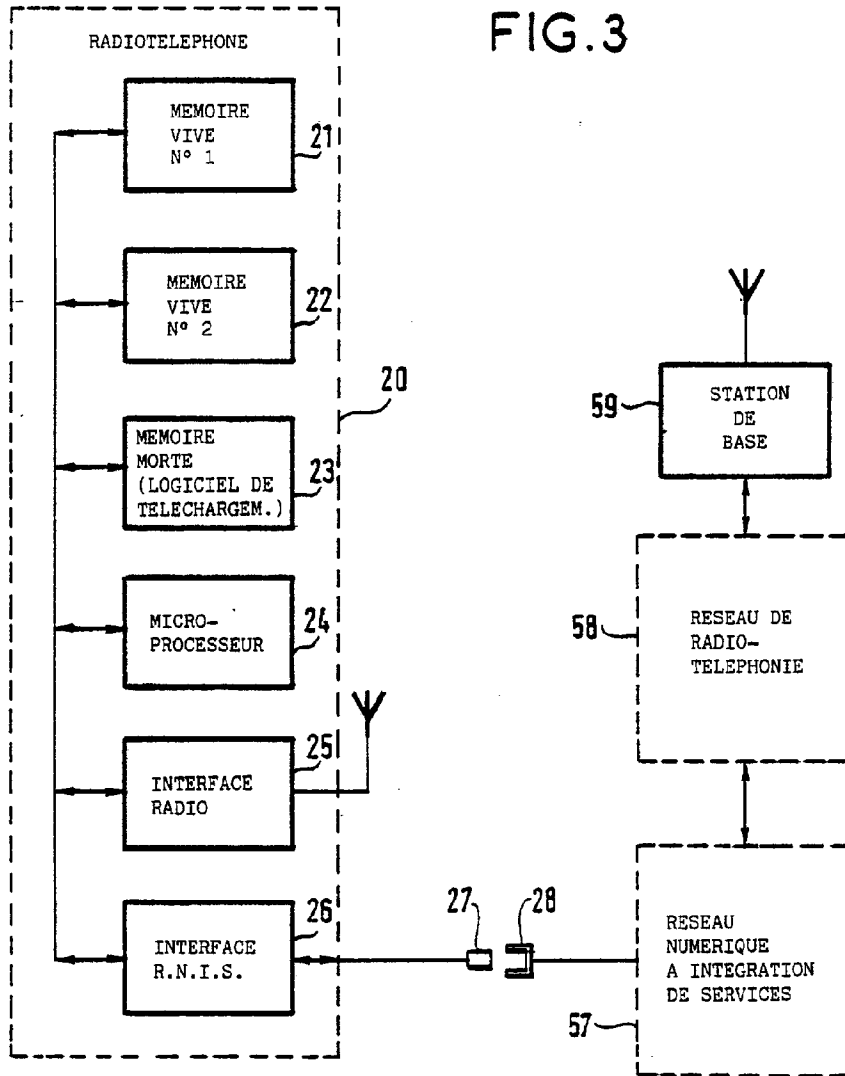


FIG. 4

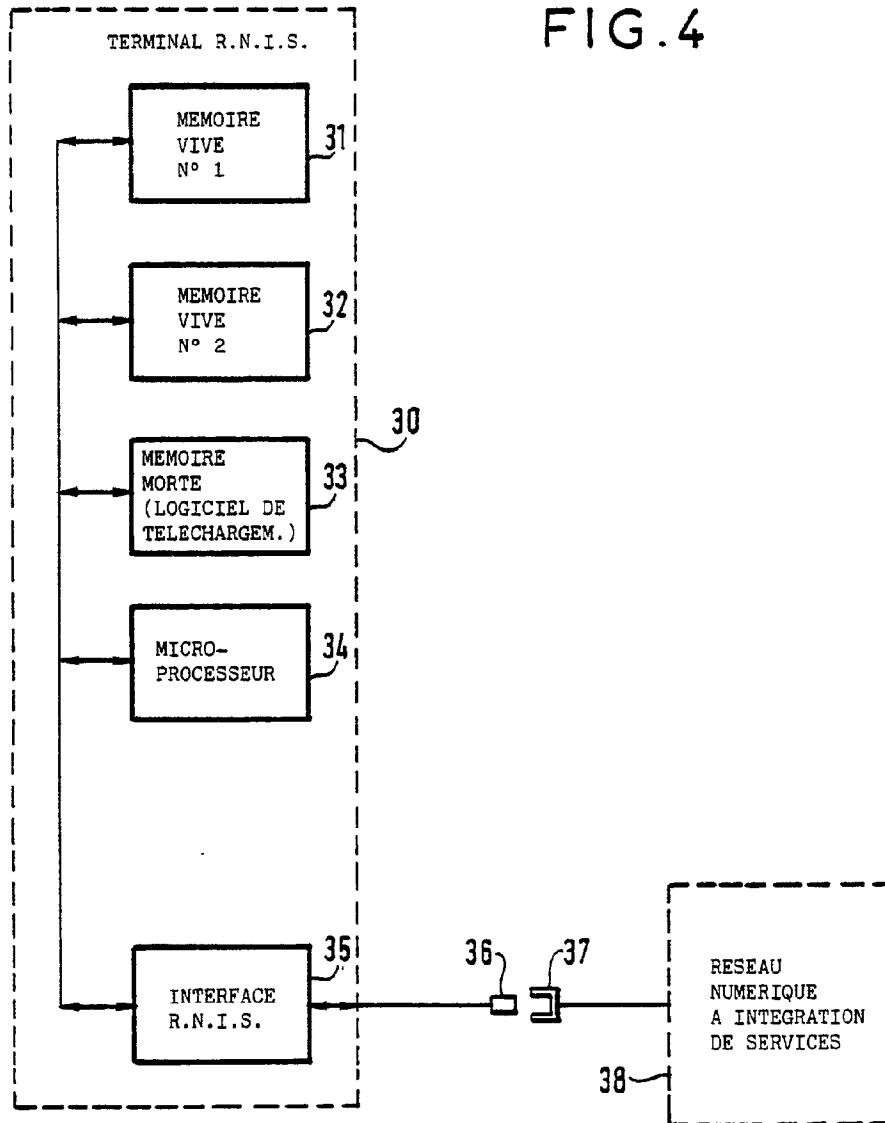
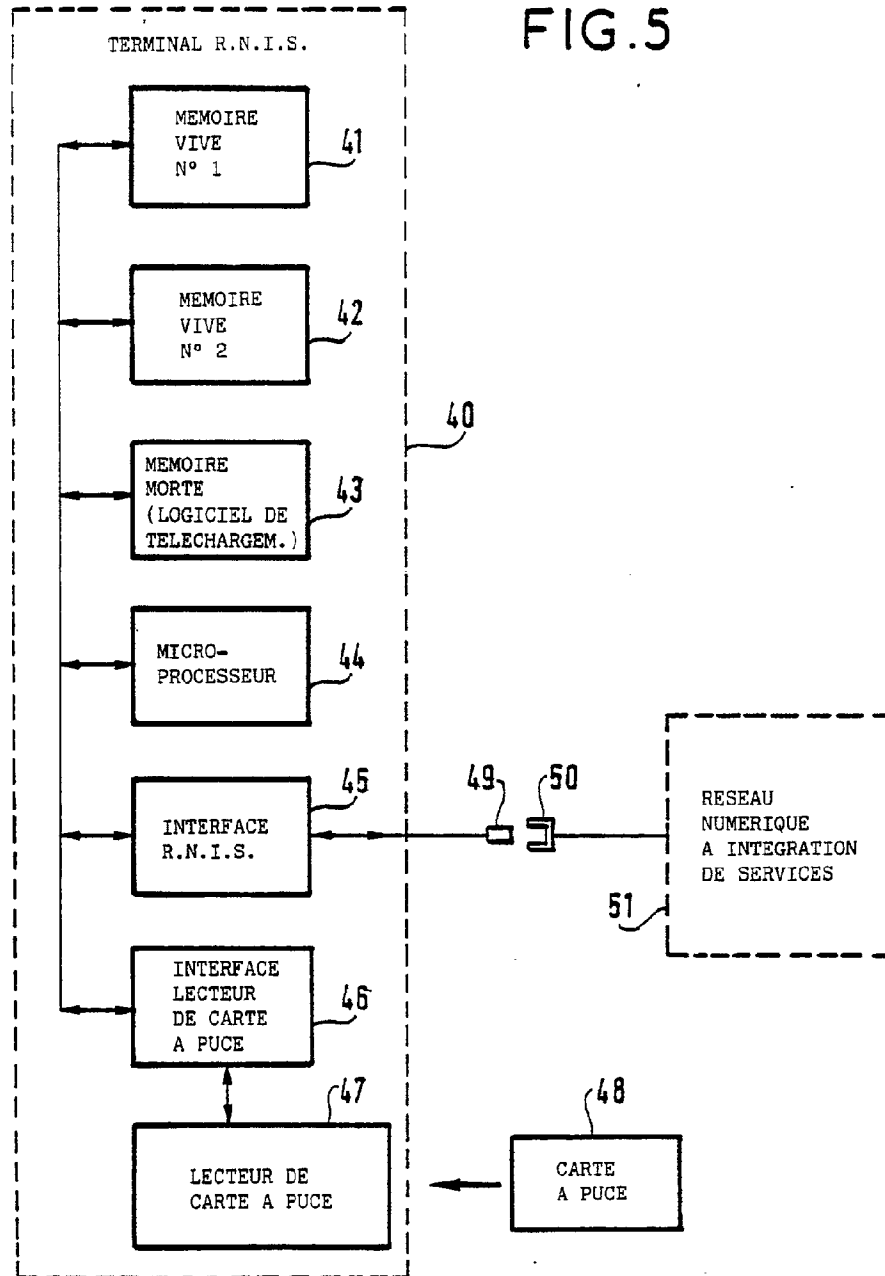


FIG.5





DOCUMENTS CONSIDERES COMME PERTINENTS			
Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication concernée	CLASSEMENT DE LA DEMANDE (Int. Cl.5)
Y	PROCEEDINGS OF THE NATIONAL COMMUNICATIONS FORUM, vol. 42, no. 2, 30 septembre 1988, pages 1706-1713; P.E. JACKSON et al.: "Portable communication" * Page 1708, colonne de droite, lignes 29-34; page 1709, colonne de gauche, lignes 44-54; figure 1 *	1	H 04 Q 7/04
A	IDEM - - - -	2-4	
Y	EP-A-0 297 616 (S.E.L.) * Résumé, colonne 3, lignes 23-32; figure 1 *	1	
A	- - - -	2-3	
A	EP-A-0 369 110 (BOSCH) * Page 2, colonne 2, lignes 17-20,42-46; colonne 3, lignes 18-25; fig.* - - - -	1	
A	US-A-4 736 409 (HASEGAWA) * Colonne 1, ligne 60 - colonne 2, ligne 2; colonne 5, lignes 29-37 * - - - -	1	
A	PHILIPS TDS REVIEW, vol. 45, no. 2, juin 1987, pages 10-26, Eindhoven, NL; J.F. BRIEND et al.: "French PTT MINITEL and LECAM programme" * Page 18, ligne 35- page 21; ligne 20 * - - - -	1	DOMAINES TECHNIQUES RECHERCHES (Int. Cl.5)
A	DE-A-3 815 071 (LOEWE OPTA) * Colonne 4, lignes 6-24 * - - - - -	1-4	H 04 Q H 04 M
Le présent rapport de recherche a été établi pour toutes les revendications			
Lieu de la recherche		Date d'achèvement de la recherche	Examineur
La Haye		12 août 91	DE LA FUENTE DEL AGU
<p>CATEGORIE DES DOCUMENTS CITES</p> <p>X : particulièrement pertinent à lui seul Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie A : arrière-plan technologique O : divulgation non-écrite P : document intercalaire T : théorie ou principe à la base de l'invention</p> <p>E : document de brevet antérieur, mais publié à la date de dépôt ou après cette date D : cité dans la demande L : cité pour d'autres raisons</p> <p>& : membre de la même famille, document correspondant</p>			



Espacenet

Bibliographic data: EP0459344 (A1) — 1991-12-04

Software download device for a communication terminal.

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Classification: - **international:** H04M1/725; H04W8/24; H04W88/06; (IPC1-7): H04Q7/04
- **cooperative:** H04M1/72525; H04W8/245; H04W88/06

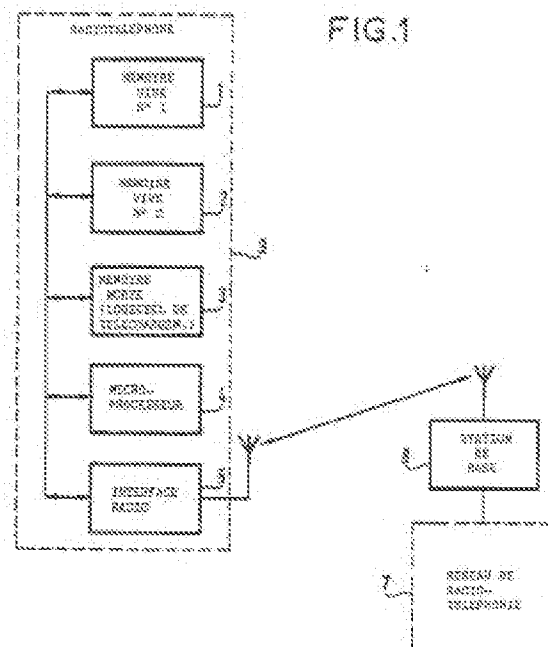
Application number: EP19910108566 19910527

Priority number (s): FR19900006710 19900530

Also published as: FR2662891 (A1) AU7739591 (A) AU643526 (B2)

Abstract of EP0459344 (A1)

The invention relates to a device for downloading a telecommunication terminal, for example a radio telephone (9), so as to change its operating software, without the user of this radio telephone having to take it to a commercial agency of the operator of the radio telephone network. In an embodiment, each radio telephone includes: - a plurality of random-access memories (1, 2) for storing various items of operating software; - a read-only memory (3) storing an item of downloading software; - a microprocessor (4) executing either the downloading software, or one of the operating programs; - a conventional radio interface (5) used, on the one hand, as



downloading interface, and on the other hand, for the conventional radio telephone links. Application to all telecommunication terminals containing a microprocessor, in particular the terminals distributed in great numbers among the public.



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C.L.	CR.	340-71
		354-22

(51) INTL.CL. ⁵ A61B-5/00

(19) (CA) **CANADIAN PATENT** (12)

(54) Physiological Monitoring System

(72) Friesen, Edward J. , Canada

(73) Same as inventor

(57) 4 Claims

Canada

CCA 3254 (10-89) 41

ABSTRACT OF THE DISCLOSURE

Physiological monitoring systems for measuring variables such as, for example the temperature or pulse rate in animals usually include a sensor for attachment to the animal, and a telemetry unit for receiving a signal from the sensor indicative of the value being measured. It is necessary to be close to the subject being monitored, and values are obtained on an intermittent basis. By providing a transmitter/receiver, a microcomputer, a source of power and at least one sensor in a remote telemetry unit, and a transmitter/receiver, a source of power and a computer in a master telemetry unit the subject can be continuously monitored, the data being stored in the microcomputer and periodically transmitted to the computer of the master telemetry unit either automatically or in response to a command for such data.

1296068

This invention relates to a physiological monitoring system.

Physiological monitoring systems are not new. Examples of such systems are found in Canadian Patents Nos. 738,747, issued 5 to R.J. Preston on July 19, 1966; 801,875, issued to F.R. Anderholm et al on December 17, 1968; 886,724, issued to N. Murata on November 23, 1971; 940,433, issued to C.H. Fuller on December 23, 1975; 1,027,181, issued to R.A. Lewis on February 28, 1978; 1,043,425, issued to D.G. Noiles on November 28, 1978; 1,105,562, 10 issued to P. Schmidt-Andersen on July 21, 1981; 1,128,138, issued to M. Toshimitsu et al on July 20, 1982, and U.S. Patents Nos. 3,212,495, issued to R.J. Preston on October 19, 1965; 4,237,900, issued to J.H. Schulman et al on December 9, 1980; 4,249,538, issued to T. Musha et al on February 10, 1981; 4,321,933, issued 15 to L.R. Baessler on March 30, 1982; 4,456,825, issued to G.J. Veith on November 2, 1982; 4,387,724, issued to D.L. Zartman on June 14, 1983; 4,399,821, issued to D.L. Bowers on August 23, 1983 and 4,531,526, issued to L.J. Genest on July 30, 1985.

In general, physiological monitoring systems have been 20 used for some time to provide management information for animal operations. The principle objective has been to identify the individual animals, and to provide some means for monitoring temperature and heart rate. The systems employ a variety of probes which may be subdermally implanted, located close to the 25 tympanic membrane, or mounted in the vagina for detecting temperature.

- 1 -



Some probes are not internally powered, so that they must be actuated using an external source of power located close to the probe. Such passive probes transmit data only when interrogated. Even in cases where the probe constantly monitors a condition,
5 e.g. using battery operated probes, information is obtained only upon actuating a transmitter/receiver. Thus, information not gathered at the moment of transmission is lost. A problem common to all such devices is that continuous remote monitoring is in general not possible.

10 The object of the present invention is to overcome the drawbacks of existing apparatuses by providing a relatively simple physiological monitoring system, which is capable of measuring physiological functions such as pulse rate and temperature in a living creature, storing the data, and transmitting the data
15 complete with an identification code via a radio telemetry link.

Accordingly, the present invention relates to a physiological monitoring system comprising remote telemetry means for attachment to the subject to be monitored including sensor means for detecting a condition of the subject, first microcomputer
20 means connected to said sensor means for storing data concerning the sensed condition, and first transmitter/receiver means for transmitting a signal representative of the condition and for receiving command signals; and master telemetry means for communicating with said remote telemetry system including second
25 computer means for storing data and for generating a command

signal, and second transmitter/receiver means for transmitting command signals to said remote telemetry unit, and for receiving data from said first microcomputer.

5 The invention will now be described in greater detail with reference to the accompanying drawings which illustrate preferred embodiments of the invention, and wherein:

Figure 1 is a schematic block diagram of a remote telemetry unit for use in the system of the present invention;

10 Figure 2 is a schematic block diagram of a master telemetry unit for use in the system of the present invention; and

Figure 3 is a schematic block diagram of another form of remote telemetry unit for use in the system of the present invention.

15 With reference to Figs. 1 and 2, the basic elements of the present invention include a remote telemetry unit (Fig. 1) and a master telemetry unit (Fig. 2). The remote telemetry unit is externally or internally attached to the animal to be monitored. The master telemetry unit functions as a base station for collecting and processing data received from one or more remote telemetry units
20 during operation of the latter.

The remote telemetry unit includes a microcomputer 1 for collecting data from one or more sensors 2. The sensors 2 are connected directly to the microcomputer 1. Alternatively,
25 the sensors can be connected to an analog to digital converter 3,

or to a multiplexer 5 which is connected directly to the micro-
computer 1 or through an analog to digital converter 6 to the
microcomputer 1. The microcomputer 1 is operated by a power
supply 7. A transmitter/receiver 8 carrying an antenna 9 is
5 connected to the microcomputer. The transmitter/receiver 8
receives command signals via the antenna 9 from the master
telemetry unit, and transmits data from the microcomputer 1 to
the master telemetry unit.

Examples of the microcomputer 1 include CPU, RAM's,
10 ROM's and EPROM's, which collect data from the sensors 2, stores
the data, performs monitoring routines, and controls transmission
of the data to the master telemetry unit. The sensors 2, which
are forms of transducers, measure the appropriate physiological
function such as pulse rate, temperature and respiration rate,
15 and transmit data to the microcomputer. The power supply 7 is
a compact power supply, e.g. a battery, so that the entire remote
telemetry unit can be attached internally, subcutaneously or
externally to the subject being monitored.

The entire remote telemetry unit is contained in a
20 single package. Very large scale integration (VLSI) is used
to make the remote telemetry unit as small as possible, and to
keep manufacturing costs as low as possible. The manner of
attaching the remote telemetry unit to the subject depends on the
use or application. Mounting of the remote telemetry unit
25 subcutaneously possesses the advantage of utilizing the skin

for mechanical protection of the remote telemetry unit. Alternatively, the remote telemetry unit can be injected into the digestive tract of the subject when the physiological functions to be determined require such form of sensing. In cases where
5 relatively short term sensing, or when there is no need for mechanical protection, the remote telemetry unit can be attached to the surface of the skin using an adhesive. For internal or subcutaneous use, the remote telemetry unit can be in the form of a small cylinder (one inch by one-quarter inch). For surface
10 mounting on the skin, the remote telemetry unit can be a thin disc with an adhesive backing. The antenna 9 can be integral with or external to the remote telemetry unit, and in the case of subcutaneous use can extend through the skin of the subject.

With reference to Fig. 2, the master telemetry unit
15 includes a computer 10 connected to a transmitter/receiver 12 on which is mounted an antenna 13. The transmitter/receiver 12 sends command signals to the transmitter/receiver 8 of the remote telemetry unit, and receives stored data from the micro-computer 1 via the transmitter/receiver 8. The usual auxillary
20 equipment, including an LED (light emitting diode) readout device 14, a monitor 15, a printer 16 and a disc storage device 17 are attached to the computer 10.

Referring to Fig. 3, an alternative form of remote
telemetry unit includes a computer 40 connected to sensors 42
25 and 43 (one of each shown). The digital sensors 42 are connected

1296068

directly to the computer, while the analog sensors are connected through an analog/digital converter 44 to the computer 40. The microcomputer 40 is connected through a grounded interface 46, a quad line receiver 47, operational
5 amplifiers 48 and 49, a voltage/frequency converter 50, operational amplifier 52, relay 53 and an isolating transformer 54 to the transmit circuit of a communications unit 56. Lines 58 and 59 bypass the amplifiers 48 and 49, the converter 50 and the amplifier 52, connecting the quad
10 line receiver 47 directly to a universal asynchronous receiver/transmitter (UART) 60 and a read only memory (ROM) 61, and connecting the latter to the relay 53. A rate generator 64 is connected to the UART 60.

The computer 40 is also connected through the
15 interface 46, a quad line driver 65, a Schmidt trigger 66, an operational amplifier 68, a frequency voltage converter 69, a Schmidt trigger 70, an operational amplifier 72, a relay 73 and an isolating transformer 74 to the receive circuit of the communications unit 56. As in other
20 embodiments, an antenna 57 is provided on the communications unit 51. A line 77 connects the ROM 61 to the relay 73.

While not illustrated, the master telemetry unit can be identical to the unit shown in Fig. 3, except that the
25 computer 40, sensors 42 and 43, and the analog/digital converter 44 are replaced by a computer with peripheral devices, including a

monitor, printer and data storage.

The quad line receiver 47 is a monolithic quad line receiver designed to interface data terminal equipment with data communications equipment in conformance with the specifications of EIA Standard No. RS-232C (see Motorola Semiconductors Data Sheet). The quad line driver 52 is a monolithic quad line driver also designed to interface data terminal equipment with data communications equipment in conformance with the specifications of EIA Standard No. RS-232C. The voltage/frequency converter 48 accepts a variable analog input signal and generates an output pulse train, the frequency of which is linearly proportional to the input voltage. The same device can be used as a frequency to voltage converter 54, which accepts virtually any input frequency wave form and provides a linearly proportional voltage output (see Teledyne Semiconductor Data Sheet). The inverting Schmidt triggers 66 and 70 are circuits having a high voltage output when the input voltage is low. The output voltage remains high while the input voltage increases until the input voltage exceeds set point. The output voltage then switches to its minimum value and holds that value until the input voltage has decreased below set point.

In operation, the computer of the master telemetry unit identifies a remote telemetry unit to be interrogated, either through its software or by operator request. A digital coded signal is sent via the interface 46 to the quad line receiver

1296068

47. The receiver 47 conditions the digital signal to a voltage level acceptable to the digital input voltage signal. The output pulse train is then input to the communications unit 56 via the amplifiers 48 and 49, the voltage/frequency converter 50, the
5 amplifier 52, the relay 53 and the isolating transformer 54. The operational amplifiers 48, 49 and 52, and the voltage/frequency converter 50 are used to condition the signal from the receiver 47 to the transformer 54. The isolating transformer 54 is used to electrically isolate the communications unit from the remainder
10 of the circuit.

The signal from the output of the quad line receiver 47 also goes to the UART 60. The UART 60 receives the serial signal and converts it to a parallel signal which is sent to the ROM 61. The ROM 61 interprets the signal on its address bus (not shown)
15 and if the signal is a command from the computer 40 to transmit, it operates the transmit relay 53 which puts the telemetry unit into the transmit mode of operation. If the transmit signal is not received by the ROM 61, then the ROM operates the receive relay 73 to maintain the master telemetry unit in the receive
20 mode of operation.

The communications unit 56 of the master telemetry unit is normally operated in the receive mode. When the communications unit 56 senses an input to its transmission circuitry, the unit automatically switches to transmit mode and transmits the input
25 data via the antenna 76. When the input data stops, the

communication unit 56 switches back to the receive mode. A suitable communications unit is a Citizen Band transmit/receiver, Julian International Model JWT 603. The unit has voice activated input, and operates at 49.876 megahertz.

5 When a signal is received by a communications unit of the master telemetry unit via the antenna 76, the signal is directed to the receive port through the isolating transformer 74 to the converter 69. The converter 69 converts the input pulse train to a digital voltage output for the quad line driver 65. The driver 65 converts the digital signal to a voltage level in accordance with the standard of the interface 46. The Schmidt triggers 66 and 70, and the amplifiers 68 and 72 are used to condition the signals from the driver 65 to the transformer 74. The signal is then passed to the computer for processing.

10 As mentioned above, the portion of the remote telemetry unit which sends a signal to the communications unit 56 or receives a signal is the same as the master telemetry unit. The data acquisition portion of the remote telemetry unit functions when the analog sensor 43 sends a signal to the analog-to-digital converter 44. The signal is proportional to the phenomena being sensed, e.g. temperature, pressure, voltage, etc. The analog-to-digital converter 44 changes the input analog signal to a digital signal, which is input to the computer 40 for processing. The digital sensor 42 produces a digital signal, which is sent directly to the computer 40 for processing, and can be used with

the analog sensor 43 to act as a switch indicating that an event has occurred.

It will be appreciated that the master telemetry unit is required to communicate with the remote telemetry unit.

5 Consequently the design of the master telemetry unit depends upon whether the unit is portable or stationary, the range required between the two units, the number of remote telemetry units in the system and the type of display required. The transmitter/receiver operates on the same frequency as the remote telemetry
10 unit. The master telemetry unit antenna would be designed to make up for deficiencies in the remote telemetry unit antenna, e.g. a parabolic antenna could be used to receive a weak signal from a remote telemetry unit and to transmit a strong, omnidirectional signal towards the remote telemetry unit.

15 The computers are referred to in the generic sense as any of a multitude of commercially available computers having a suitable interface. Communications between the computers and the transmitter/receiver are via the interface. One of the more important features of the invention is the use of a micro-
20 computer as part of the remote telemetry unit for attachment to the subject to be monitored. The microcomputer controls measurement of physiological variables, stores the measurements, identified transmissions from the master telemetry unit, and controls radio transmission of stored data to the master telemetry,
25 unit. There are various advantages to using a microcomputer in

the remote telemetry unit. Data transmission does not have to be continuous, since the data can be collected and stored in the microcomputer for transmission when instructions are received, at predetermined time intervals or if preset values of specific data are exceeded. Because transmission is controlled, power drain on the battery used as the power supply is minimized or conversely, a smaller battery can be used, and one standard frequency can be used when more than one remote telemetry unit is in operation for the same installation. For example, each remote telemetry unit could transmit for approximately two seconds every twenty-four hours and the master telemetry unit would provide continuous twenty-four hour surveillance. There is no danger of losing data, since the microcomputer can have sufficient storage capacity. A microprocessor complete with the components listed hereinbefore can be sufficiently small for subcutaneous implantation in the subject to be monitored. Using very large scale integration technology, it is likely that the battery used for the power supply would constitute the largest component.

Using the communications link between the remote and master telemetry units, it is possible to calibrate the remote telemetry unit for the specific variables being monitored. For example, in order to calibrate the temperature monitoring system, the remote telemetry unit is immersed in a medium such as water prior to attachment to the subject. The water temperature is measured using a thermometer, the temperature is input manually

into the master telemetry unit, which in turn transmits the temperature to the remote telemetry unit. The microprocessor of the remote telemetry unit is programmed to receive the data, compare it to the measurement taken using the temperature transducer(s),
5 and make the necessary changes to the temperature algorithm used in the microcomputer. Following attachment of the remote telemetry unit to the subject, the temperature, pulse rate, etc. of the subject can be measured using traditional methods, and the data transmitted to the remote telemetry unit. The microprocessor
10 would have the capability of confirming or correcting the algorithm.

When using a microcomputer, each remote telemetry unit can be given a unique digital name or code, which is used when the remote telemetry unit is interrogated, for requesting data transmission from the particular remote telemetry unit or to
15 identify data transmission from a remote telemetry unit.

The system described hereinbefore can be used, inter alia for artificial insemination, live stock performance monitoring, health monitoring and wild animal monitoring. In the livestock industry, data can be collected to determine the
20 estrous cycle in order to increase the probability of successful impregnation. Livestock in test stations and feed lots can be monitored to determine the health, location, feeding habits and weight gain. The monitoring of feeding habits and weight gain would require sensors at feed bunks and load cells to identify
25 the animal. The calving period in commercial cattle operations is

notoriously labour intensive. The system can be used to monitor
the cattle, and provide an alarm when physiological changes
occur to indicate that the cow is in labour or about to give birth.
Branding could be eliminated since each remote telemetry unit has
5 its own unique code used to identify each individual animal.

When used in health monitoring, heart attack or stroke
patients can be monitored in intensive care units and/or during
recovery. The system allows a doctor to monitor a patient
in an environment away from the hospital. If necessary, a pocket
10 carried, rechargeable repeater station can be used to strengthen
transmission of the remote telemetry unit signal. By implanting
a remote telemetry unit in a bird or wild animal, the need
for banding or tagging is eliminated.

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THE EMBODIMENTS OF AN INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A physiological monitoring system comprising remote telemetry means for attachment to the subject to be monitored including sensor means for detecting a condition of the subject, first microcomputer means connected to said sensor means for storing data concerning the sensed condition, and first transmitter/receiver means for transmitting a signal representative of the condition and for receiving command signals; and master telemetry means for communicating with said remote telemetry system including second computer means for storing data and for generating a command signal, and second transmitter/receiver means for transmitting command signals to said remote telemetry unit, and for receiving data from said first microcomputer.

2. A monitoring system according to claim 1, wherein said first microcomputer means includes analog/digital converter means, and said sensor means is an analog sensor.

3. A monitoring system according to claim 1, wherein each said remote telemetry means and master telemetry means includes a communications unit containing a transmit circuit and a receive circuit; antenna means connected to said communications unit for transmitting and receiving signals; quad line receiver and voltage/frequency converter means connecting said transmit circuit of the communications unit to said first or second computer means; and frequency/voltage converter means, Schmidt trigger means and quad line driver means connecting said receive circuit to said first or second computer means.

1296068

4. A method of calibrating a remote telemetry unit in a physiological monitoring system of the type including remote telemetry means for attachment to the subject to be monitored including sensor means for detecting a condition of the subject, first microcomputer means connected to said sensor means for storing data concerning the sensed condition, and first transmitter/receiver means for transmitting a signal representative of the condition and for receiving command signals; and master telemetry means for communicating with said remote telemetry system including second computer means for storing data and for generating a command signal, and second transmitter/receiver means for transmitting command signals to said remote telemetry unit, and for receiving data from said first microcomputer, said method comprising the steps of accurately determining a value of the condition to be monitored; manually inputting the value into the master telemetry unit so that the value is transmitted to the remote telemetry unit; and programming the remote telemetry unit to receive the value and to compare such value with the values obtained using said sensor means, and to make the changes to the value algorithm in the first microcomputer means necessary to ensure accurate indication of the value by said system.



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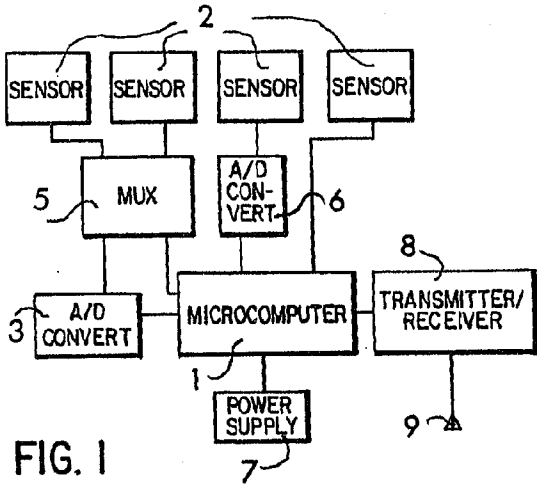


FIG. 1

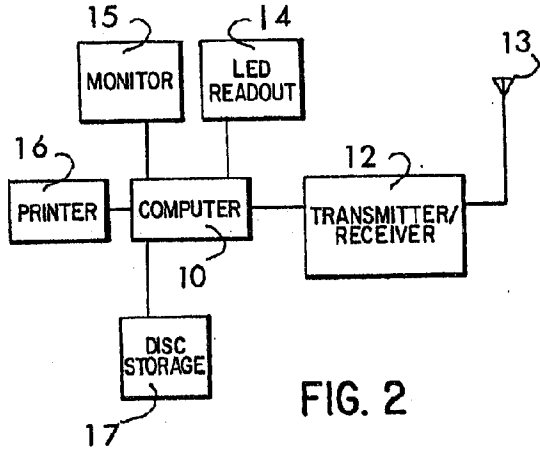


FIG. 2

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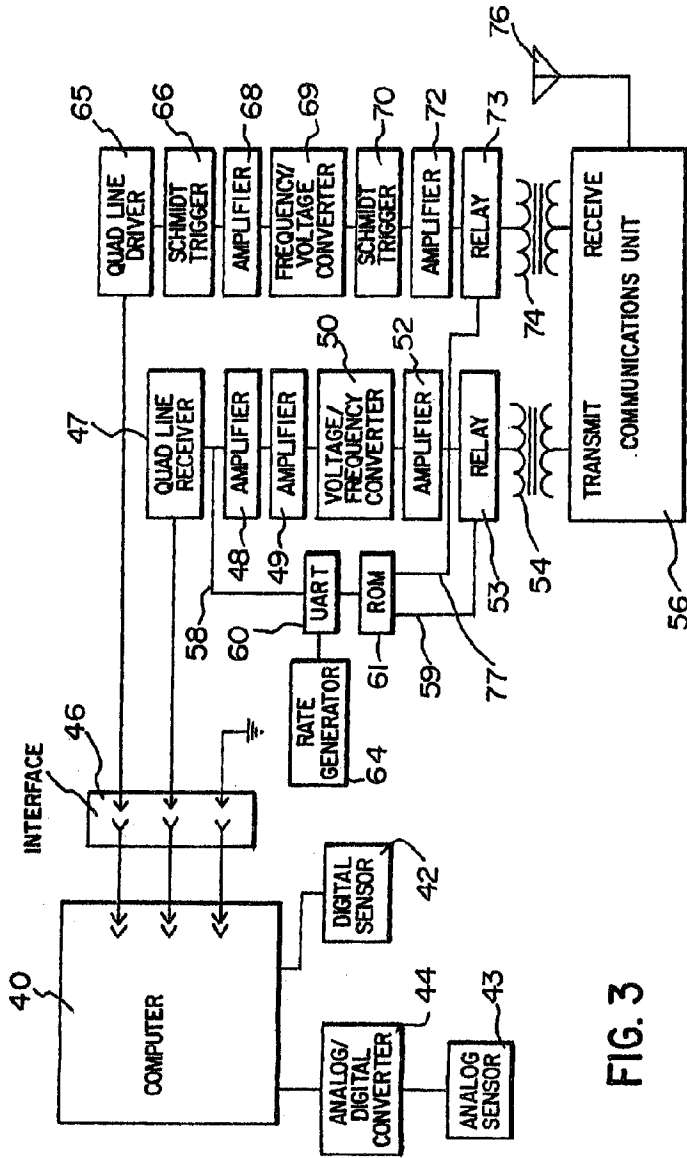


FIG. 3



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Modem with firmware upgrade feature.

Updated operating code and parameters can be reprogrammed into a modem system with no disassembly of the modem hardware. The modem system includes an in-circuit reprogrammable memory chip (3,17) in which operating code and parameters are stored. Two control programs control the reprogramming of updated operating code. One of the control programs is designed for manufacturing and testing purposes. The other control program allows remote reprogramming of updated operating code or parameters from a remote location such as a customer site. The modem system is portable, obtaining power from a standard 9 volt battery. Therefor, various power saving features are also incorporated into the modem system.

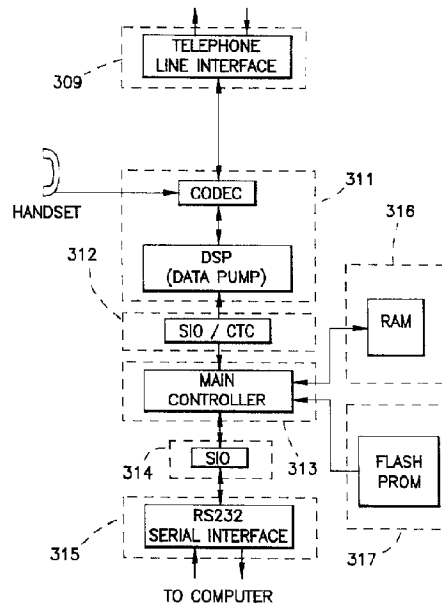


FIG. 2

Field of the Invention

The present invention relates to communications systems and in particular to a modem in which the firmware which controls the operation of the modem can be changed or upgraded remotely.

5

Background

Presently, there are several mechanisms through which software upgrades, bug fixes and the like are distributed to users. In systems employing firmware storage of operating programs, such as Electrically Programmable Read Only Memory (EPROM) and the like, bug fixes or enhancements to system firmware require programming a new EPROM with the updated code and shipping the new EPROM to the customer. A technician then travels to the site, disassembles the hardware, and replaces the old EPROM with the new one.

Unfortunately, these methods are very inconvenient. First, a considerable time delay is encountered while waiting for the manufacturer to program and ship the replacement parts. Second, the hardware may not be operable if the user is waiting for a bug fix. Especially true in cases of bug fixes where the hardware might not be operable without the updated operating code. Also, the replacement of the old with the new EPROM requires a technician to travel to the site and use special tools to disassemble the hardware and replace the outdated on faulty part or parts. This results in an increased expense for repairs or upgrades because technician time and special tools are required. Current update methods are thus time consuming, expensive and inefficient.

There is a need in the art, therefore, for a modem which allows remote changes and/or upgrades to be made to the firmware stored operating code, without requiring disassembly and replacement of parts, technician time, or special tools, thus resulting in the more efficient and cost effective means of updating firmware.

Summary

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To overcome the shortcomings in the art described above, and to provide other advantages which will become apparent upon reading and understanding the present specification, the present system is a modem system which includes hardware and software components. The system allows the user to connect to remote locations equipped with a similar system or with modems or facsimile machines over a single analog telephone line. The incorporation of various power saving features allow practical implementation of a small, lightweight and easily transportable modem system powered from a standard 9 volt battery. The present modem system also incorporates storage of operating code and parameters in an in-circuit reprogrammable memory chip. A user can thus remotely upgrade system firmware with updates, bug fixes, enhancements or other new releases of system operating code by downloading the update over a phone line and reprogramming the memory chip in-circuit over the serial port.

35

Brief Description of the Drawings

In the drawings, where like numerals refer to like components throughout the several views,
 Figure 1 shows the telecommunications environment within which the present system may operate;
 Figure 2 is a block diagram of the hardware components of the present system;
 Figure 3 is a key for viewing the detailed electrical schematic diagrams of Figures 4A-7C to facilitate understanding of the interconnections between the drawings;
 Figures 4A-4E, 5A-5C and 6A-6C are detailed electrical schematic diagrams of the circuitry of the hardware components of the present system;
 Figure 7 shows a flow diagram of the process for downloading the HEX files containing the updated operating code from a bulletin board to the host PC;
 Figures 8A-8C show a flow diagram of the upgrade control program from the perspective of the host PC; and
 Figures 9A-9D show a flow diagram of the upgrade control program from the perspective of the modem.

45

Detailed Description of the Preferred Embodiments

In the following detailed description of the preferred embodiment, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which the inventions may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be made without departing from the spirit and scope of the present inventions. The

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following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present inventions is defined by the appended claims.

Figure 1 shows a typical arrangement for the use of the present modem system. Hardware components 20 contain the present modem system and are connected to laptop computer 10. Hardware components 20 communicate over a standard telephone line 30 to one of a variety of remote sites. For example, one of the remote sites may be equipped with the present modem system including hardware components 20a and laptop computer 10a. The present modem system can also connect over phone lines 30 to fax machine 60, to a personal computer and associated modem 40, or to a network of personal computers 90. Those skilled in the art will readily recognize the wide variety of communication interconnections possible with the present system by reading and understanding the following detailed description.

Hardware Components

Figure 2 is a block diagram of the hardware components of the present system corresponding to reference number 20 of Figure 1. These components form the link between the user, the laptop or personal computer (PC) and the telephone line interface.

The preferred embodiment of the present system preferably includes a data pump circuit 211, which includes a digital telephone coder-decoder (CODEC) and a digital signal processor (DSP) for communicating over the telephone line interface 209. The data pump DSP of circuit 211 performs functions such as modulation, demodulation and echo cancellation to communicate over the telephone line interface 209 using a plurality of telecommunications standards including FAX and modem protocols. The main controller circuit 213 directly controls the DSP data pump circuit 211.

As described more fully below, the main controller circuit 213 includes, in the preferred embodiment, a microprocessor which controls the functions and operation of all of the hardware components shown in Figure 2. The main controller is connected to RAM circuit 216 and a programmable and electrically erasable read only memory or Flash PROM circuit 217. The Flash PROM circuit 217 includes non-volatile memory in which the executable control programs for the main controller circuits 213 are stored.

The RS232 serial interface 215 communicates to the serial port of the personal computer which is running the software components of the present system. The RS232 serial interface circuit 215 is connected to a serial input/output circuit 214 with main controller circuit 213.

Data is received from the telephone line over telephone line interface circuit 209 and forwarded by the data pump circuit 211 and the main controller circuit 213 over the serial line interface circuit 215 to the personal computer.

Detailed Electrical Schematic Diagrams

The detailed electrical schematic diagrams comprise Figures 4A-E, 5A-C, 6A-C and 7A-C. Figure 3 shows a key for how the schematic diagrams may be conveniently arranged to view the passing of signals on the electrical lines between the diagrams. The electrical connections between the electrical schematic diagrams are through the designators listed next to each wire. For example, on the right side of Figure 4A, address lines A0-A19 are attached to an address bus for which the individual electrical lines may appear on other pages as A0-A19 or may collectively be connected to other schematic diagrams through the designator "A" in the circle connected to the collective bus. In a like fashion, other electrical lines designated with symbols such as RNGL on the lower left-hand side of Figure 4A may connect to other schematic diagrams using the same signal designator RNGL.

Beginning with the electrical schematic diagram of Figures 4D and 4E, the DAA circuitry (telephone line interface) is shown. The telephone line connection in the preferred embodiment is through connector J201 which is a standard six-pin modular RJ-11 jack. In the schematic diagram of Figure 4E, only the tip and ring connections of the first telephone circuit of the RJ-11 modular connector are used. Ferrite beads FB201 and FB202 are placed on the tip and ring wires of the telephone line connections to reduce high frequency or RF noise that may radiate from telephone line. The incoming telephone line is also overvoltage protected through SIDACTOR R205. The incoming telephone line is full wave rectified by the full wave bridge comprised of diodes CR230, CR226, CR227 and CR228 of Figure 4D.

Also connected across the incoming telephone line is a ring detect circuit. Optical isolator U220 (part model number CNY17) senses the ring voltage threshold when it exceeds the breakdown voltages on zener diodes CR201 and CR202.

The DAA circuitry is physically isolated from the rest of the system by transformer T1, optocoupler U220 and two solid state relays X215 and X202 which are optically coupled. Connector J203 is a four pin header

used for automatic testing during manufacturing and for diagnostics.

Relay X215 shown in Figure 4D is used to accomplish pulse dialing by opening and shorting the tip and ring wires. Transistor Q203 along with the associated discrete resistors comprise a holding circuit to provide a current path or current loop on the telephone line to grab the line. The DAA circuitry shown in Figures 4D and 4E can be customized to interface to the varying telephone standards used in the United States and in many different European countries.

Connector J202 shown in Figure 4D connects the telephone line interface circuitry described above to connector J102 shown in Figure 6A and thusly to the rest of the circuit. Incoming RXA signals are buffered by the two operational amplifiers U104 as shown in Figure 6B. The first stage of buffering is used to drive the transmit carrier signal to the telephone line. The second stage of the input buffering is configured for a moderate amount of gain before driving the signal into CODEC U101. This stage is also used to reduce the amount of transmit signal that is fed back into the receiver. The signal from amplifiers U104 is also fed to speaker driver U105, which drives speaker X101.

Data and address buses A and B shown in Figures 4A and 4B connect the Z80180 microprocessor in microcontroller U5 with the Z80 KIO circuit U4 and a gate array circuit U3, and to other portions of the electrical schematic diagrams. Gate array U3, also shown in Figures 4A and 4B, includes the "glue logic" used to support various functions in the hardware components of the present invention. Gate array U3 includes miscellaneous latch and buffer circuits for the present system which normally would be found in discrete SSI or MSI integrated circuits. By combining a wide variety of miscellaneous support circuits into a single gate array, a much reduced design complexity and manufacturing cost is achieved.

CODEC chip U101 shown in Figure 6B, interface chip U1 shown in Figure 5A and digital signal processor (DSP) chip U2 shown in Figure 5A comprise a data pump chip set manufactured and sold by AT&T Microelectronics. A detailed description of the operation of these three chips in direct connection and cooperation with one another is described in the publication entitled "AT&T V.32bis/V.32/FAX High-Speed Data Pump Chip Set Data Book" published by AT&T Microelectronics, December 1991, which is incorporated herein by reference. This AT&T data pump chip set comprises the core of an integrated, two-wire full duplex modem which is capable of operation over standard telephone lines or leased lines. The data pump chip set conforms to the telecommunications specifications in CCITT recommendations V.32bis, V.32, V.22bis, V.22, V.23, V.21 and is compatible with the Bell 212A and 103 modems. Speeds of 14,400, 9600, 4800, 2400, 1200, 12,000 and 300 bits per second are supported. This data pump chip set consists of a ROM-coded DSP16A digital signal processor U2, and interface chip U1 and an AT&T T7525 linear CODEC U101. The AT&T data pump chip set is available from AT&T Microelectronics.

The chip set U1, U101 and U2 on Figures 5A and 6B perform all A/D, D/A, modulation, demodulation and echo cancellation of all signals placed on or taken from the telephone line, and performs DTMF tone generation and detection, signal analysis of call progress tones, etc. The transmission of information on the telephone line from CODEC U101 is through buffers U104, and through line buffer U105 as described above.

The main controller of controller circuit 213 and the support circuits 212, 214, 215, 216 and 217 are shown in Figures 4A-4C and 5A. In the preferred embodiment of the present system, the main controller U5 shown in Figures 4A and 4B is a Z80180 eight-bit microcontroller chip. In the preferred implementation, microcontroller chip U5 is a Z80180 microprocessor, by Zilog, Inc. of Campbell, California. The Zilog Z80180 eight-bit microprocessor operates at a 12.288 MHz internal clock speed by means of an external crystal XTAL, which in the preferred embodiment, is a 24.576 MHz crystal. The crystal circuit includes capacitors C1 and C2 which are 20 pf capacitors and resistor R15 which is a 33 ohm resistor. The crystal and support circuitry is connected according to manufacturer's specifications found in the Zilog Intelligent Peripheral Controllers Data Book published by Zilog, Inc. The product description for the Z80180 Z180 MPU from the Z80 CPU Product Specification pages 351-392 of the Zilog 1991 Intelligent Peripheral Controllers databook is incorporated herein by reference.

The Z80180 microprocessor in microcontroller chip U5 is intimately connected to a serial/parallel I/O counter timer chip U4 which is, in the preferred embodiment, a Zilog 84C90 CMOS Z80 KIO serial/parallel/counter/timer integrated circuit available from Zilog, Inc. This multi-function I/O chip U4 combines the functions of a parallel input/output port, a serial input/output port, bus control circuitry, and a clock timer circuit in one chip. The Zilog 84C90 product specification describes the detailed internal operations of this circuit in the Zilog Intelligent Peripheral Controllers 1991 Handbook available from Zilog, Inc. Z84C90 CMOS Z80KIO Product specification pgs. 205-224 of the Zilog 1991 Intelligent Peripheral Controllers databook is incorporated herein by reference.

The memory chips which operate in conjunction with the Z180 microprocessor in microcontroller chip U5 are shown in Figure 4C. The connections A, B correspond to the connections to the address and data buses, respectively, found on Figure 4A. Memory chip U7 is a read-only memory (ROM) chip which is electrically re-

programmable in circuit. This programmable ROM, typically referred to as a flash PROM, holds the operating code and operating parameters for the present system in a non-volatile memory. Upon power-up, microcontroller chip U5 executes the program code that is stored in the flash PROM U7. In the preferred embodiment, RAM chip U6 is a pseudostatic RAM which is a dynamic RAM with a built-in refresh. Those skilled in the art will readily recognize that a wide variety of memory chips may be used and substituted for pseudo-static RAM U6 and flash PROM U7 without departing from the scope of the present invention.

The interface between the main controller circuit 213 and the personal computer is through SIO circuit 214 and RS232 serial interface 215. RS232 connection J103 is shown on Figure 6A with the associated RS232 driver circuit U102 and interface and ring detect circuitry used to generate and receive the appropriate RS232 standard signals for a serial communications interface with a personal computer.

Figure 6C is a detailed electrical schematic diagram showing the generation of various voltages for powering the hardware components of the electrical schematic diagrams described herein. The power for the present hardware components described herein is received from either a standard 9 volt battery or through AC adaptor J104 which is a standard 3 Pin Power Jack. When the AC adaptor is plugged in, the battery is disconnected. Power is controlled by power switch S101. The preferred modem system is designed to run off of a standard 9 Volt battery, thus resulting in a small, lightweight and easily transportable package. However, it shall be understood that the modem could also be run from any other power source using standard interfaces and conversion circuitry known well in the art. 5 volt regulator U107 is a linear regulator with a low drop out voltage of about 5.3. Q102 is a MOSFET which controls on/off as directed by power switch S101. Power switch S101 turns on MOSFET Q102, and has three positions, on, off, or auto. In auto position, power switch S101 senses the Data Terminal Ready Signal from the computer, and if that is not present, then the power to the modem is turned off completely. Thus, if no communications software is loaded, the modem is automatically off such that no power is wasted. From the circuitry of Figure 6C, the +9 volts DC is regulated down to 5 volts, and is also inverted via U106 to get a negative voltage. The negative voltage is used to drive the RS232 driver U102 shown in Figure 6A. As a result, five volts are derived for operating the various memory, logic and controller chips and support circuitry of the present system.

Figure 5B shows connector J1 which interfaces with connector J101 shown in Figure 6A. Figure 5C shows the interconnection of the status LED's found on the front display of the modem of the present invention.

30 Power Saving Features

Referring again to Figure 5A, the interface chip U1, discussed in detail above is shown. Also shown in the upper left portion of Figure 5A is power saving circuitry which is incorporated into the present modem system to enable the practical implementation of a small, lightweight and easily portable modem suitable for use with a laptop computer, for example. The power saving features of the present modem system allow the design to be powered from a standard 9 volt battery as discussed above with respect to Figure 6C.

In order to conserve power, various power saving features are provided which allow the present modem system to be put in a low power, or "sleep" mode. In sleep mode the power to the modem is greatly reduced. There are three main power saving features in the sleep mode. First, additional circuitry has been added in the preferred embodiment to allow additional power savings to be realized. Second, the AT&T data pump chip set has a built in low power mode. Third, the Z180 MPU U5 also has a built in low power mode.

The AT&T data pump chip set U1, U2 and U101 described in detail above has the ability to be put into a low power mode. When in low power mode, the CODEC bit clock TCODEC generated by interface chip U1 shown on Figure 5A is slowed to 115kHz to provide a required clock signal to DSP chip U2 and CODEC U101. The data pump chip set enters sleep mode automatically after a reset, a disconnect or by user command. The chip set automatically wakes up when a ring signal or host command is received. The built-in sleep mode of the AT&T data pump chip set is described in more detail in the aforementioned publication entitled "AT&T V.32 bits/V.32/FAX High-Speed Data Pump Chip Set Data Book" published by AT&T Microelectronics, December 1991.

In addition to the power saving sleep mode provided by the AT&T data pump chip set U1, U2 and U101, the present invention provides additional power saving features. These features include providing an external clock oscillator XTL1. Circuitry is provided such that external clock oscillator XTL1 can also be put in sleep mode (disabled). This results in a significant power savings as the oscillator would consume power unnecessarily when the modem is not in use. When XTL1 is disabled, the clock to CODEC U101 is switched to a low frequency, approximately 100 kHz signal generated from K10 U4 of Figure 4A via NAND gate U10 of Figure 5B.

Crystal XTL2 is a 20.275 MHZ crystal which is used in conjunction with an internal oscillator provided on interface chip U1. The internal oscillator is described in the above listed documentation for interface chip U1.

The present modem system can be assembled with either the crystal XTL2/C17/C18 combination or the external clock oscillator XTL1/C19 combination. With either combination, the power saving feature built into the AT&T data pump chip set U1, U2 and U101 can be used. However, with the XTL1/C19 combination the AT&T data pump chip set power saving feature and also the additional feature of disabling external oscillator XTAL1 can be used for even greater power savings. External clock oscillator XTL1 is part number CO2810 available from Raltron Corporation of Miami, Florida. External clock oscillator XTL1 has a frequency of 40.5504 MHz and is described in more detail in the publication entitled "CLOCK OSC, Model CO2810 Series (SMD Type OSC)", published by Raltron Corporation, which is incorporated herein by reference. In the preferred embodiment, external clock oscillator XTL1 is used as the main clock for the AT&T data pump chip set U1, U2 and U101 and runs at 40.5504 MHz to drive the interface chip U1.

When the present modem system is off-hook and the Z180 MPU U5 is not processing, the Z180 MPU U5 can be put into a low power or SLEEP mode. The Z180 MPU SLEEP mode places the CPU into a state in which the internal CPU clock stops, thereby consuming less current. The Z180 MPU U5 wakes up when one of the interrupts INT0, INT1 or INT2 shown in Figures 4A and 4B is asserted.

INT0 wakes up the Z180 MPU U5 in response to interrupts generated by K10 U4. INT1 wakes up the Z180 MPU U5 in response to a RNGL or watchdog timer (WDOUT-) signal. The watchdog is a slow timer (in the seconds) which allows the processor to keep track of time. For example, the processor must keep track of the time for which the modem cannot call a blacklist of forbidden phone numbers. INT2 wakes up the Z180 MPU U5 in response to a DTE data signal (TD shown in Figure 5B).

The built in SLEEP mode of the Zilog Z180 MPU U5 is described in more detail in the aforementioned publication Zilog Intelligent Peripheral Controllers 1991 Handbook.

Functional Description of Upgrade Control Programs

The preferred modem system includes two control programs which control the remote in-circuit reprogramming of system firmware, a flash control program and a boot control program. The flash control program runs in the host PC and receives updated operating code downloaded from a bulletin board. The updated code is downloaded to the host PC in the form of Intel HEX files. The flash control program processes the HEX files and creates the packets containing the updated code which are actually sent to the modem. Each packet contains a field containing the packet length, the address at which to store the updated code, the actual program data and a checksum. The boot control program running in the modem checks that the packet was correctly transmitted and programs the updated operating code at the address specified in the address field of the packet.

In summary, the flash control programs control the host PC side of the process of in-circuit reprogramming of flash PROM U7. The boot control program controls the modem side. As described above, flash PROM U7 is an in-circuit programmable and electrically erasable read only memory. As is well known to those of skill in the art, these memory chips allow in-circuit reprogramming of the operating code and parameters which are stored in the flash PROM chip U7. Although the present modem system is described with respect to a particular flash PROM U7, it shall be understood that any in-circuit reprogrammable memory configuration could be used without departing from the scope of the present invention.

Before flash PROM U7 is assembled in the modem circuit, the boot control program is burned, or programmed into flash PROM U7 using conventional PROM programmers and programming techniques.

When a bug fix, enhancement or other new release of system operating code becomes available, the flash control program is used to control the remote loading and processing of operating code downloaded over telephone line from a central bulletin board. The boot control program receives the updated code from the host PC over the serial port and controls in-circuit reprogramming of the new operating code into flash PROM U7.

The field programmable feature of the modem system of the present invention has several advantages. Because a user can remotely load new operating code over a remote telephone connection, code updates can be obtained immediately as soon as they are available instead of waiting for new parts to be shipped. In addition, no physical removal or replacement of parts is required thus significantly reducing the chance of breakages. Further, no special tools are required to remove and replace parts, and no special PROM programming equipment is required to reprogram the memory chips. Finally, the need for a technician to travel to the remote site to perform the upgrade is avoided thus significantly reducing costs associated with the upgrade.

Detailed descriptions of the flash control program and boot control program will now be given. The illustrative embodiments of the flash control program and boot control program described and shown herein is with special reference to a PC-based DOS operating system. It shall be understood, however, that the present invention is in no way limited to a DOS operating system. The preferred modem system can also be used with a UNIX-based operating system, MacIntosh operating system, or any of a number of operating system plat-

forms simply by customizing the user interface to run on the desired operating system.

Detailed Description of Flash Control Program

5 The flash control program is used to control the reprogramming of updated operating code and parameters into the flash part of the modem.

The updated operating code is distributed to the user according to the procedure shown in Figure 7. To get the update, HEX files containing the updated operating code are downloaded over a phone line from a computer bulletin board to the host PC. The HEX files are preferably in the Intel MCS-86 HEX format. This is an industry standard for HEX files.

10 The HEX files contain entirely ASCII characters and include three record types: Data Record, End Record and Extended Address Record. The formats of the three record types are described in detailed at page 27 of the User Manual for the Gtek EPROM programmer model 9000, dated 01-11-88, which is incorporated herein by reference, and are as follows:

Data Record

Byte number	Contents
1	Colon(:)
2-3	Number of binary data bytes
4-5	Load address, high byte
6-7	Load address, low byte
8-9	Record type, must be "00"
10-x	Data bytes, 2 ASCII-HEX characters
x+1 - x+2	Checksum, two ASCII-HEX characters
x+3 - x+4	carriage return (CR), line feed (LF)

End Record

Byte number	Contents
1	Colon(:)
2-3	Record length, must be "00"
4-7	Execution address
8-9	Record type, must be "01"
10-11	Checksum
12-13	CR,LF

Extended Address Record

Byte number	Contents
5 1	Colon(:)
2-3	Record length, should be "02"
4-7	Load address field, should be "0000"
10 8-9	Record type, must be "02"
10-13	USBA-this number multiplied by 16 is the new load offset address For our use only the first digit is used as the 64K bank offset value
15 14-15	Checksum
16-17	CR,LF

20 Figures 8A shows a detailed flow diagram of the flash control program 800. The beginning of the flash control program 800 is shown. First, the internal environment and variables are initialized. The preferred flash control program 800 accepts either command line parameters or can be run in a menu driven mode. The present state of the user interface screen is saved and cleared while the field upgrade control program is running. The screen is saved for later restoration after the reprogramming is completed.

25 Flash control program 800 continues at control block 802, which starts the help system. The help system reports onscreen status messages to the user during various stages of reprogramming. At times information may be requested from the user. Also, error messages and possible courses of action are displayed when appropriate.

30 Next, flash control program 800 reads the setup file to determine which serial port the modem is connected through, the appropriate baud rate and other necessary setup information. The serial port is then initialized according to the setup information obtained.

Control block 804 allocates a 128 kbyte memory buffer in the host PC. This memory buffer is used to store processed HEX files containing the updated operating code to be programmed into the flash PROM in the modem. Processing of the HEX files is described in detail below with respect to Figure 8B.

35 If "AUTOMATIC MODE" is set at query 806, flash control program 800 automatically runs the user through the reprogramming procedure. However for certain manufacturing and R&D purposes, it is desirable for the user to have more control over the reprogramming procedure. Thus, automatic mode can be disabled. When automatic mode is disabled, the flash control program checks whether the name of the HEX file to be programmed is present on the command line. If not, a user "PROCESS MENU" will appear on the screen at control block 807 with the choices "PORT SETUP," "READ FILE," "PROGRAM," or "EXIT." The user can then select the functions to be performed. If the HEX file name was on the command line, the flash control program continues with READ AND PROCESS FILE routine 810 described in detail below.

40 Otherwise, in AUTOMATIC MODE, flash control program 800 continues at the top right portion of Figure 8A with control block 808. Here all HEX files present in the host PC are found and their names displayed onscreen. The user chooses the name of the file to be programmed into the modem. If the desired file is not listed, the user can press the ESC key to exit the program.

45 Although the bytes of each record in the HEX files downloaded from the bulletin board are sequential, the HEX records themselves are in no particular order within the file. The file must therefore be processed and sorted into a format which can be programmed into the modem. READ AND PROCESS FILE routine 810 reads the standard Intel HEX files stored in the host PC and performs the necessary HEX file processing.

50 Figure 8B shows a detailed flow diagram of the READ AND PROCESS FILE routine 810. The purpose of READ AND PROCESS FILE routine 810 is to convert the ASCII HEX characters contained in the HEX records to a binary format appropriate for programming into flash PROM U7. Routine 810 begins with an update of the onscreen help display. Next, the memory buffer is "zapped", i.e., set to all FF hex (all 1 binary). This corresponds to the erased state of flash PROM U7.

55 Next the HEX file is opened for read access and the first HEX record is read. The record is then parsed to check syntax and to determine the record type indicated by the record type field of each HEX record as described above.

If the record is type 0 the record is a data record. The record is processed as a data to be loaded in the

memory buffer at the current memory pointer, where the pointer is the current 64k page plus the address supplied in the record. After the data is converted from a ASCII text to binary and stored to the memory buffer, the pointer is incremented to the next available space in the buffer.

Record type 02 indicates an extended address record. The information in these records is converted from ASCII text to binary and processed as a 64k page number to be added as an offset to all of the following records until a new record type 02 is reached.

Record type 01 indicates an End of File (EOF) record. If address 0000, 0001 or 0002 were programmed, these addresses are forced to 0c3h, 00 and 01, respectively. This is the code for a jump to boot control area, rather than the normal modem code. This step ensures that the boot control area of the flash part is not corrupted.

READ AND PROCESS FILE routine 810 reads through the records in the HEX file until all records have been read, processed and stored into the memory buffer in the host PC. After the last record has been processed, the READ AND PROCESS FILE routine 810 is completed.

Referring again to Figure 8A, after READ AND PROCESS FILE routine 810 is completed, flash control program 800 queries the user ensure that the correct file to be programmed into the modem has been identified. If not, the program exits. Otherwise, flash control program 800 continues with PROGRAM FILE INTO PRODUCT routine 820.

Figure 8C shows a detailed flow diagram of PROGRAM FILE INTO PRODUCT routine 820. The present modem system uses the well-known and widely used AT command set. As is well-known in the art, the AT command set allows a user to control a modem by entering commands through a computer keyboard. The AT command set can be used to direct the modem to perform functions such as accessing a telephone line, taking the receiver off-hook, dialing and hanging up. The AT command set can also be used for more intelligent functions such as downloading or uploading files. Many of these more intelligent functions of the AT command set are used in the present modem system, as described in more detail below. The AT command set is used in the PROGRAM FILE INTO PRODUCT ROUTINE 820.

A general overview of the PROGRAM FILE INTO PRODUCT routine 820 will now be described with reference to Table 1 and Table 2. The handshaking procedure which negotiates the transfer baud rate between the host PC and modem, which was discussed above is shown in Table 1. The AT command set shown and described in Table 2 is used to control the modem. All data sent is 8 bits, no parity and 1 stop bit.

Table 1

Host	Modem
5	Power up or AT*FS triggers execution of the boot code.
10	Responds with `U` at 19200 baud if `M`s received within 30 ms of power up or AT*FS command. Otherwise jumps to main code on time out.
15	If `D` received within 300 ms of when `U` sent, then modem responds with `J`: can receive at 19200 baud `K`: can receive at 19.2k or 38.4k baud `M`: can receive at 9.6k, 19.2k, 38.4k, 57.6k or 115.2k baud. Otherwise jumps to main code on time out.
20	
25	
30	
If `J` then 19200 baud Otherwise may send `I`: 9600 baud `J`: 19200 baud `K`: 38.4k baud `L`: 57.6k baud `M`: 115.2k baud	
35	Configure for negotiated speed.

40 Referring now to Figure 8C, the serial port is initialized to 19200 baud, and is set for packets of 8 bits, no parity and 1 stop bit. AT*FS is a special command which tells the modem to jump to address zero, which is equivalent to powering on the modem. At that point, the host PC and modem engage in a handshaking procedure to negotiate the transfer baud rate, shown in tabular form in Table 1 above. Pursuant to this handshaking procedure, the host PC starts sending capital 'M's to the modem at an initial baud rate of 19200. The host PC sends 'M's until it receives a 'U' response from the modem. Timeout is controlled by the modem side as described below with respect to Figure 9A. The host PC continues to send 'M' at 19200 baud until a 'U' is received.

45 In the normal case, the modem will respond with a 'U' within 30 milliseconds. At that point, the PC will send back a 'D' and the modem responds within 300 ms with either 'J', 'K' or 'M', depending on the modem version and the corresponding baud rate at which it can run. If the modem responds with a 'J', the computer assumes a baud rate of 19200.

50 If the modem responds with a 'K', the computer can choose 38400 or 19200 baud. A response of 'M' means that the modem can be run at 9600, 19200, 38400, 57600 or 115.2k baud. The PC sends I, J, K or M to set the speed. The host PC and modem then each initialize the negotiated baud rate and configure accordingly.

The modem is now prepared to receive the AT command set as shown in Table 2:

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Table 2

Command	Description
ATIx, where x=0, 1, 2, or 3	special codes
ATFLEND	exit program and jump to main code
ATFLP	program a packet

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Next, the host PC sends an AT11 command. The AT11 command contains the boot control program version number. The version number determines the packet size, which can range from 128 bytes to 4k byte packet size depending on the version number received. The host PC then sets the max packet size according to the version number received.

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Next, as shown in control box 880 in the top right of Figure 8C, the host PC initializes pointers to the top of the RAM buffer which was allocated in control box 804 shown on Figure 8A, and in which the processed and sorted updated operating code to be programmed into the flash PROM in the modem is stored.

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Once the pointers are initialized to the top of the RAM buffer in the host PC, control block 882 commands the PC to check a software protect switch which when enabled prevents overwriting of the program area of the flash PROM in which the boot control program is stored, or which when disabled allows portions of the boot control program to be updated. For normal use the software protect switch is enabled to prevent erroneous overwriting of the boot control program area. However, for R&D or manufacturing purposes it may be necessary to update or reprogram the boot control area. The software protect switch thus provides a software "back door" which allows access to the area of the flash PROM where the boot control program is stored.

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Referring again to Figure 8C, the host PC begins to build a packet which will be sent to the modem over the serial port. In the control blocks 884 and 886 the host PC builds a packet by searching through the HEX files in the RAM buffer, searching for contiguous non-blank pages. A HEX file blank page is defined as a page programmed to all FF. Whenever a non-blank page is found the packet length is incremented. Variable length packets may be sent in sizes up to the specified max packet length determined by version number as described above. Once a blank page is found or the max packet length is reached, the packet is complete and ready to be transferred to the modem over the RS232 serial port.

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The packet built by the process shown in control blocks 884 and 886 includes a header portion and a data portion. The header portion includes a length field created by the host PC as it builds of the packet. The header portion also includes an address field which contains the physical starting address of where the data is to be placed in the flash PROM. The data portion includes the updated program data bytes and an XOR'd checksum. The packet format is shown in Table 3:

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Table 3

Packet Field	Field Length
Length High	1 byte
Length Low	1 byte
Address High	1 byte (only lowest order 4 bits used, upper 4 bits set to 0)
Address Middle	1 byte
Address Low	1 byte
Program Data	x bytes
XOR'd checksum	1 byte

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After the packet is built, the host PC sends the command ATFLP to the modem, the command for program a packet. Upon receipt of the ATFLP command, the modem responds with a 'G'. The host PC then transmits the data packet pointed to by the RAM buffer pointer.

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After the packet is received by the modem, the modem generates its own checksum based on the data received and compares it to the checksum sent by the host PC. If they are equivalent, the modem responds with 'OK', and the received code is programmed into the flash PROM address pointed to by the Address High,

Middle, and Low bytes. Otherwise the modem responds with an error.

The host PC will run through the programming loop, searching through the RAM buffer, creating packets and sending packets to the modem until the programming is complete or until 5 consecutive errors occur.

After the host PC has sent all the packets, as determined by the DONE PROGRAMMING query, the host PC sends an ATFLEND command to signal that programming is completed. After the file has been programmed, an exit routine, shown in Figure 8A is run in which timers are shut down and the state of the screen is restored. The user is informed that the program is completed or was terminated due to error. The program then jumps to the normal modem code.

10 **Detailed Description of the Boot Control Program**

Figures 9A and 9B show a flow diagram of the boot control program. Figures 9A and 9B show the same programming procedure as described above with respect to Figures 8A-8C, except that Figures 8A-8C were described from the perspective of the host PC and Figure 9A and 9B are described from the perspective of the modem. The program begins with power up or AT*FS. The serial port between modem and host PC is initialized for 19200 baud. At this point the modem also copies the program code into RAM. The boot control program is run out of RAM while the flash PROM is reprogrammed. This is because certain bits in flash PROM U7 are toggled during reprogramming and therefore the boot control program must be copied to RAM to avoid corruption of the boot control code.

Next, the handshaking protocol described above with respect to Figure 8C is performed. The modem initializes a counter for 30 milliseconds. If the modem receives an 'M' from the host PC, the modem responds with a 'U'. If no 'M' is received, the counter is decremented. The loop will timeout after 30ms if no 'M' is received. The number of times through the loop is dependent on the crystal speed of the modem, but is equivalent to 30 milliseconds.

When the 'M' is received and the 'U' response is sent, another counter is initialized to 300 milliseconds. If a 'D' is received from the host PC within the 300ms timeout, the modem responds with a 'K' or an 'M', depending on the baud rate at which the modem can run.

The host PC then sends either 'I', 'J', 'K', 'L' or M, and both the host PC and the modem configure their baud rates according to the negotiated speed.

The AT commands ATFLP, ATFLEND or ATIx can now be received by the modem. Flow diagrams showing the programming procedures on receipt of these commands are shown in Figures 9B-9D.

Figure 9B shows the control flow upon receipt of the ATFLP command. The modem first responds with a 'G' to indicate that the ATFLP command was received. Next, the packet length bytes and programming address bytes are received from the host PC. A counter is initialized to the length of a packet, and the checksum is initialized to 0.

The modem next runs through a loop, getting each data byte and calculating a new checksum by XOR'ing the checksum from the previous iteration through the loop with the data received. The modem continues through the loop, decrementing the counter each iteration until the count equals 0, indicating that the entire packet was received.

Next, the modem receives the checksum data byte which was generated by the host PC. If the checksum data byte generated by the host PC is equal to the checksum generated by the modem, the data bytes are programmed into the programming address sent with the packet into the flash PROM and an 'OK' response is sent to the host PC. If the checksums are not equal, an error message is sent to the host PC.

Figure 9C shows the flow diagram for the ATFLEND command. As discussed above, the ATFLEND command occurs when programming of the flash PROM is completed. If the command ATFLEND is received, the serial port is disabled and a jump to the normal modem code is performed.

Figure 9D shows other commands ATIx, where x=0, 1, 2 or 3. ATi0 commands the modem to respond with a product identification code. ATi1 commands the modem to respond with a boot version number, which is the version of the boot control program installed in the modem. The boot version number is important because different versions may require different packet lengths.

ATi2 is for identification of a basic modem or hardware platform. MT1432xx indicates a derivative of the basic MT1432 platform, for example. These could become more specific to facilitate a more intelligent host interface. ATi3 can be used to indicate country types, special defaults, or for future expansion of making a smarter PC host interface.

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Claims

1. A reprogrammable modem system, comprising:
 - a communications module, the module comprising:
 - communications interface means connected for communicating with a first device for transferring data between the first device and the communications module;
 - telephone line interface means for connection to a telephone line;
 - control means for executing operating code to control said communications module;
 - memory means for storing the operating code; and
 - programming means for programming said operating code into said memory means;
 - the control means executing software to communicate with the second device through the telephone line and operable for initiating a telephone call to a second device in response to the commands by a local user of the first device and for controlling downloading of the updated operating code from the second device to the first device;
 - the control means further executing software to communicate with the first device through the communications interface and to control transfer of said updated operating code from the first device to the communications module over the communications interface.
2. The system of claim 1 wherein the memory means comprises an Electrically Erasable Programmable Read Only Memory.
3. The system of claim 1 further including:
 - power saving means in the communications module for conserving power when the communications module is not in use, the power saving means comprising:
 - external oscillator means for providing an external clock signal to the communications module during use of the communications module;
 - low frequency oscillator means for providing a low power, low frequency clock signal to the communications module when the communications module is not in use;
 - the first control means further for operating in a low power mode when the communications module is not in use;
 - the communications module further for operating in a low power mode when the communications module is not in use.
4. The system according to claim 1 wherein the control means is further operable for programming the updated operating code into the communications module by performing the steps of:
 - (a) reading a first portion of the updated operating code transferred from the first device;
 - (b) processing the read portion from a first format to a second, binary format;
 - (c) storing the processed updated operating code in a memory buffer;
 - (d) reading a next portion of the updated operating code transferred from the first device; and
 - (e) repeating steps (b)-(d) until all of the updated operating code is stored in the memory buffer.
5. The system according to claim 1 wherein the control means is further operable for programming the updated operating code into the communications module by performing the steps of:
 - (a) negotiating a baud rate between the first device and the communications module;
 - (b) creating a packet having a packet identifier, a length indicator, a programming address and a variable amount of the processed updated operating code;
 - (c) transmitting the packet to the communications module;
 - (d) programming the processed updated operating code in the packet into the memory means at the programming address; and
 - (e) repeating steps (b) - (d) until all processed updated operating code is programmed into the memory means.
6. The system according to claim 1 further including:
 - an external oscillator adapted to output an external clock signal;
 - the communication module further including a data pump circuit, the data pump circuit requiring a clock signal when not in use;
 - low frequency oscillator adapted to output a low frequency clock signal and adapted to operate using low power; and

sleep means for disabling the external oscillator when the communications module is not in use, and further for enabling the low frequency oscillator to provide the required clock signal to the data pump means.

- 5 7. The system of claim 1 wherein the first device comprises a central computer.
8. The system of claim 1 wherein the second device comprises a personal computer.
9. The system of claim 1 wherein the communications interface comprises a serial port.
- 10 10. In a communications module which handles communication between a first device connected to the communications module over a telephone line, and a second device connected to the communications module over a communications interface, the communications module under control of operating code to which periodic updates are made, a system for in-circuit reprogramming of the operating code, comprising:
- 15 storage means in the communications module for storing the operating code, and for receiving and storing updated operating code;
- receive means in the second device for receiving the updated operating code from the first device over the telephone line;
- control means for programming the updated operating code into the storage means, said control means including:
- 20 protocol means for transferring the updated operating code from the second device to the communications module over the communications interface according to a predetermined communications protocol; and
- check means for verifying that the updated operating code was accurately transferred.
- 25 11. A method of upgrading the operating code which controls a modem system, comprising the step of:
- (a) storing in a first device updated operating code;
- (b) transferring the updated operating code in a first format from the first device to a second device;
- (c) storing the updated operating code in a first memory buffer;
- 30 (d) reading a first portion of the updated operating code;
- (e) creating a packet having a packet identifier, a length indicator, a programming address and the read portion of the updated operating code;
- (f) transmitting the packet to the modem system;
- (g) programming the portion of the updated operating code into the modem system at the address specified in the programming address;
- 35 (h) reading a next portion of the updated operating code;
- (i) repeating steps (e) - (h) until all of the updated operating code is programmed into the modem system.
- 40 12. A reprogrammable modem system, comprising:
- a communications module, the module comprising:
- communications interface means connected for communicating with a first device for transferring data between the first device and the communications module;
- telephone line interface means for connection to a telephone line;
- control means for executing operating code to control said communications module;
- 45 memory means for storing the operating code; and
- programming means for programming said operating code into said memory means;
- the control means executing software to communicate with the second device through the telephone line and operable for initiating a telephone call to a second device in response to the commands by a local user of the first device and for controlling downloading of the updated operating code from the second device to the first device;
- 50 the control means further executing software to communicate with the first device through the communications interface and to control transfer of said updated operating code from the first device to the communications module over the communications interface;
- an external oscillator adapted to output an external clock signal;
- 55 the communication module further including a data pump circuit, the data pump circuit requiring a clock signal when not in use;
- low frequency oscillator adapted to output a low frequency clock signal and adapted to operate using low power; and

EP 0 632 629 A1

sleep means for disabling the external oscillator when the communications module is not in use, and further for enabling the low frequency oscillator to provide the required clock signal to the data pump means.

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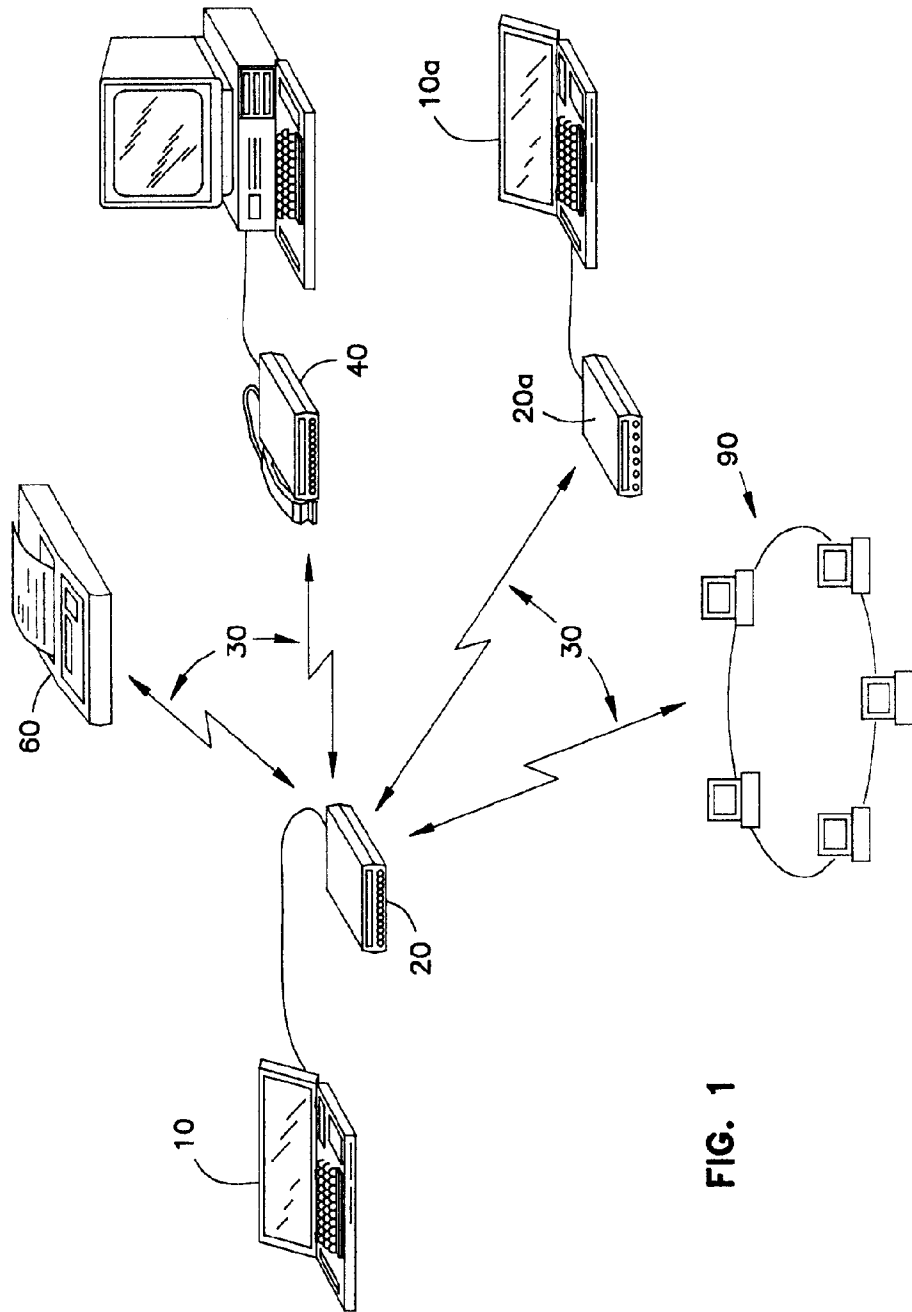


FIG. 1

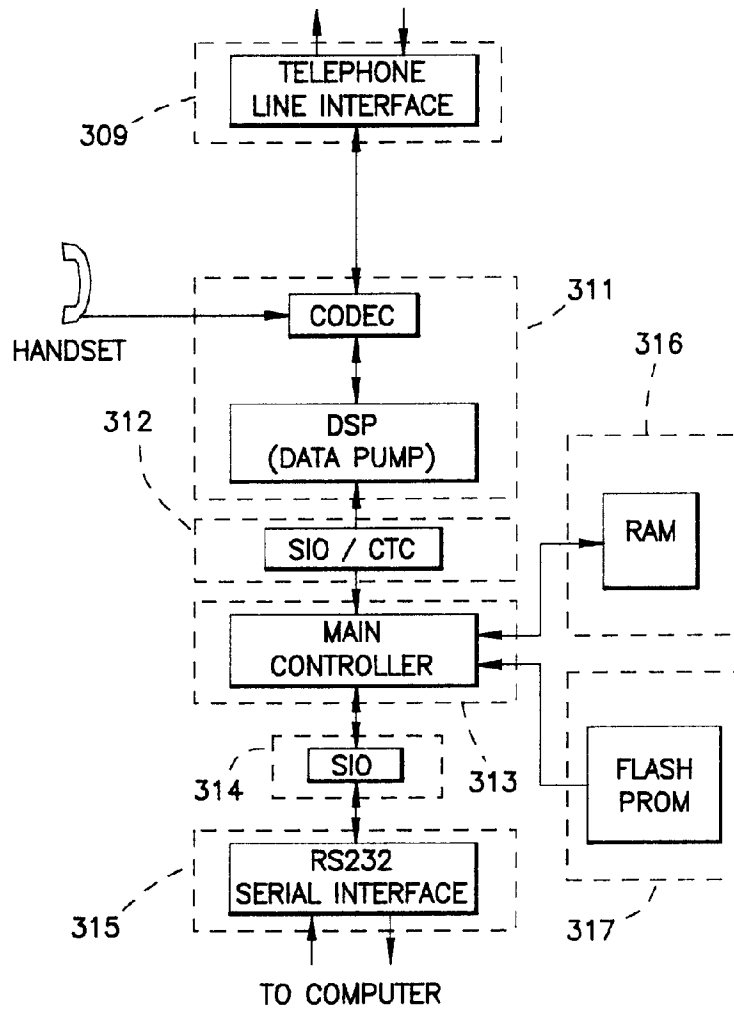


FIG. 2

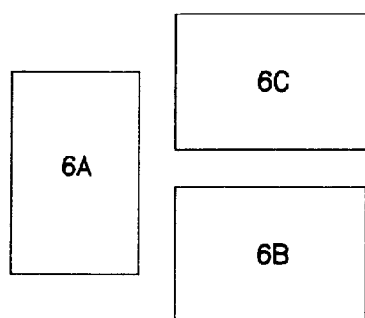
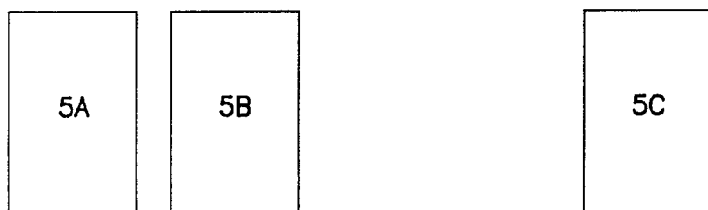
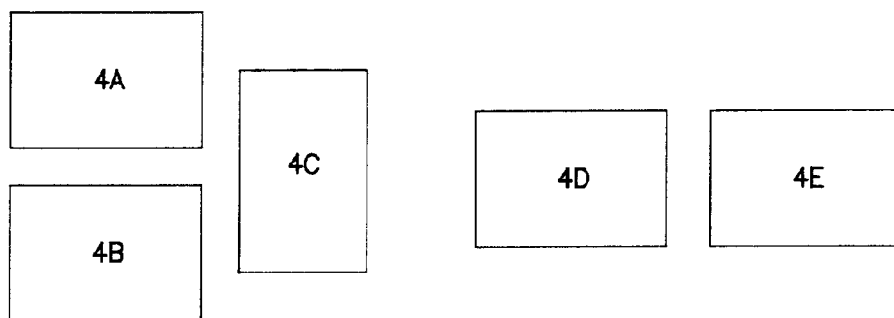


FIG. 3

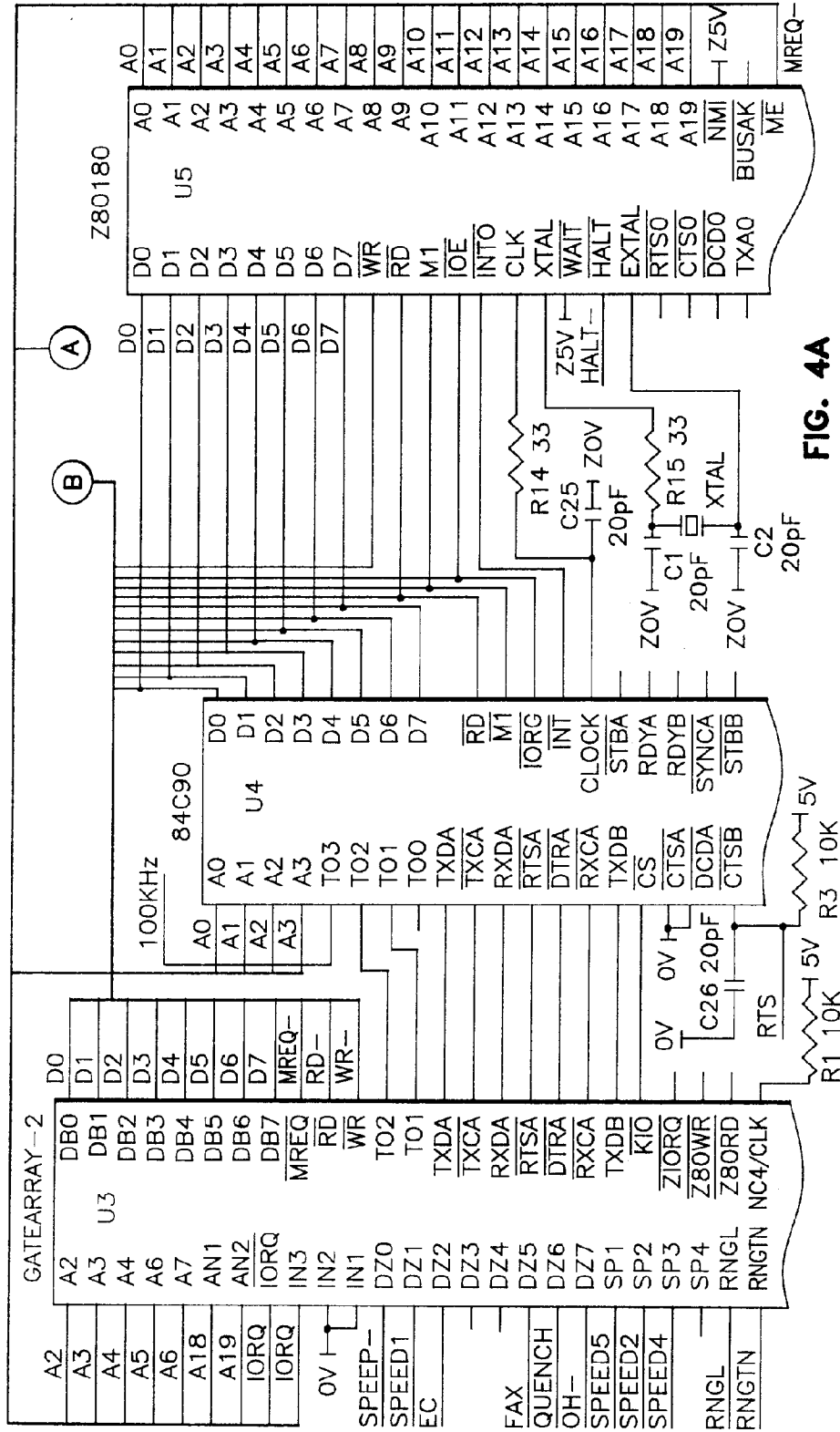


FIG. 4A

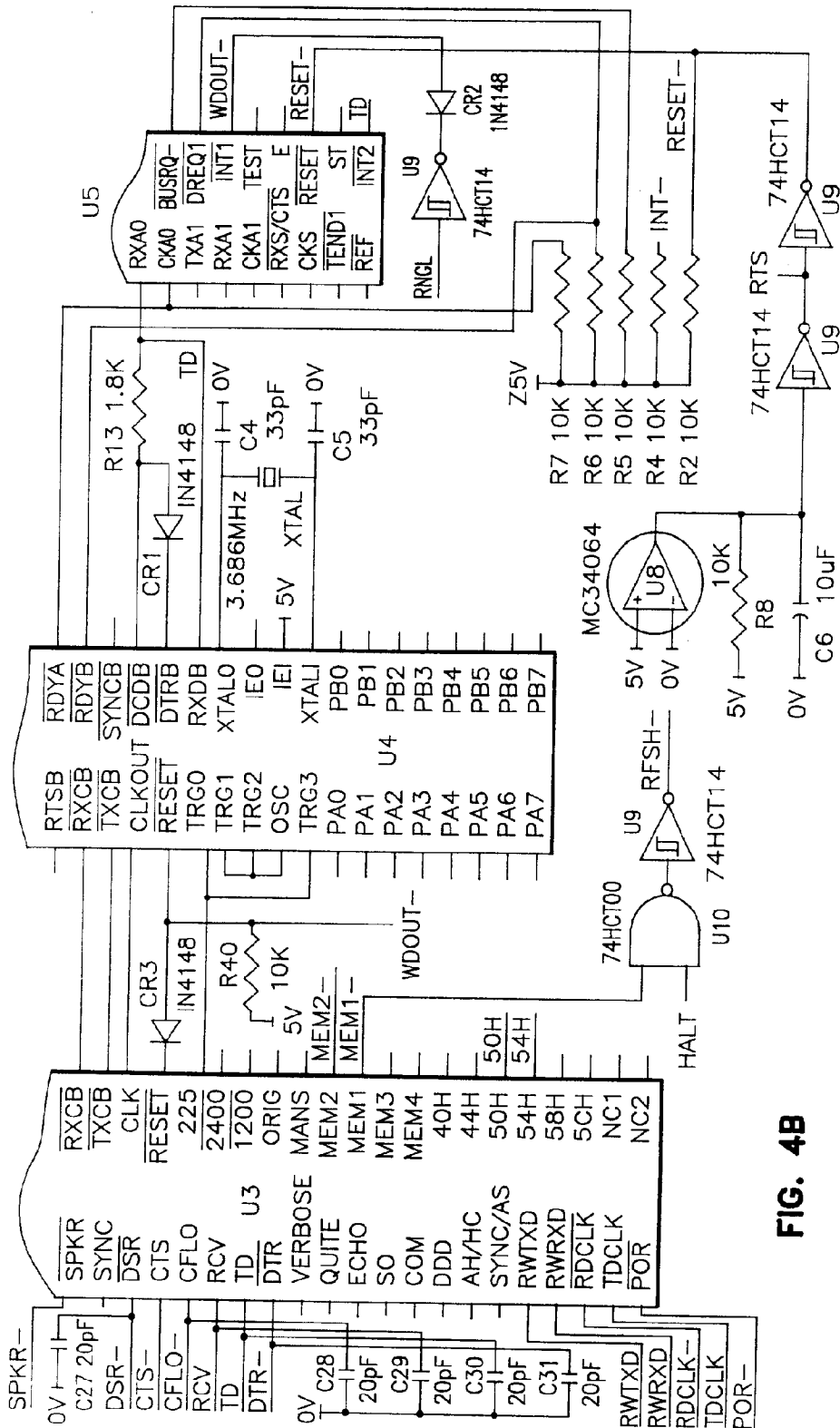


FIG. 4B

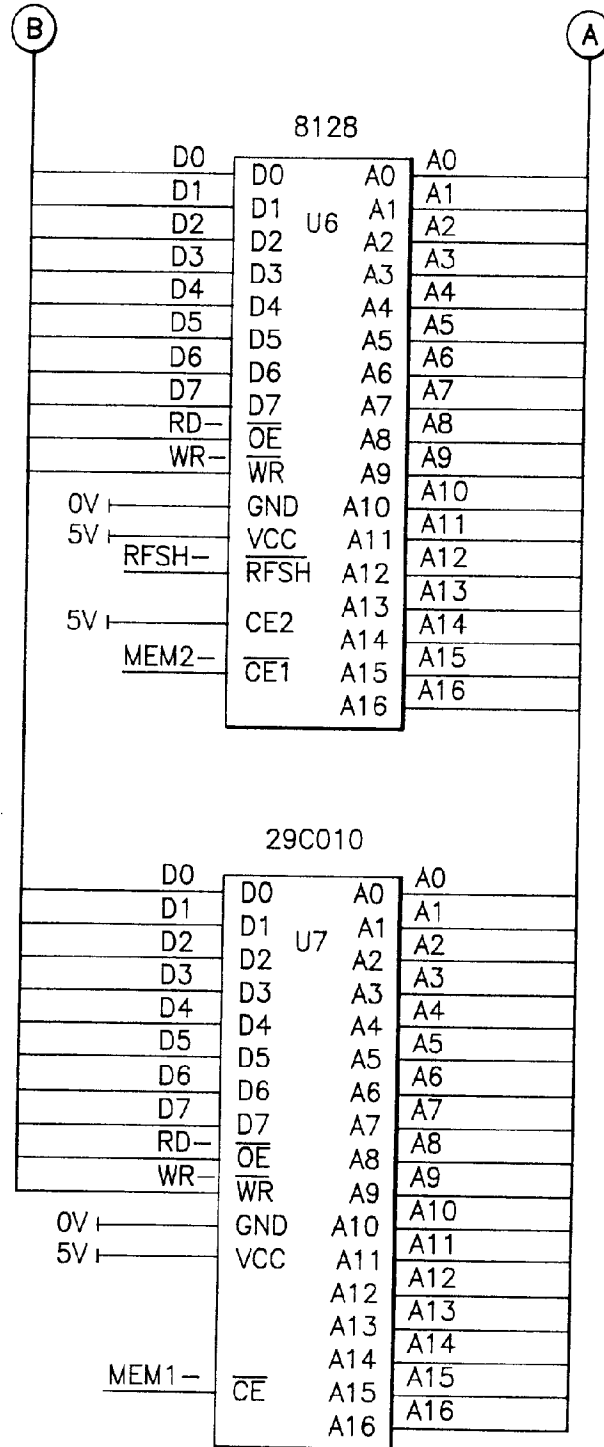
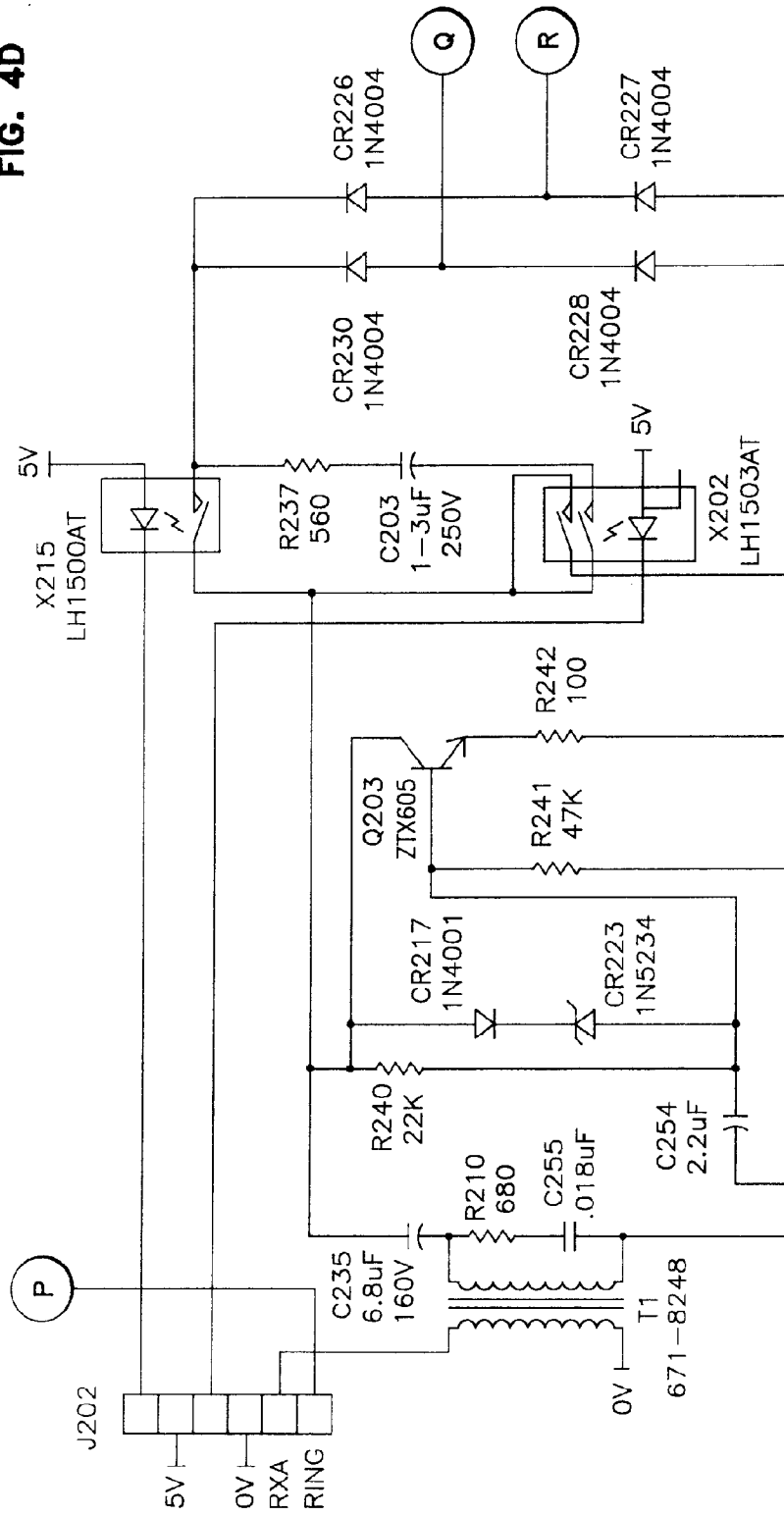


FIG. 4C

FIG. 4D



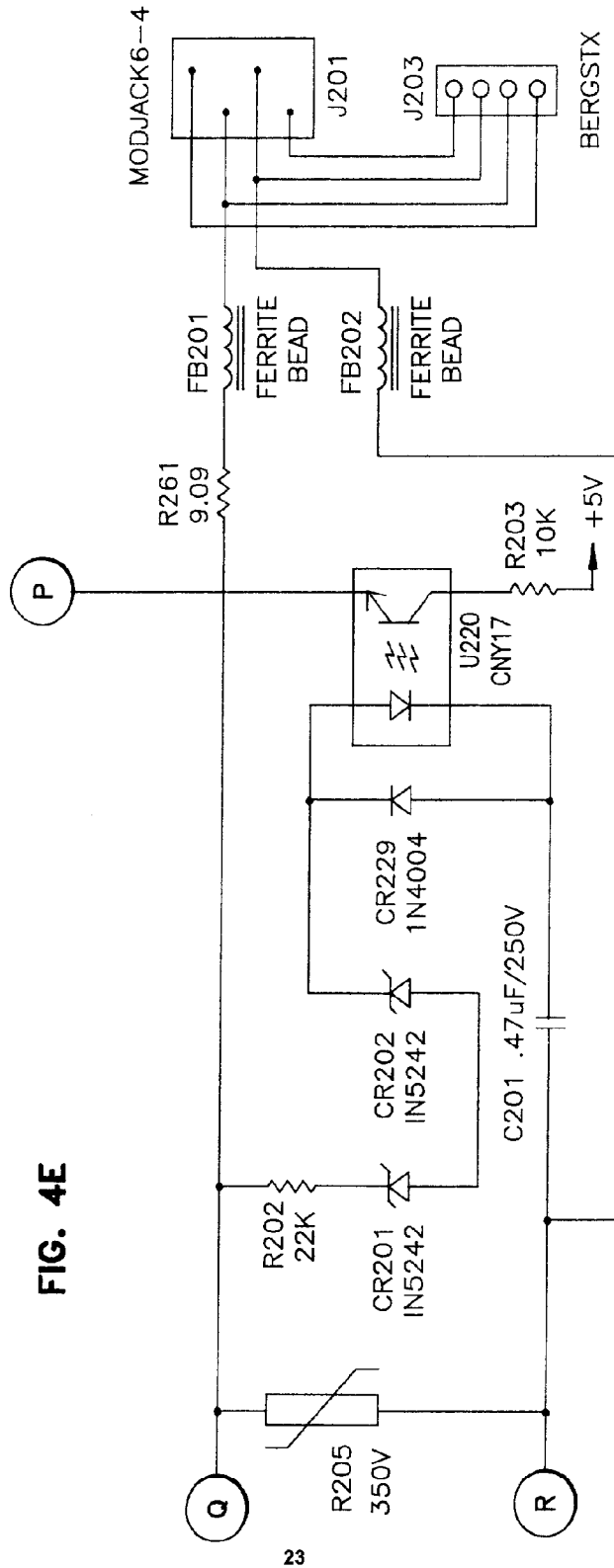


FIG. 4E

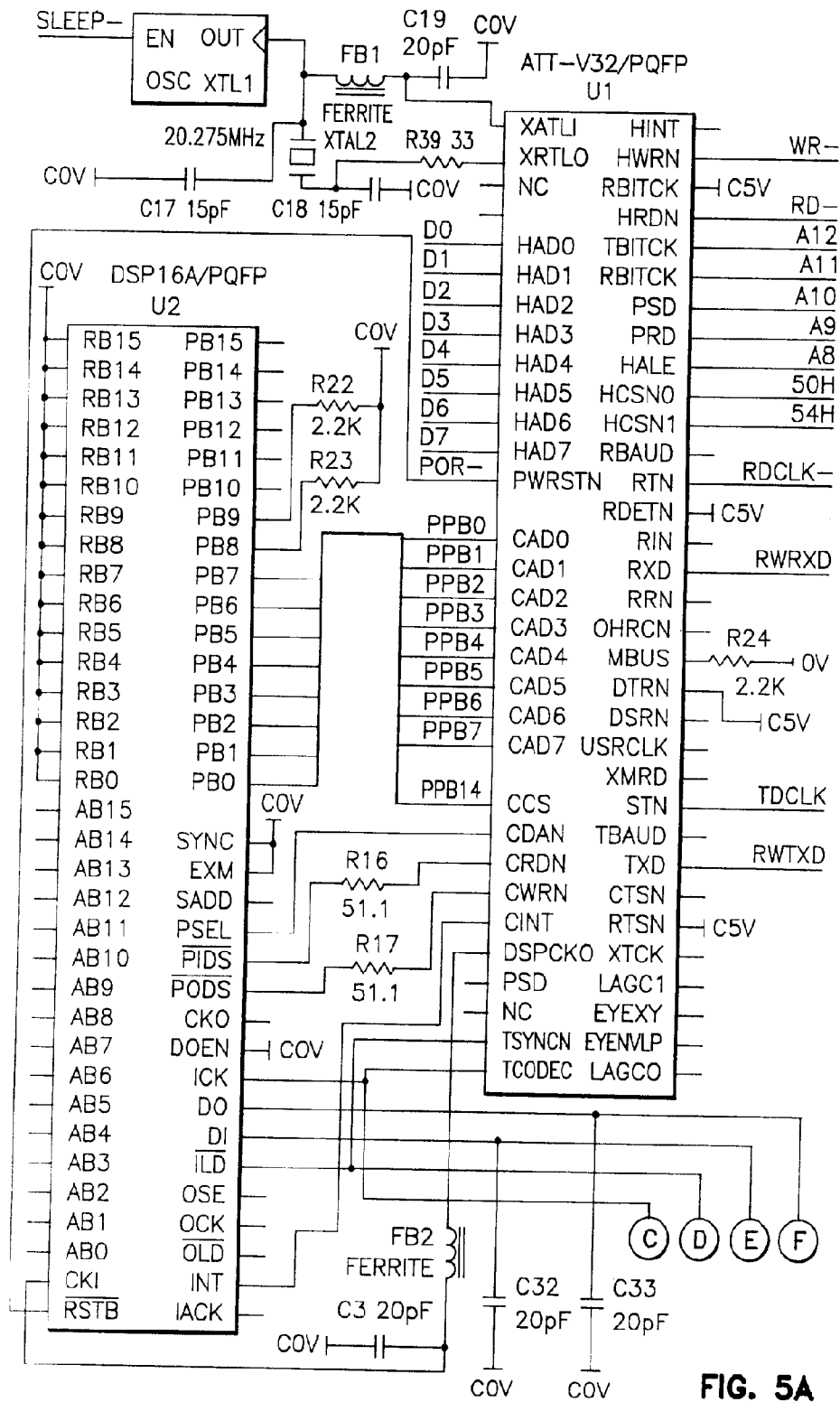


FIG. 5A

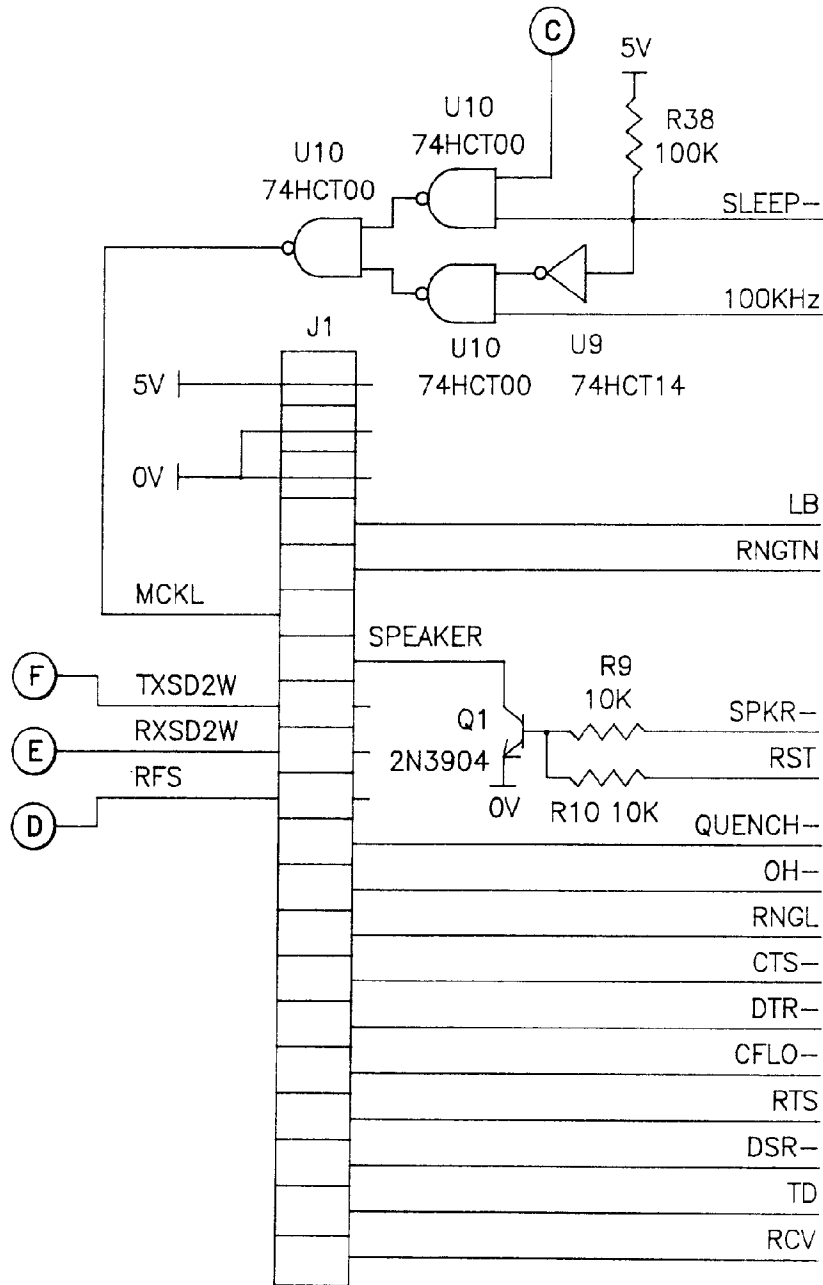


FIG. 5B

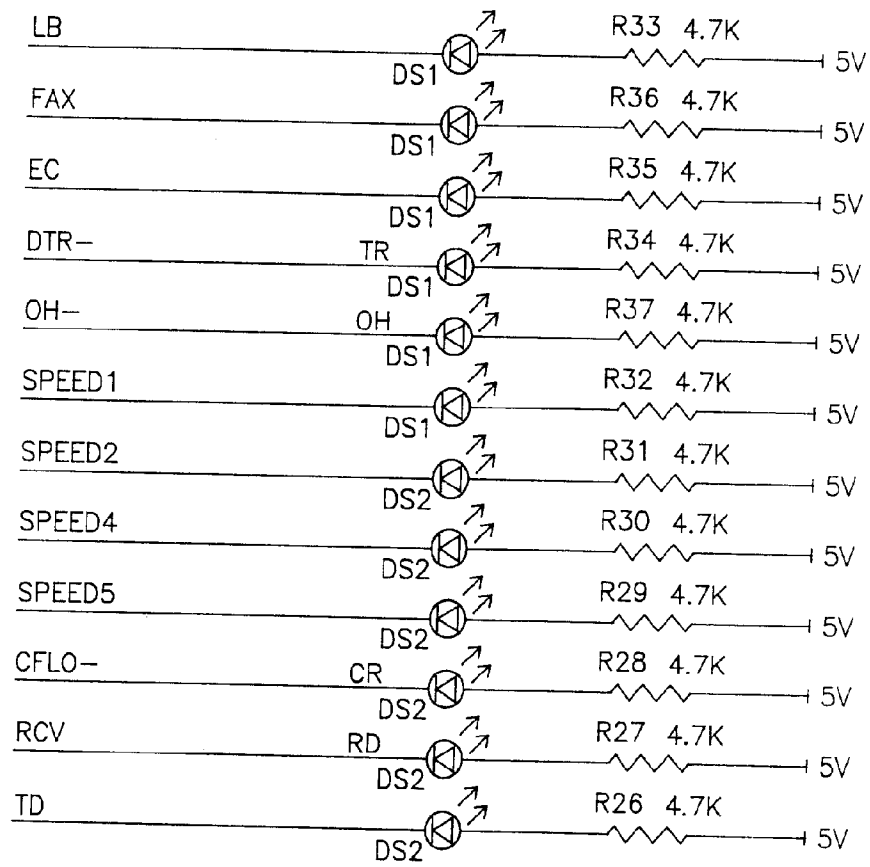


FIG. 5C

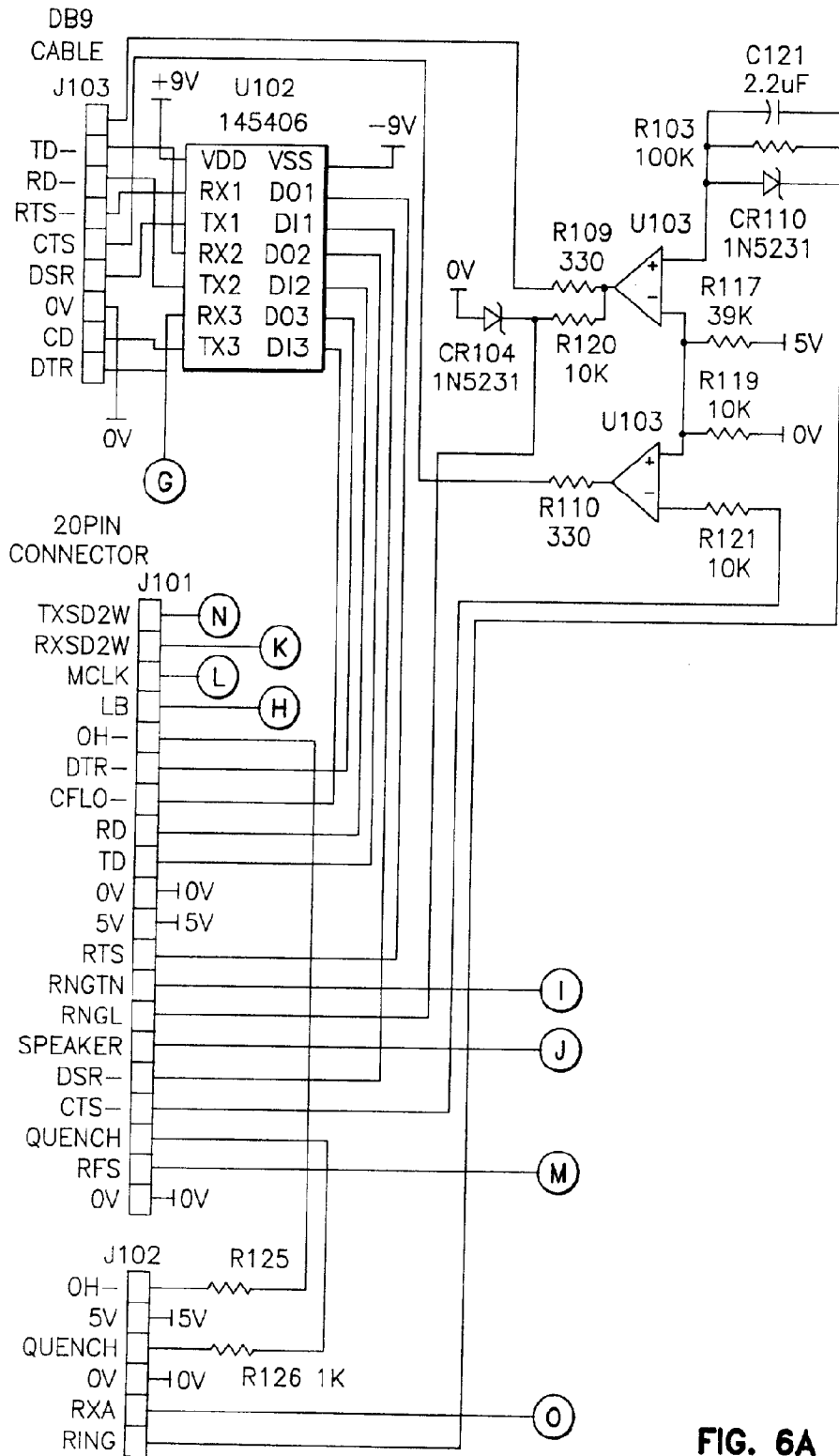


FIG. 6A

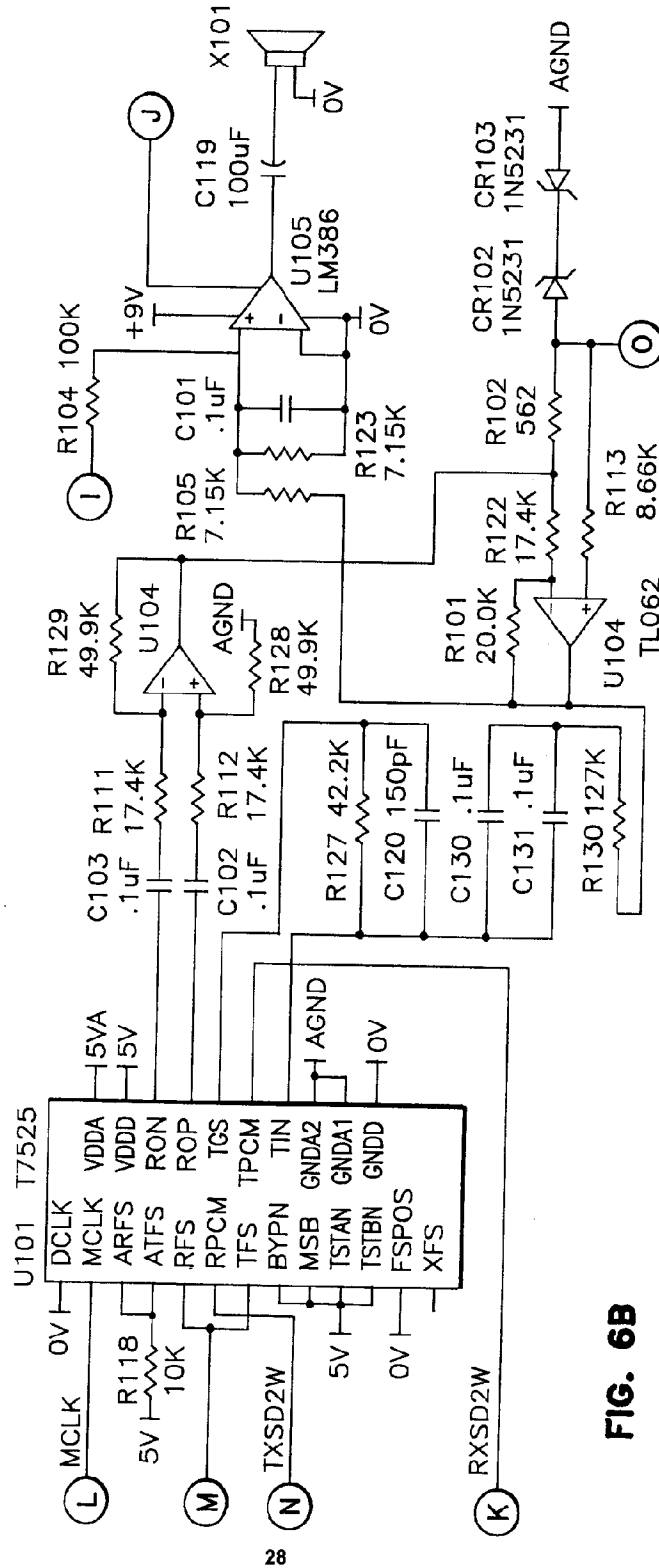


FIG. 6B

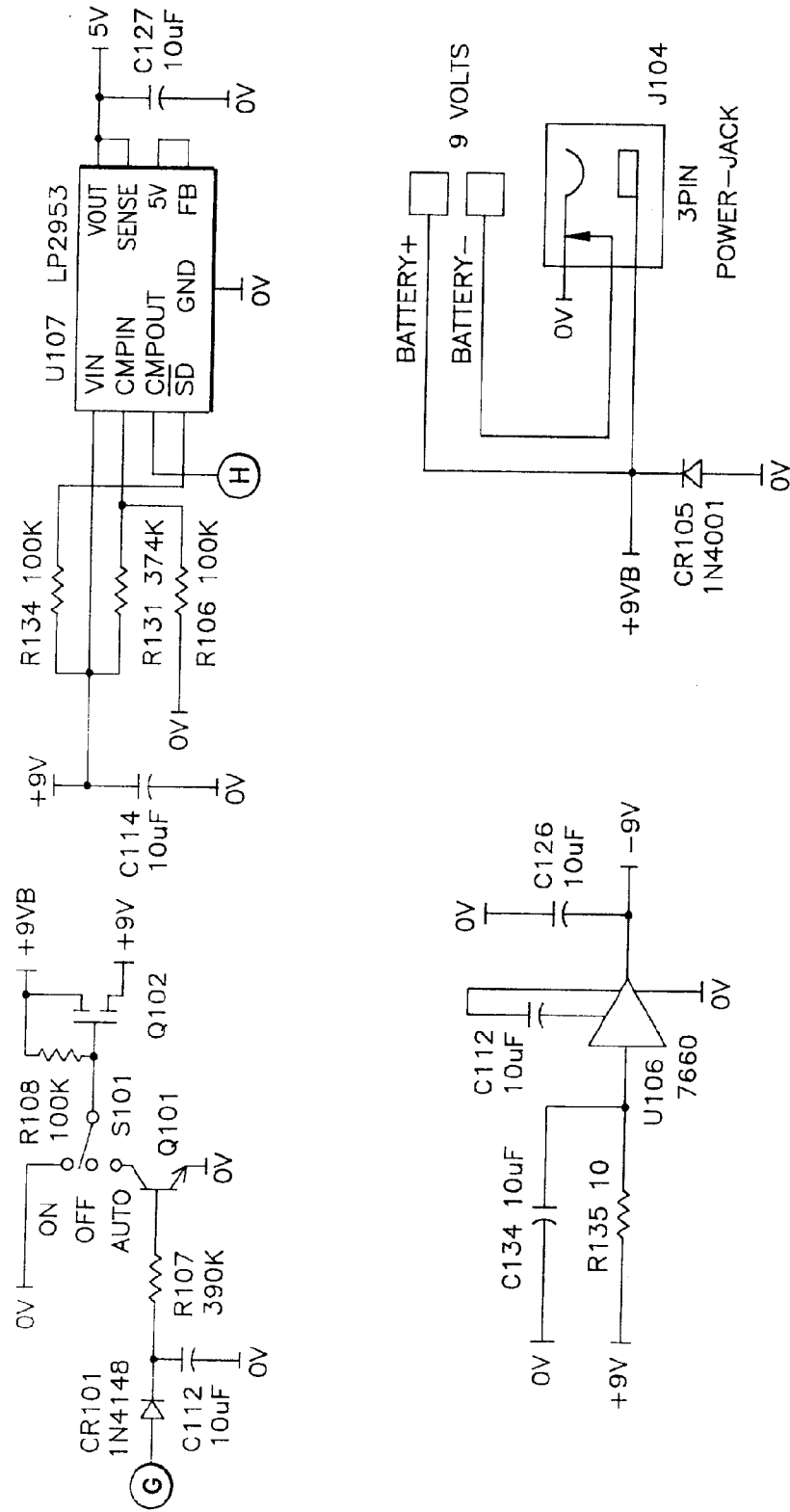


FIG. 6C

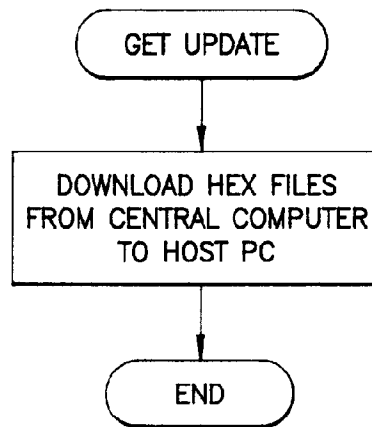


FIG. 7

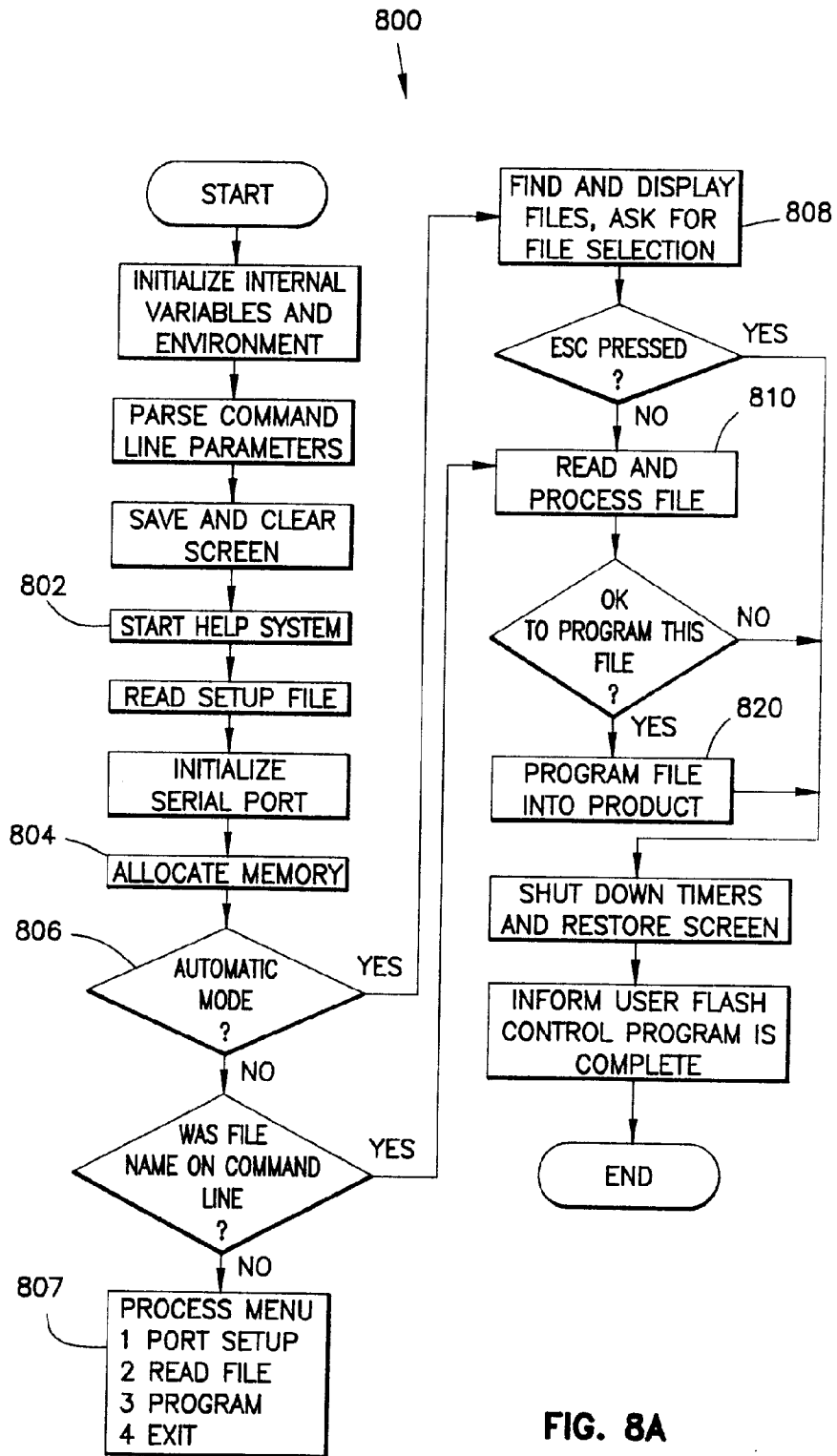
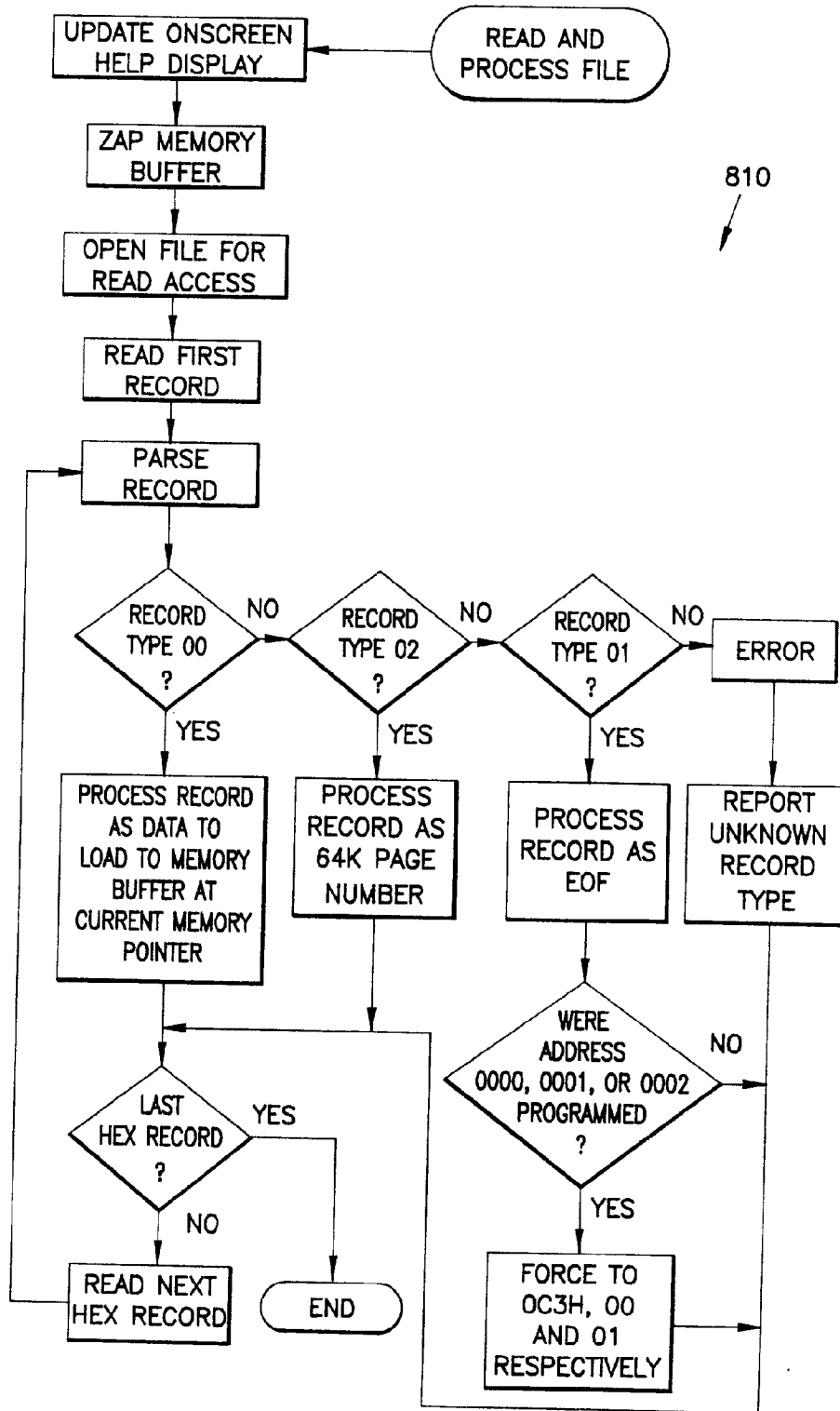


FIG. 8A

FIG. 8B



810

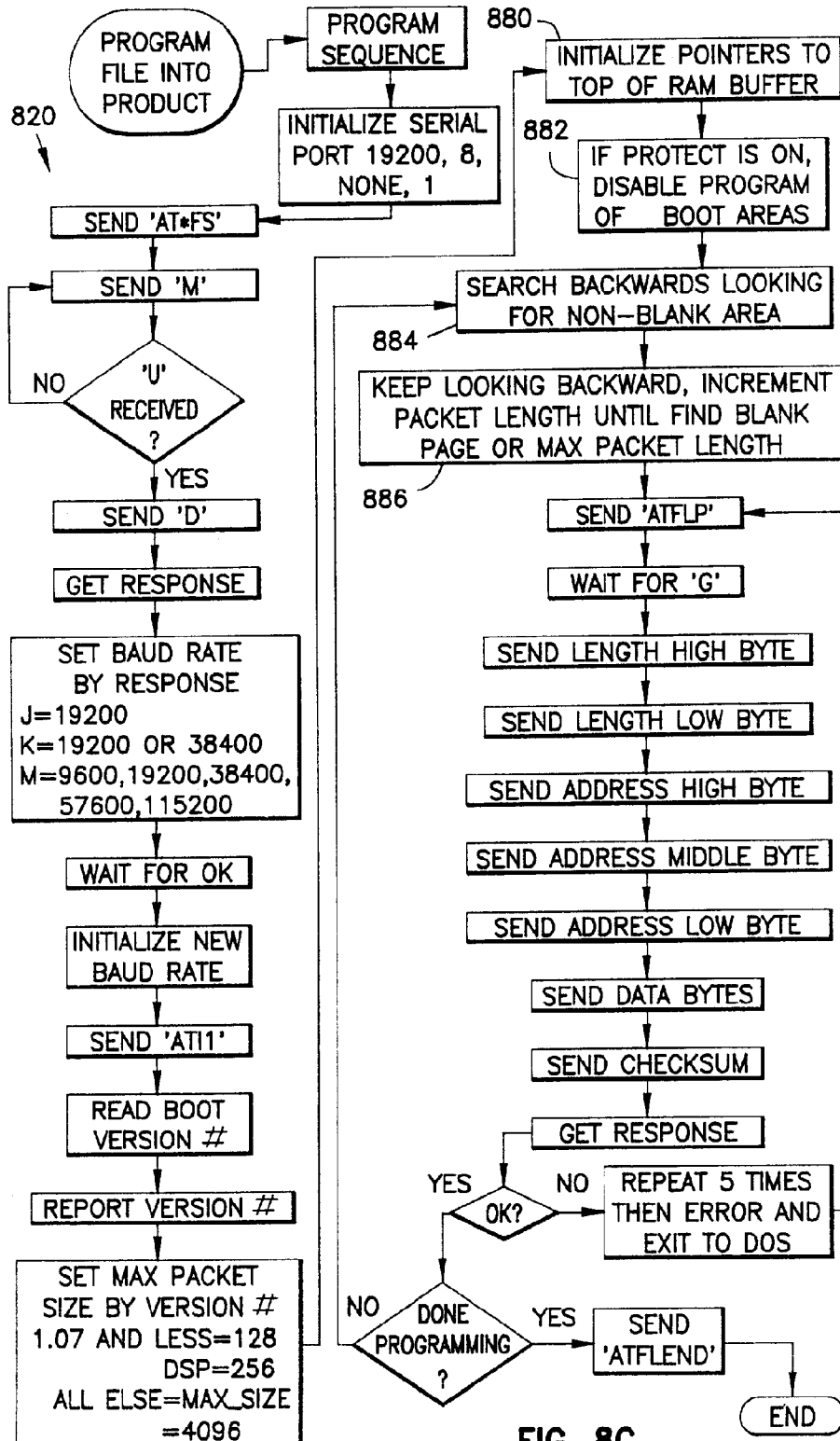


FIG. 8C

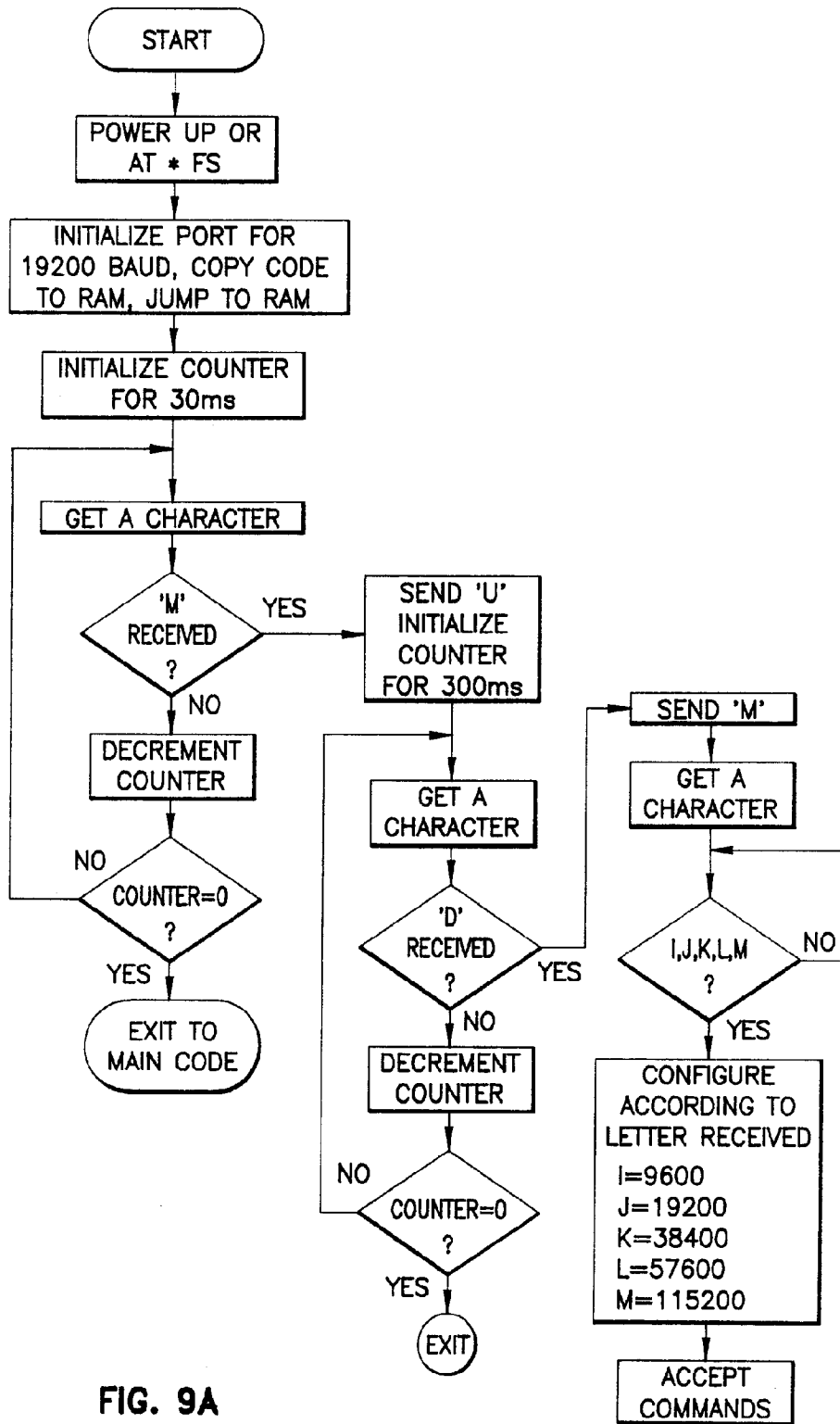


FIG. 9A

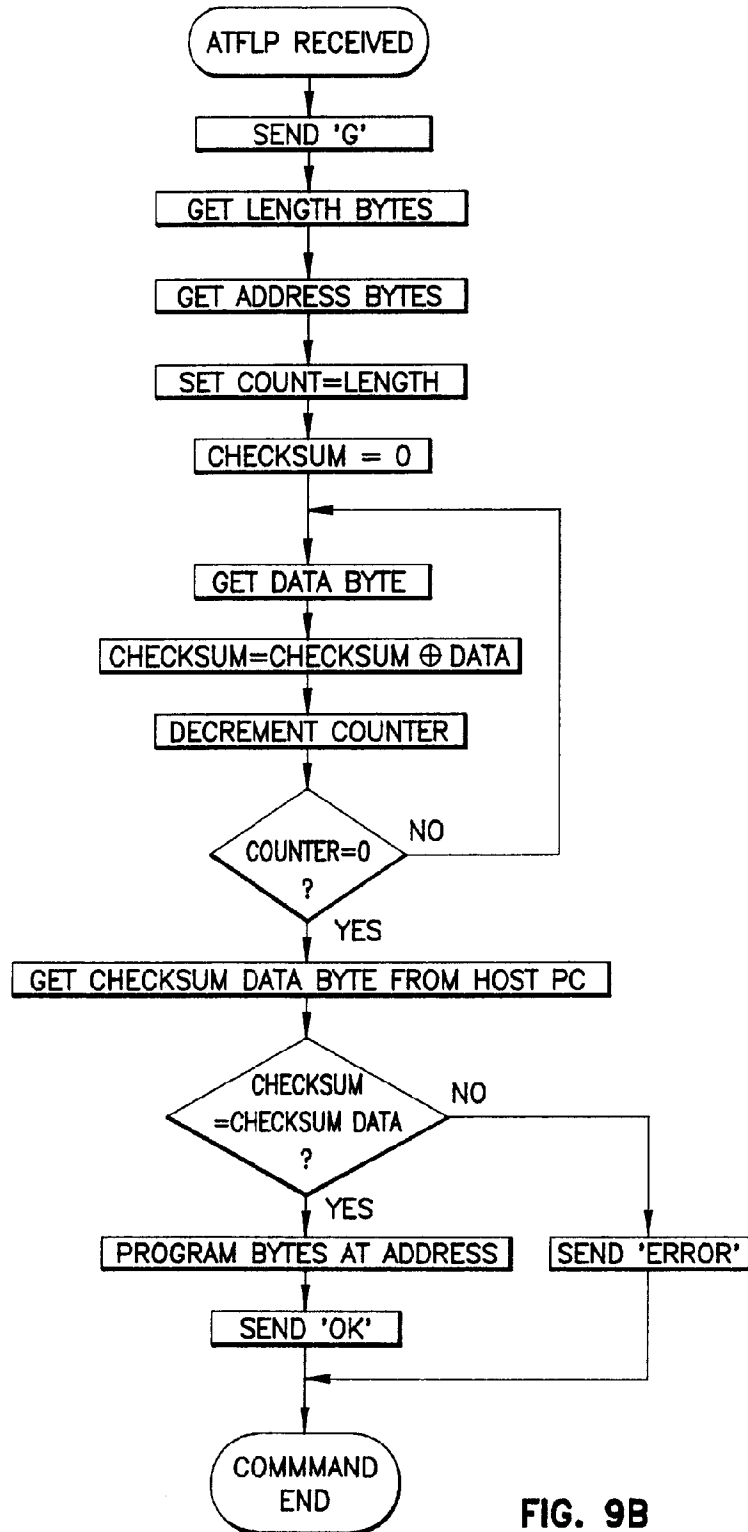


FIG. 9B

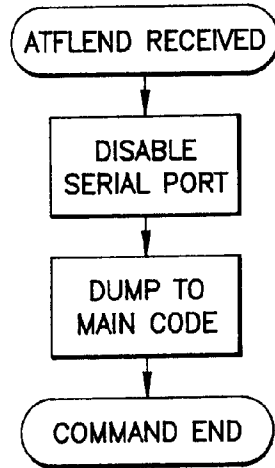


FIG. 9C

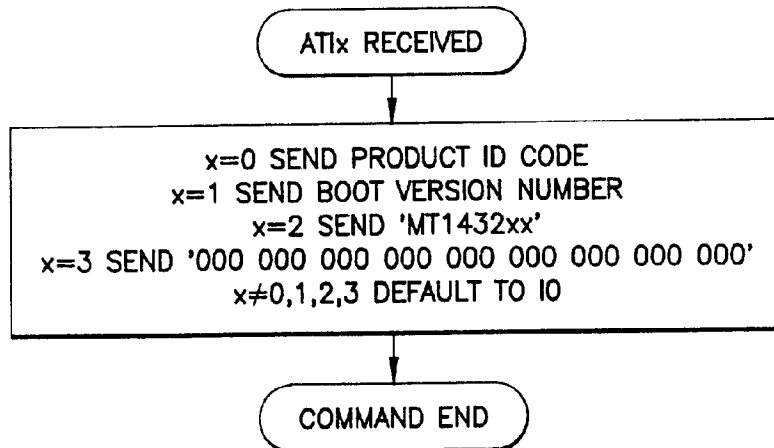


FIG. 9D



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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 4741

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	IBM TECHNICAL DISCLOSURE BULLETIN., vol.26, no.1, June 1983, NEW YORK US pages 261 - 262 'Dynamic Setting of Modem Parameters'	1,2,4,5, 7-11	H04L29/06
Y	* the whole document * ---	3,6,12	
Y	IBM TECHNICAL DISCLOSURE BULLETIN., vol.35, no.5, October 1992, NEW YORK US pages 425 - 427 'Technique for Power Management in Signal Processors'	3,6,12	
A	* the whole document * ----- IBM TECHNICAL DISCLOSURE BULLETIN., vol.35, no.4B, September 1992, NEW YORK US pages 398 - 399 'S-register Retention Method at Suspend Resume Operation for Internal Modems'	3,6,12	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H04L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 October 1994	Examiner Goossens, A
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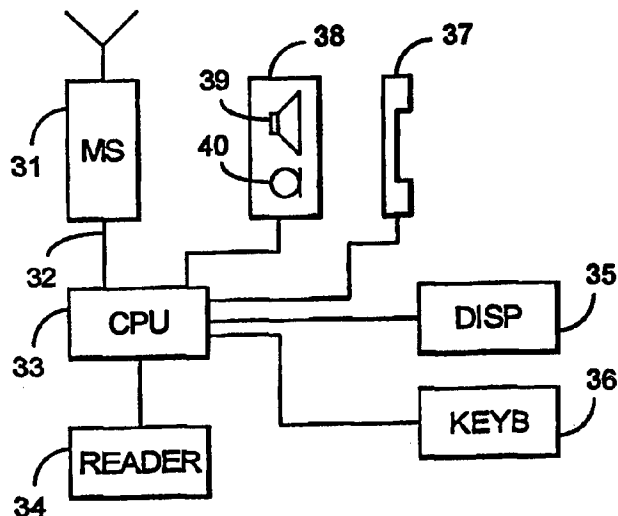
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<p>(21) International Application Number: PCT/FI96/00321 (22) International Filing Date: 31 May 1996 (31.05.96) (30) Priority Data: 952906 13 June 1995 (13.06.95) FI (71) Applicant (for all designated States except US): NE-PRODUCTS OY [FI/FI]; Teknologiantie 18, FIN-90570 Oulu (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): SAVOLAINEN, Kimmo [FI/FI]; Telkkäkuja 2, FIN-86100 Pyhäjoki (FI). (74) Agent: TEKNOPOLIS KOLSTER OY; Oy Kolster Ab, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>

(54) Title: METHOD AND TERMINAL EQUIPMENT FOR TRANSMITTING INFORMATION NOT RELATING TO A CALL

(57) Abstract

The invention relates to a terminal equipment and to a method for transmitting information not relating to a call to a telephone user in a cellular radio system comprising a number of terminal equipments (20a-20c) and base stations (22a-22c) communicating over a radio path, in which method information not relating to the calls is sent from the system to the terminal equipments (20a-20c) which display the information in a display unit (35). For conveying versatile information effectively to a terminal equipment user, the display unit (35) of the terminal equipment is controlled in such a way that the display unit (35) displays alternately call-related information and information not relating to the calls.



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Method and terminal equipment for transmitting
information not relating to a call

5 The present invention relates to a method for
transmitting information not relating to a call to a
telephone user in a cellular radio system comprising a
number of terminal equipments and base stations com-
municating over a radio path, in which method informa-
tion not relating to the calls is sent from the system
10 to the terminal equipments which display the information
in a display unit.

The invention also relates to a terminal equip-
ment in a cellular radio system, comprising a cellular
radio transceiver, a display unit, and means for receiv-
15 ing from the cellular radio system textual information
intended for the user and not relating to the calls to
be forwarded.

Conventional terminal equipments intended for
speech transmission that are used in cellular radio sys-
20 tems today have a display unit as well, through which
various types of information relating to calls and call
establishment can be conveyed to the user. Typically the
display unit displays for example the field strength of
the signal received by the terminal equipment from the
25 base station, the telephone number of the other sub-
scriber, and the duration of the call.

It is also possible to convey other text
information in the form of 'short messages' in digital
cellular radio systems. In such a case, the display unit
30 of the terminal equipment that received the short mes-
sage displays a brief message typically having a length
of a few words. The length of the message is limited by
the size of the display unit, which is very small in
typical terminal equipments. Short messages are one-time
35 user-to-user type messages, which are read once and

deleted from the memory of the terminal equipment. The implementation of short messages is described in detail in GSM specification TS GSM 03.40, which is incorporated herein by reference.

5 Solutions in accordance with the prior art are intended for user-to-user communication in which the delivered message can be discarded after reading. The prior art solutions are rather poorly suited to conveying long-term information.

10 It is an object of the present invention to enable conveying of various kinds of information to one or more terminal equipments simultaneously as the information necessary for the calls and call establishment is also visible to the user.

15 This object is achieved with a method as set forth in the preamble, which is characterized in that the display unit of the terminal equipment is controlled in such a way that the display unit displays alternately call-related information and information not relating to
20 the calls.

The terminal equipment set forth in the preamble is characterized in that it comprises means for controlling the display unit in such a way that the display unit displays alternately call-related information and
25 information not relating to the calls.

The method of the invention makes it possible to realize a versatile information service to terminal equipment users. The invention can be applied in any conventional cellular radio system.

30 As cellular radio systems are becoming more common and as their coverage areas are in many places replacing systems implemented with fixed wired telephone connections, it has become necessary to develop pay telephones utilizing cellular telephone systems. A need
35 for such telephones exists for instance in an area where

no fixed wire telephone connections have been constructed, or in applications in which a pay telephone is located in an environment where a connection to a fixed network is not readily available, for instance in moving vehicles. The method of the present invention can be applied with particular advantage in a system in which pay telephones have been implemented with terminal equipment. In that case, information services can be furnished on the display of the terminal equipment when the telephone is in idle mode and also during calls.

Information services may include any information that is of interest to customers, such as information on road traffic congestions in the surroundings of the terminal equipment, information on stock exchange quotations, or advertisements.

The method and the terminal equipment in accordance with the invention can be implemented in any cellular radio system, such as the NMT, AMPS, TACS and GSM. In the terminal equipment of the invention, it is possible to apply the characteristics of the cellular radio systems effectively to the special requirements of a pay telephone. In particular, the above-mentioned information transfer can be realized for instance in the GSM and DCS systems by using 'short messages'. The information can thus be conveyed during a call, and it is not necessary to reserve a separate radio channel for this purpose, but the information can be transmitted by means of signalling during the call.

In the following, the invention will be explained in greater detail with reference to the examples in accordance with the accompanying drawings, in which

Figure 1 is a schematic representation of the configuration of a pay telephone system,

Figure 2 schematically represents an example of the transmission of a super message,

Figure 3 illustrates an example of the construction of a terminal equipment of the invention on block diagram level, and

5 Figure 4 illustrates a possible construction for the control unit by means of a block diagram.

In the following, the invention will be described in detail using as an example the digital GSM mobile telephone system, yet without being restricted thereto. It will be apparent that the terminal equipment
10 of the invention can be implemented with minor modifications in any analog or digital cellular radio system, as stated previously.

In a preferred embodiment of the invention, the terminal equipment displaying extra information is a pay
15 telephone, but the invention may likewise be applied to terminal equipments in normal use.

Figure 1 illustrates the configuration of a pay telephone system to be realized in a cellular radio network. The system comprises a number of pay telephones
20 20a-20c, each communicating with base stations 22a-22b via a radio path 21a-21c. With regard to the radio path and the base station, the terminal equipments serving as pay telephones are no different from conventional subscriber terminal equipment. The base stations 22a-22b
25 typically communicate with base station controllers 24a-24b via transmission links 23a-23b, which can be implemented with an optical cable, copper wireline or radio relay link, and each base station controller controls several base stations. The base station
30 controllers 24a-24b in turn communicate with a mobile exchange 26 via transmission lines 25a-25b, said mobile exchange controlling the operation of the base station controllers and forwarding the calls from the terminal equipments further to a fixed network or to other parts
35 of the cellular radio system through transmission lines

27.

In the exemplary GSM system, the control equipment 30 of the pay telephone system is connected for instance by using an X.25 connection 29 to a short message service centre 28, which in turn communicates with GSM cellular networks and the mobile exchanges thereof. The above description of a cellular radio system thus relates to the GSM system, but it is obvious that even though the construction in other systems differs in its details from that which is described, there are no differences as regards the essential parts of the construction. It should be noted that it is possible to realize a pay telephone system without a short message service centre also in the GSM system by connecting the control equipment 30 of the pay telephone system to the cellular radio system in other known ways, for instance by means of a modem.

In a preferred embodiment of the invention, the control and management of the information to be displayed to the customer, i.e. to the user of the terminal equipment, are incorporated in the pay telephone control equipment 30. The same information may be transmitted to one or several terminal equipments controlled by the control equipment.

In a preferred embodiment of the invention, the information to be displayed to the customer, i.e. to the user of the terminal equipment, is delivered to the terminal equipment in the form of short messages. The communication protocol is based on the use of a super message consisting of one or more short messages. The short message service of the GSM is based on sending separate independent messages. In the solution in accordance with the invention, a sequence number is attached to each message of the super message for the detection of transmission error situations. The recipient of the message

acknowledges the receipt of the message to the sender. The reason for a negative acknowledgement may be reception of an incorrect super message, which is detected on the basis of the sequence numbers or check sums for the messages.

The control equipment 30 of the pay telephone system thus forwards the messages to the short message service centre 28, which handles the relaying of actual short messages to all addressed terminal equipments. In the solution in accordance with a preferred embodiment of the invention, the communication protocol is efficient, because simultaneously as the control equipment 30 sends super messages to the pay telephones, it can receive acknowledgements of short messages sent by the short message service centre 28.

The following is a description of the structure of a super message in accordance with the invention. The super message SprM consists of one or more separate short messages SMi:

$$\text{SprM} = \text{SM}_0 + \text{SM}_1 + \dots + \text{SM}_n.$$

Each short message SMi has a Short Message System Part SMSi, e.g. information on the sender and recipient. The structure of the Short Message System Part is described in detail in the GSM specification 03.40 referred to above. In addition to the system part, each message comprises a Short Message User Part SMUi that contains the actual message to be sent:

$$\text{SM}_i = \text{SMS}_i + \text{SMU}_i, \text{ where } i = 0 \dots 254.$$

The structure of the Short Message User Part may be illustrated by the formula

35

7

$$\text{SMU}_i = \text{Id} + \text{SM_No} + \text{Data} + \text{Check_Sum}$$

where Id is the identification of the super message, preferably having a length of 1 byte, SM_No is the short message sequence number, preferably having a length of 2 bytes. Data is the information to be sent, having a length of 1 - n bytes, and Check_Sum is a modulo 256 sum of bytes in SMU, having a length of 1 byte.

Figure 2 illustrates an example of a situation in which a super message consisting of three short messages SM0, SM1, SM2 is sent. The pay telephone system control equipment PMS transmits the messages to the short message service centre SM-SC, which acknowledges the received messages and relays them further to the pay telephone PP. The pay telephone PP acknowledges the received messages to the short message service centre SM-SC, and the acknowledgement is also transmitted to the pay telephone system control equipment PMS. The short message service centre sends an indication of the delivery of the acknowledgement to the pay telephone.

Figure 3 illustrates an example of a preferred embodiment of a terminal equipment of the invention. The terminal equipment of the invention comprises a cellular radio transceiver 31 and a control unit 33 connected directly to the transceiver 31 without a two-wire connection. The terminal equipment of the invention also comprises a collecting means 34 connected to the control unit 33. The terminal equipment typically also comprises a dialling means 36 with which a desired telephone number is dialled, display equipment 35, and a receiver 37. The terminal equipment may also comprise means 38 enabling a hands-free facility, comprising a loudspeaker 39, a microphone 40 and the required amplifiers. Some or all of the above components may, if desired, be directly

integrated into the transceiver 31, but they may also be implemented as separate means, even if structurally within the same casing.

5 The purpose of the collecting means 34 is to enable the user to be charged for executing a call in accordance with the current tariff and the characteristics of the call executed. The collecting means 34 can be implemented in a variety of known ways. A typical
10 implementation is to use a call card reading/writing device. The cards used may be for instance disposable cards which contain a certain amount of talk time and which cannot be reloaded. It is also possible to use loadable call cards, various smart cards or credit
15 cards. When credit cards are used, the control unit 33 must be capable of checking the credit standing. It is also possible to use 'proximity cards', i.e. cards that are read and written into without any physical contact between the reading device and the card, in the equip-
20 ment. Hence the use of wearing parts in the device is obviated, such parts being included for instance in a magnetic card reading device. In such a case, the equipment may also be implemented without any openings in the exterior, which will reduce the possibility of van-
dalism.

25 The purpose of the transceiver unit 31 is to establish a radio connection to a base station when required, in order that a call may be forwarded. The unit 31 also handles all procedures relating to the main-
30 tenance of the radio path and the call that are normally the task of a mobile telephone. The unit 31 also receives the short messages transferred by the base station and transmits them to the control unit 33 for pro-
cessing. Likewise, the unit 31 sends acknowledgements of received short messages to the base station under the
35 control of the control unit 33.

The purpose of the control unit 33 is to control the pay telephone. The control unit typically comprises a microprocessor, fixed and reprogrammable memory circuits, multiplexing means and switches. The control unit controls the operation of the other units of the equipment, keeps a record of the calls executed and handles the charging.

Figure 4 illustrates a possible way of embodying the control unit 33. In the figure, the control unit is connected to the transceiver unit via a bus 32, and the control unit is provided with a bus buffer 41, which can be implemented with separate components. The unit comprises a microprocessor 42, which may be for instance model Intel 80C32 or equivalent. The processor has connected to it detector means 43 detecting whether the performance of the processor program is interrupted owing to an error and restarting the processor when needed. The control unit further comprises memory means 44, into which a program code is stored. The memory means 44 can be implemented for instance with a 'flash memory circuit', which can be updated. The control unit further comprises second memory means 45, into which for instance payment transaction data and received short messages are stored. The second memory means 45 are battery secured. The unit further comprises buffering means 46, 47, of which the buffer 46 serves as a data out buffer, with outgoing lines 48 for controlling the collecting means 34, to audio switches, and for controlling the dialling means 36. The buffering means 47 serve as a data in buffer, with incoming lines connected for instance to the dialling means 36, the receiver 37, and the collecting means 34. Furthermore, there is a connection 50 from the processor 42 to the display means 35.

The display equipment 35 used may be for ins-

tance an LCD display, which is capable of displaying numerals, letters, and also graphics if desired. Typical information shown on the display is information relating to the state of the call and to charging.

5 Hence, the control unit 33 receives short messages from the transceiver 31 and typically stores them in the memory means 45. If the short message relates to the information displayed in the display means, the processor 42 controls the display means as called for by
10 the message, when necessary. In the solution in accordance with the invention the display means are thus controlled in such a way that they display to the user alternately the above call-related information, such as call time, call state and charging information, and
15 information not relating to the call, such as road traffic information, weather reports, advertisements, etc. The alternation can preferably be realized in such a way that information of both types is displayed for a fixed period at a time, whereafter a new type of information
20 is changed into the display. The fixed period may be for example 5 seconds.

The alternation time may also be determined by means of the short message, e.g. incorporating said time in the same short message as the information. The short
25 message may also contain an indication of how long the same information not relating to the call is repeated together with the call-related information, and when new information not relating to the call is substituted for the previous one. Another alternative is to use a fixed
30 value, for example 5 minutes, whereafter the information is changed.

The control of the display means 35 may be similar irrespective of whether the terminal equipment is actively participating in a call or in idle mode with no
35 ongoing call. When a call is in progress, the extra

information alternates with information relating to the proceeding of the call, and when the equipment is in idle mode, information relating to the field strength or other information facilitating call establishment or the use of the telephone can alternate with the extra information on the display. When the equipment is in idle mode, the display may naturally also be switched off, and the alternation of information may be applied only during a call.

10 The dialling means 36 can be preferably implemented by utilizing prior art for instance by means of a 5*4 matrix keyboard and a decoder. When a user depresses a key, the state of the depressed key is forwarded to the microprocessor, which reads the code of the depressed key from the decoder. The dialling means 15 36 may consist of dialling means comprised by the actual transceiver, or dialling means connected to the data bus of the transceiver or to the control unit. The dialling means 36 may be located in the receiver 37 or integrated 20 into the casing structure.

 The terminal equipment of the invention preferably comprises means 38 for enabling the hands-free facility. Said means can be implemented by using known components, and they comprise a loudspeaker 39, a microphone 25 40, and the required amplifiers for producing a sufficient volume level. The hands-free facility may be switched on by means of the dialling means 36, when desired.

 A pay telephone must forward information on the payment transactions to the system operator. In the terminal equipment of the invention, payment information can be conveyed preferably during calls, with no need to establish a radio connection separately for data transmission. The terminal equipment of the invention comprises means 31, 33 for transmitting the payment data of 35

the preceding call executed to the operator equipment 30 controlling the payment transactions during the next call executed at the terminal equipment without the call being disturbed or the caller being aware of the procedure in any way. In the preferred embodiment of the equipment of the invention, this is carried out by utilizing short messages, which for instance in the GSM system can be transmitted as signalling messages during the call.

10 In the GSM system, short messages are forwarded in a centralized manner to a short message service centre, wherefrom they are relayed further to a desired destination, which may be for instance another terminal equipment in some other system. In a preferred embodiment of the invention, the operator equipment is connected to a short message service centre, wherefrom the messages intended for the operator equipment are forwarded to destination. Short messages can be used in all data traffic between a pay telephone and the operator equipment, such as for transmitting call statistics, card blacklist information and credit card queries. The software of the terminal equipment and other parameters controlling the operation of the equipment can also be updated in said manner. Such parameters may include for instance barring of incoming calls or outgoing calls having specified area codes, or other corresponding facilities known from pay telephones.

The terminal equipment of the invention may be of fixed or mobile installation. Fixed installation means that the terminal equipment remains within the area of the same cell in a base station network. Such a terminal equipment may be for instance a pay telephone fixedly installed in a building or a telephone booth. A mobile installation in this context means that the terminal equipment may move from one cell to another in a

base station network. A terminal equipment of this kind may be for instance a vehicle-mounted pay telephone, such as one installed in a taxi or a bus, or a pay telephone installed in a train and moving with the
5 train.

Even though the invention has been explained in the above with reference to examples in accordance with the accompanying drawings, it is obvious that the invention is not restricted to them but can be modified in a
10 variety of ways within the scope of the inventive idea disclosed in the appended claims.

Claims:

1. A terminal equipment in a cellular radio system, comprising a cellular radio transceiver (31), a display unit (35), and means (31) for receiving from the cellular radio system textual information intended for a user and not relating to the calls to be forwarded, characterized in that the terminal equipment comprises means (33) for controlling the display unit (35) in such a way that the display unit (35) displays alternately call-related information and information not relating to the calls.

2. A terminal equipment as claimed in claim 1, characterized in that the terminal equipment comprises means (31) for receiving from the cellular radio system a message consisting of one or more short messages, and means (33) for directing the message contained in the received message to the display unit (35).

3. A terminal equipment as claimed in claim 1 or claim 2, characterized in that the terminal equipment comprises means (33) for controlling the display unit (35) in such a way that the type of information displayed in the display unit (35) is changed at given intervals.

4. A terminal equipment as claimed in claim 1, characterized in that the terminal equipment comprises means (31) for receiving from the cellular radio system an indication of the desired interval after which the type of information displayed in the display unit (35) is changed.

5. A terminal equipment as claimed in claim 2, characterized in that the terminal equipment comprises means (33) for controlling the display unit (35) in such a way that the information not rel-

ating to the call alternately displayed in the display unit (35) is changed at given intervals.

5 6. A terminal equipment as claimed in claim 2, characterized in that the terminal equipment comprises means (33) for controlling the display unit (35) in such a way that the message contained in the received message is displayed to the user in two or more parts, which are displayed in succession at given intervals.

10 7. A terminal equipment as claimed in claim 2, characterized in that the terminal equipment comprises means (33) for storing several different messages to be displayed, and means (33) for controlling the display unit (35) in such a way that each stored
15 message is displayed to the user in succession at given intervals.

8. A terminal equipment as claimed in claim 1, characterized in that the terminal equipment comprises a control unit (33) controlling charging
20 operations and being directly connected to the cellular radio transceiver, and a collecting means (34) connected to the control unit (33).

9. A terminal equipment as claimed in claim 8, characterized in that the control unit (33)
25 is connected to the cellular transceiver (31) via a bus interface (32).

10. A terminal equipment as claimed in claim 8, characterized in that the terminal equipment comprises means (31, 33) for transmitting the
30 charging data of the previous call executed to the unit (30) controlling the payment transactions during the next call executed at the terminal equipment.

11. A method for transmitting information not relating to a call to a telephone user in a cellular
35 radio system comprising a number of terminal equipments

(20a-20c) and base stations (22a-22c) communicating over a radio path, in which method information not relating to the calls is sent from the system to the terminal equipments (20a-20c) which display the information in a display unit (35), c h a r a c t e r i z e d in that the display unit (35) of the terminal equipment is controlled in such a way that the display unit (35) displays alternately call-related information and information not relating to the calls.

10 12. A method as claimed in claim 11, c h a r - a c t e r i z e d in that messages not relating to the calls are sent to the terminal equipments by means of one or more short messages.

15 13. A method as claimed in claim 11, c h a r - a c t e r i z e d in that the same message not relating to the calls is sent to one or more terminal equipments (20a-20c).

20 14. A method as claimed in claim 11, c h a r - a c t e r i z e d in that the display unit (35) of the terminal equipment is controlled in such a way that the information displayed in the display unit (35) is changed at given intervals.

25 15. A method as claimed in claim 14, c h a r - a c t e r i z e d in that an indication of the desired interval after which the information displayed in the display unit (35) is changed is sent to the terminal equipments (20a-20c) by means of short messages.

30 16. A method as claimed in claim 11, c h a r - a c t e r i z e d in that information not relating to the calls is displayed both when a call is in progress and when the telephone is in idle mode.

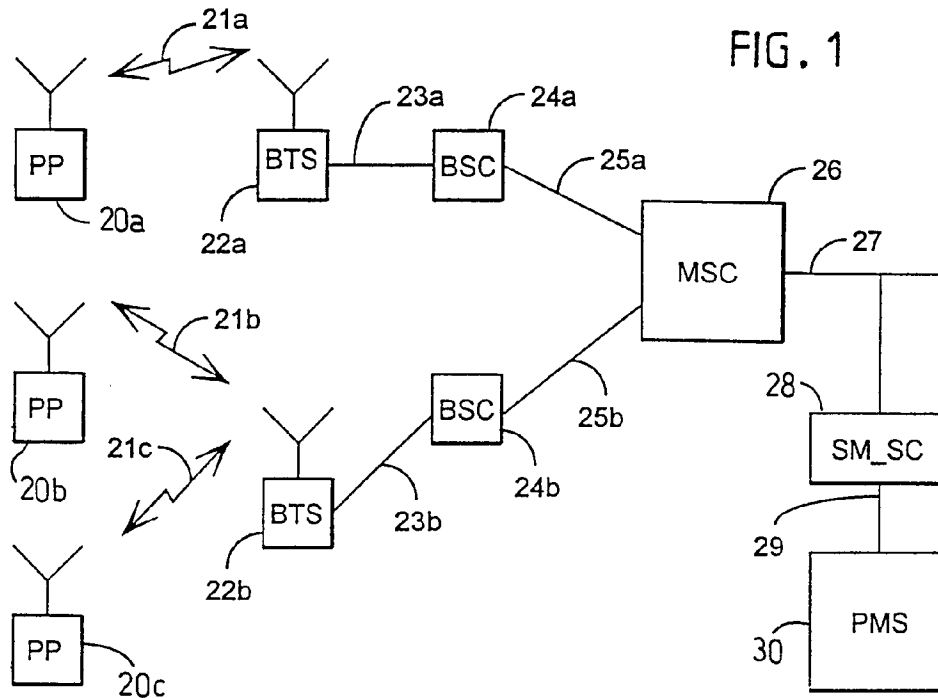
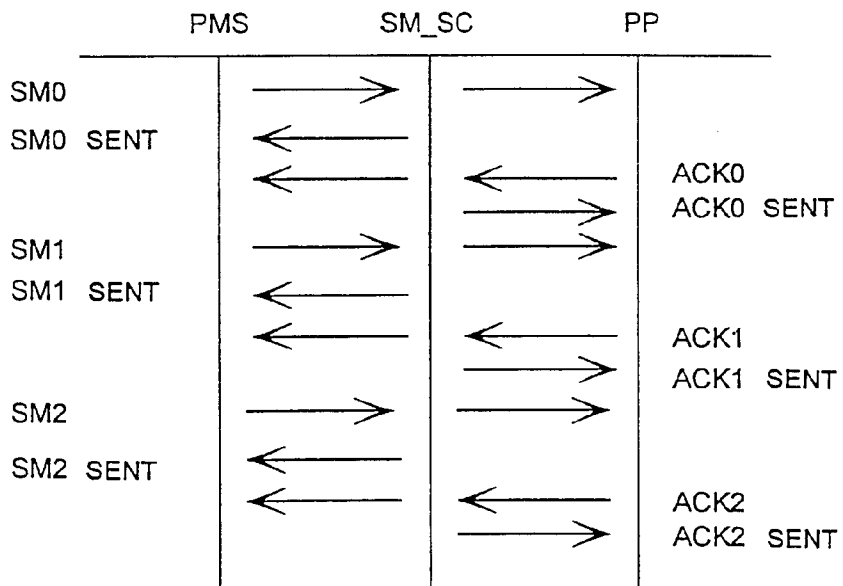


FIG. 2



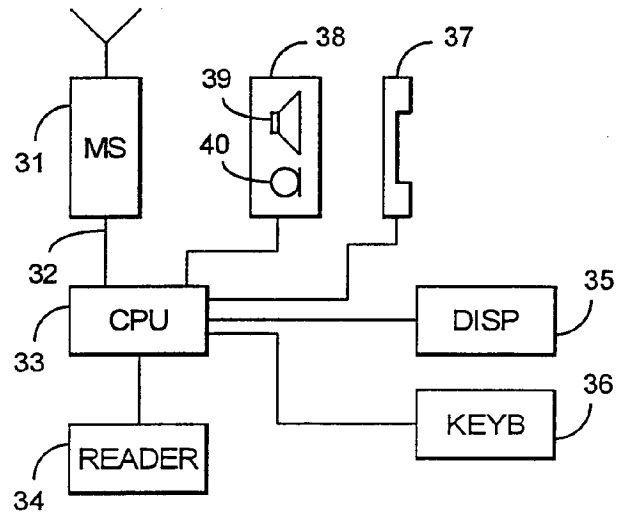


Fig. 3

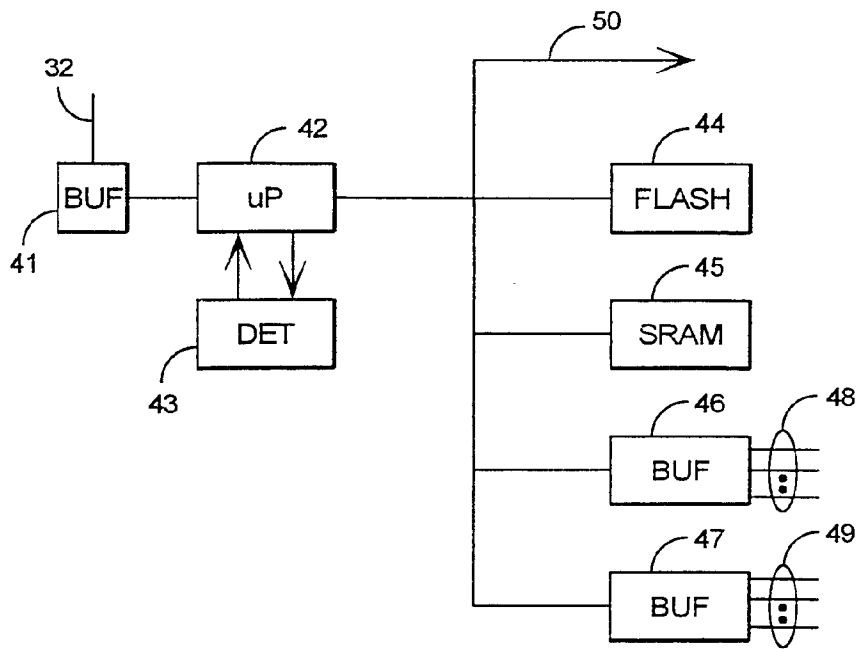


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 96/00321

A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: H04Q 7/22 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
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IPC6: H04Q		
Documentation searched other than minimum: documentation to the extent that such documents are included in the fields searched		
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	IEEE Electronics Division Colloquium, Volume, January 1991, Kevin Holley, "The GSM short message service", see page 2, 3rd piece; page 2, 5th piece and page 4 3rd piece --	1-6,9-15
Y	EP 0647055 A1 (AT&T CORP), 5 April 1995 (05.04.95), column 2, line 1 - line 21; column 3, line 31 - line 58 --	1-6,9-15
Y	GB 2272607 A (VODAFONE LIMITED), 18 May 1994 (18.05.94), page 1, line 21 - page 2, line 2; page 4, line 5 - page 7, line 20 --	1-6,9-15
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search		Date of mailing of the international search report
7 October 1996		08 -10- 1996
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer Christina Halldin Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 96/00321

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9214329 A1 (TELENOKIA OY), 20 August 1992 (20.08.92), page 5, line 3 - line 33; page 13, line 22 - line 29 --	1-16
P,A	EP 0690639 A2 (VAISALA OY), 3 January 1996 (03.01.96), see whole document -- -----	1-16

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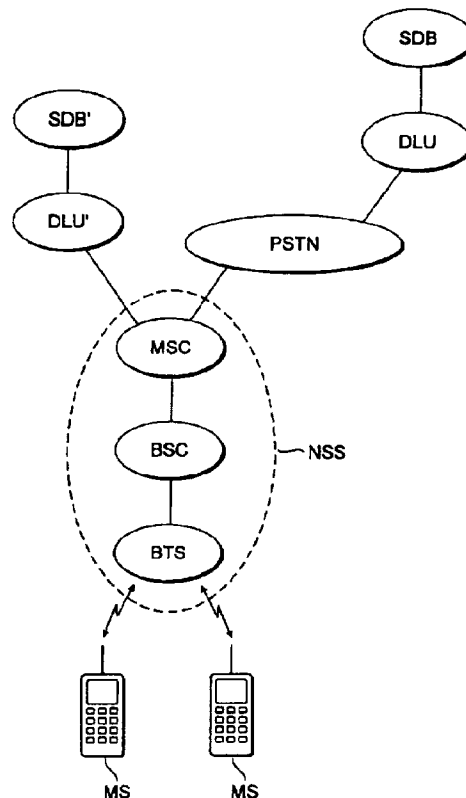
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<p>(21) International Application Number: PCT/FI96/00574 (22) International Filing Date: 29 October 1996 (29.10.96) (30) Priority Data: 955188 30 October 1995 (30.10.95) FI (71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATIONS OY [FI/FI]; Upseerinkatu 1, FIN-02600 Espoo (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): LEPPÄNEN, Reijo [FI/FI]; Kokinkyläntie 34 A, FIN-02200 Espoo (FI). (74) Agent: OY KOLSTER AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Finnish).</p>

(54) Title: UPGRADING SOFTWARE IN A MOBILE TELEPHONE

(57) Abstract

A prior art method for upgrading a mobile station is to change at least partly software contained therein in a service shop, for example. This solution is not satisfactory to a user of a mobile station. In accordance with the invention, the mobile station (MS) is designed to that its software can be changed at least partly. A software database (SDB) connected to a mobile communication network (NSS) contains the most recent versions of the softwares of the mobile stations. A downloading unit (DLU) checks the softwares of the mobile stations by means of the database (SDB) and when necessary, loads the software into the mobile station.



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Upgrading software in a mobile telephone

5 The present invention relates to upgrading of software, especially of speech coding software in mobile telephones. In some cases different operators of mobile communication networks may use a different speech coding algorithm. Alternatively, the software of a mobile station can be suitable in principle but a more recent version of it may have been developed.

10 Mobile communication systems develop rapidly. When facilities are added or improved, a problem will be how to add these facilities to existing mobile stations. Prior art for improving a mobile station is to change at least partly the software therein in a service shop. This solution is not satisfactory to a user of a mobile station. The maintenance of software in a service shop may not be a good solution for the service shop either as this work rather causes peaks in work load than permanent business.

20 The object of the invention is to upgrade software in a mobile station so that the mobile station need not be taken for this purpose to a service shop. The objects of the invention are achieved with the methods and systems that are characterized by what is stated in the independent claims. Preferred embodiments are disclosed in the dependent claims.

25 The invention is based on the idea that software in a mobile station is arranged to be at least partly variable in response to incoming signals from outside the mobile station. In some embodiments of the invention, actual executable code is transferred to a mobile station. In the second embodiments, the program best corresponding to the prevailing conditions is selected from the software preinstalled in the mobile station. In the third embodiments, the preinstalled and

30

35

externally loaded software modules cooperate in such a manner that at least parts of each are executed.

An advantage of the method and system of the invention is for a user of a mobile station primarily that when new facilities are added, the mobile station need not be changed or even taken to a service shop. This also gives a competitive advantage to the mobile station manufacturer. Another advantage for the manufacturer is that the testing of the product may be shortened and the introduction of the product to the market can be expedited if the product can be upgraded even after delivery. The advantage to a network operator is that facilities can be added more flexibly as the user has subscriber terminal equipments which are technically ready for the use of new facilities.

The invention will now be explained in more detail by means of preferred embodiments with reference to the accompanying drawings, wherein

Figure 1 shows the elements of the mobile communication system essential for the invention;

Figure 2 shows an exemplary form of one record of a software database;

Figure 3 shows process steps when the mobile communication system starts loading a program;

Figure 4 shows process steps when a mobile station starts loading a program;

Figures 5 to 6 shows different techniques for changing the software of a mobile station.

Figure 1 shows the elements of the mobile communication system essential for the invention. Mobile stations MS are connected to a base station BTS in a manner known per se. The base station BTS is connected to a base station controller BSC, which is, in turn, connected to a mobile services switching centre MSC. The network elements BTS to MSC form

Network SubSystems (NSS) connected to other subsystems and the public switched telephone network PSTN. The elements of the subsystem NSS may naturally have a tree structure in such a manner that several base stations
5 BTS may be connected to one controller BSC and similarly, several base station controllers BSC to one exchange MSC.

In accordance with one embodiment of the invention, Downloading Units DLU attend to the loading
10 of software into mobile stations. Information on the software contained in the mobile stations is maintained in Software Database SDB. There may be only one or several software databases SDB. If the system includes only one software database SDB, all mobile services
15 switching centres MSC can be connected to this software database via the public switched telephone centre PSTN, for example. In this case, the software database SDB corresponds to a great extent to the home location register HLR of the mobile communication system. The
20 loading of software into the mobile station can be started for example so that when the mobile station is registering into the network, the network sends an inquiry to the mobile station about the software it contains. If the mobile station does not respond to the
25 inquiry in any way, the network deduces that the mobile station does not support this feature and the procedures will end. On the other hand, if the mobile station responds to the network as expected and indicates it contains the most suitable software, there
30 is no need for loading the software, and the procedure ends in this case, too. A need for loading the software arises only when the mobile telephone responds to the inquiry to the network relating to the software and the response contains an indication that the software of
35 the mobile station is not in all parts the most

suitable one for this network. When a new software is loaded into the software database SDB, it can update the software of the mobile station to correspond to the loaded software.

5 The network (and especially the software downloading unit DLU) then has to deduce how urgently the software should be loaded. If the mobile station is moving to an area of an operator where the used speech coding or other necessary program is not compatible,
10 the loading of software should be started immediately. On the other hand, if the network finds out that the mobile station supports full-rate speech coding, but not for example enhanced full-rate speech coding, the network may inform the mobile station that this
15 software supporting enhanced full-rate speech coding can be loaded. The user can then load the software at the required time by calling a specified service number, for example. The enhanced full rate speech coding in the GSM system used herein is only one
20 example of this feature. It is not essential for the invention how the speech coding program operates, but how this program can be transferred into a mobile station. The same method could be used for transferring a more advanced identification procedure, a power saving algorithm or the like.
25

 When software is loaded into a mobile station, the loading may take place on a traffic channel, for example, in such a manner that the whole capacity of one traffic channel is allocated to the loading of
30 software into one mobile station at a time. The network may then send first a header field containing information on the program to be loaded (program type, function, version, length, etc.). The header field is followed by the contents of the program divided for
35 example into several frames which may contain a

checksum. When the mobile telephone receives a frame, it calculates the checksum from the data contained in the frame and compares it to the sent checksum. If the checksums are equal, the frame is stored into memory. 5 If the checksums are different from one another, the mobile station may request the erroneous frame or the whole software to be loaded again. When the whole software is loaded (possibly after repeating some frames), it can be activated for use. "Activation" does 10 not necessarily mean that the program would be executed immediately but when said program is needed the next time.

As an alternative to loading the software at each connection, the network may send new programs on 15 some broadcast control channel to all mobile stations. This embodiment could be implemented by sending continuously new programs, for example.

Figure 2 shows an exemplary form of a record of the software database SDB. Field 202 shows the 20 equipment type of the mobile station and field 204 the equipment version. Similarly, the program version is in field 206. Field 208 shows the number of modules capable of being loaded into the mobile station. Fields 210 to 214 include identification data of the modules 25 in triplets: the identifier of the module, the initial header and the length of the module. The next three fields contain corresponding information for the next module. Field 208 indicates the number of these triplets. The program code of module 1 is in area 224, 30 of module 2 in area of 226, etc.

Although the easiest way to check the software of a mobile station is to compare the version numbers, it is not the only way. The compatibility of the software may be checked in other ways, for example by 35 means of a checksum or by testing how the mobile

station will respond to a specified message sent thereto.

Figure 3 shows process steps when the mobile communication system starts loading the software. Figure 3 shows an embodiment where the operation is initiated by the mobile station being turned on in the coverage area of the network (step 302). In step 304 the network informs the equipment register of the equipment and program versions in the mobile station. In step 306 the equipment register sends the equipment and program data to be checked by the DLU of the mobile station type in question. In step 308 the DLU checks if the mobile station already has the most suitable software for the mobile station type. In step 310 the DLU makes a special call to the mobile station when the mobile station is free and available. In step 312 the DLU requests the mobile station to send its identifier data. In step 314 the mobile station sends its identifier data, e.g. the equipment type and the software versions. In step 316 the DLU informs the mobile station of the new programs to be selected by the user. In step 318 it is inquired on the display of the mobile station (or alternatively, by an audio signal) if the user requires loading. In step 320 the DLU reads the program from the SDB and supplies it to the connection. In step 322 the mobile station informs the user by a text or audio message that loading has been terminated.

Figure 4 shows process steps when the mobile station starts loading the software. In step 410 the user makes a special call to the service number (the DLU) of the network. Steps 412 to 424 correspond to steps 312 to 324 explained in connection with Figure 3 and they will not be explained again.

In the following, the changes required by the

loading of software according to the invention are examined. In an ordinary mobile station software is generally installed in one read-only-memory (ROM) whose contents cannot be changed after the manufacturing stage. In this connection, "ROM" refers to a fixedly programmed memory whose contents cannot be changed at least with the equipment in the mobile station. "RAM" similarly refers to a memory whose contents can be changed with the equipment in the mobile station. "Program to be updated" refers to the part of the software in a mobile station to be changed. Furthermore, "version" in this context is to be understood to refer widely to all modifications and not just to modifications of a different age.

The software of a mobile station of the invention may be updated e.g. in the following ways: (i) the mobile station may contain in the ROM several alternative programs one of which is selected for execution; (ii) the same as (i) but the programs are located in the RAM, and (iii) the ROM and RAM of the mobile station can cooperate so that parts of both are executed.

Figure 5 shows how a mobile station may contain several programs in the ROM one of which is selected for processing. In program segments the left column signifies a label at the source code level and a corresponding address in the executable code. Pseudocode JMP in the second column refers to a jump to the label mentioned in the third column or to a corresponding address in the executable code. The ellipsis (...) represents the part of the program to be executed. The pseudocodes "EXIT" terminating programs Pa to Pc naturally restore control to an upper level program.

The ROM contains in this example three

alternative programs Pa to Pc of which at least one can be activated so that the execution of the program is preceded by a jump in the RAM to the address RAM1 to which is initialized a jump to the program (e.g. Pa) which is executed by default if not programmed otherwise. This default situation is described by unbroken arrows between the ROM and RAM. Any one of the programs Pa to Pc can be activated by writing a jump to the program in question in place of the jump instruction in the address RAM1 of the RAM. This change is illustrated by an arrow indicated with broken lines between the ROM and RAM. Before the program is executed, the processor of the mobile station can also make sure that the jump instruction in the address RAM1 contains a jump to a meaningful address. If this is not the case, the mobile station may initialize the jump instruction in the address RAM1 again to be directed to a program executed by default. The fact that the jump instruction is directed to a meaningful address can be ensured for example by calculating the checksum at least from part of the program to be executed. In order that the checksum need not be calculated from all the software, one check byte (CHKBYTE in this example) may be placed in front of the 3 byte jump instruction in the address RAM1 and the checksum can be calculated from the produced 4 byte area.

A restriction to the above described embodiment is that only such programs can be stored into the ROM whose contents are known at the manufacturing stage. In this way telephones can be manufactured to operate in the operation area of two or more network operators even when the operators require different programs.

If the contents of the program are not known at the stage when the mobile station is manufactured,

the contents of the program can be changed in such a manner that the mobile station contains the RAM to which one or more programs or at least parts of them are stored. The ROM and RAM preferably cooperate in such a manner that only the parts to be changed in the program have to be stored in the RAM. Figures 6A and 6B show an example of how the cooperation of the ROM and RAM can be realized. Figure 6a shows an initial situation. Some program in the ROM comprises three parts P1 to P3. As distinct from the situation in Figure 5, the parts P1 to P3 are not here alternatives but different parts of one program, all of which have to be executed. Execution of each part P1 to P3 is preceded by a jump to an address in the RAM, to the RAM1 to RAM3, respectively, to which a jump back to the parts P1 to P3 of the program in the RAM is initialized. One of these parts P1 to P3 can be replaced by a corresponding part in the RAM so that a jump to the replaced part of the program is written in the place of the jump instruction in the RAM. Replacing part P2 by a second part P2' is discussed as an example. A problem is caused by that the contents of the replacing part P2' and even its size are not known at the manufacturing stage of the mobile station. In the initial situation of Figure 6a the jump instruction of address RAM2 can be replaced only by an instruction of the same length (the length of the jump instruction is typically 3 bytes), without new data being written into the address RAM3. The address RAM3 cannot be transferred as in the address ROM3 of the ROM there is a jump to this address and the contents of the ROM cannot be changed. Referring to Figure 6B, the problem is solved in such a manner that the part P2' replacing the part P2 is placed in the empty part in the RAM and a jump instruction is placed in the address RAM2 at the

beginning of the replacing part P2'. As after executing the original part P2, the program proceeds to the address ROM3, a jump to the end of the part P2' should also be placed in the same address. As there is any
5 case a jump to the address RAM3 in this address, one jump instruction can be saved by terminating the part P2' by a jump instruction to the address RAM3, as shown by the arrow indicated with broken lines in Figure 6B.

The cooperation of the RAM and ROM saves
10 resources of the mobile station, such as storage capacity and program downloading time.

In the following it is examined how a program can be transferred into a mobile station. Several embodiments are given for this: (i) the program may be
15 loaded via the radio path; (ii) one of several preinstalled programs can be selected via the radio path; (iii) the program may be loaded by a smart card or a magnetic card; and (iv) the mobile station may cooperate with a general-purpose computer.

The loading of a program to a mobile station
20 has already been discussed in connection with the changes the technique requires of a mobile communication network. The selection of one of several preinstalled programs can be realized in the way
25 explained in connection with Figure 5, whereby information on the program to be executed is sent via the mobile communication network.

A program can be loaded to a mobile station by a smart card or a magnetic card. In this case there are
30 two alternatives in use: the program can be executed directly from a smart card or it can be copied therefrom to the RAM of the mobile station. In the last mentioned case it can apply the technique explained in
35 connection with Figure 6, by means of which the program of the mobile station can be only partly replaced.

The mobile station may also cooperate with a general-purpose computer. This embodiment is based on the observation that most users of mobile stations also use a general-purpose computer, either at work or at home. A mobile station may cooperate in many ways with a computer. According to one embodiment, the program need not be loaded via the radio path but the program is loaded first into the memory of the computer by means of a modem connection of the general-purpose computer. Alternatively, the program may be sent in a diskette readable by the computer. Cooperation with the computer has the advantage that the programs of the users of the mobile station using a computer can be updated by means of diskettes sent by post.

When the program is loaded into the memory of the general-purpose computer, it may be transferred therefrom to the memory of the mobile station via a data connection if one is available in the mobile station. Alternatively, the mobile station may have a PCMCIA or other such smart card connection.

The data connection of a mobile station may be a wired connection in series or an infrared connection that is becoming more general in laptop computers and their accessories.

The mobile station and the computer may both contain a PCMCIA card slot whereby a card of PCMCIA type may first be programmed in the computer and transferred into a mobile station.

Especially when the program is transferred in another way than via cable from the computer, it is preferable to send the program in a compressed form for minimizing transmission time. Although compression requires resources (storage space and calculation capability), decompression consumes resources only little. As a rule, the packing programs generally used

in computers condense typical programs into a 1.5 to 2 times smaller space. If the decompressing program is not to be stored into the ROM, it can be sent along with the program to be transferred.

5 It is evident for those skilled in the art that as the art develops, the basic idea of the invention can be realized in many ways. The invention and its embodiments are thus not restricted to the examples described above, but they can vary within the
10 scope of the claims.

Claims

1. A method for upgrading software in a mobile station, c h a r a c t e r i z e d in that the method
5 comprises the steps of:
- establishing a connection between the mobile station and a mobile communication network (NSS);
 - checking the software in the mobile station (MS); and
 - 10 - in response to that the software in the mobile station (MS) does not correspond to the software required by the mobile communication network (NSS), updating the software in the mobile station (MS).
2. A method according to claim 1, c h a r a c t e r i z e d in that updating the software in the
15 mobile station (MS) comprises selecting the most suitable one of the programs preinstalled in the mobile station (MS).
3. A method according to claim 1, c h a r a c t e r i z e d in that updating the software in the
20 mobile station (MS) comprises loading the software to be updated to the mobile station (MS).
4. A method according to any one of claims 1 to 3, c h a r a c t e r i z e d in that the program to
25 be updated is a speech coding program.
5. A method according to any one of claims 1 to 4, c h a r a c t e r i z e d in that the software in the mobile station (MS) is checked when the mobile station (MS) is registering into the network (NSS).
- 30 6. A method according to any one of claims 1 to 4, c h a r a c t e r i z e d in that the software in the mobile station (MS) is checked in connection with an outgoing call from the mobile station.
- 35 7. A method according to any one of claims 1 to 4, c h a r a c t e r i z e d in that the software

in the mobile station (MS) is checked in connection with an incoming call to the mobile station.

8. A method according to claim 3, c h a r a c-
t e r i z e d in that loading the program into the
5 mobile station (MS) comprises the steps of:

- dividing the program to be updated at least
into one block and calculating a checksum of each
block;

10 - sending the program to be updated from the
network (NSS) one block at a time and receiving the
blocks in question with the mobile station (MS),
whereby the checksum calculated from said block is sent
and received along with the block:

15 - calculating with the mobile station (MS) a
checksum from the received block and comparing it to
the checksum sent from the network (NSS) along with the
block;

20 - in response to that the calculated checksum
corresponds to the received checksum, storing the block
into memory; and in response to that the calculated
checksum does not correspond to the received checksum,
requesting with the mobile station (MS) the network
(NSS) to resend the block; and

25 - in response to that all the blocks of the
program have been received successfully, activating
said program.

9. A method according to claim 3, c h a r a c-
t e r i z e d in that loading the program into the
mobile station (MS) comprises the steps of:

30 - broadcasting the program to be updated from
the network (NSS) in blocks along with which a checksum
and a storing address of the block are sent;

35 - receiving with a mobile station (MS) the
block of the program to be updated and a checksum is
calculated from it;

- in response to that the checksum calculated from a specified block corresponds to the checksum sent along with the block, storing the block with the mobile station (MS) into the storing address sent along with said block; and in response to that the calculated checksum does not correspond to the checksum sent along with the block, repeating the reception and storing of said block when the block is sent the next time;

- repeating the preceding three steps until the whole program to be updated has been received.

10. A method according to claim 1, characterized in that the method further comprises the steps of:

- installing in the network at least one software database (SDB) whose function is to include information on the software contained in the mobile station;

- installing in the network at least one downloading unit (DLU) whose function is to compare the program in the mobile station (MS) with the most suitable program intended for said mobile station type, and in response to that the program of the mobile station (MS) is not the most suitable version, to update the software of the mobile station (MS), or at least to inform the mobile station (MS) that a more suitable program can be loaded.

11. A method according to claim 10, characterized in that the downloading unit (DLU) updates the software in the mobile station (MS) upon detecting the mobile station (MS) is not having an active call.

12. A method according to claim 10, characterized in that in the method:

- at least one telephone number is reserved for loading the programs; and

16

- the user of the mobile station (MS) initiates the loading of the program by calling the number reserved for program loading.

5 13. A method for upgrading software in a mobile station (MS), characterized in that in the method:

- a program to be updated is loaded into a general-purpose computer;

10 - a connection is established between the mobile station (MS) and the general-purpose computer;

- the software of the mobile station (MS) is checked; and

15 - in response to that the software of the mobile station (MS) is not the most suitable software, the program to be updated is loaded from the general-purpose computer into the mobile station (MS).

20 14. A method according to claim 13, characterized in that the program is sent with a data connection like a serial connection of a computer and received with a data connection of the mobile station (MS).

25 15. A method according to claim 13, characterized in that the program is sent with an infrared transmitter of the computer and received with an infrared receiver of the mobile station (MS).

30 16. A mobile station (MS) comprising a read-only-memory (ROM) and at least one program therein, characterized in that the mobile station (MS) further comprises:

- a loading program in the read-only-memory (ROM) for loading the program to be updated;

- means for receiving the program to be updated;

35 - a read/write memory (RAM) for storing the program.

17. A mobile station (MS) according to claim 16, characterized in that the read-only-memory (ROM) and read-write memory (RAM) may cooperate in such a manner that the program to be updated comprises a basic part in the read-only-memory (ROM) and a supplementary part in the read-write memory (RAM).

18. A mobile station (MS) according to claim 16, characterized in that the means for receiving the program to be updated comprise a connection to a general-purpose computer.

19. A mobile station (MS) according to claim 18, characterized in that the connection to the general-purpose computer comprises an optical connection, such as an infrared connection.

20. A mobile station (MS) according to claim 18, characterized in that the connection to the general-purpose computer comprises a data connection, such as a serial connection.

21. A mobile station (MS) according to claim 18, characterized in that the connection to the general-purpose computer comprises a PCMCIA card connection.

22. A mobile telephone network, characterized in that it comprises:

- at least one software database (SDB) for upgrading programs in a mobile station (MS); and
- at least one downloading unit (DLU) for loading programs into the mobile station (MS).

Fig. 1

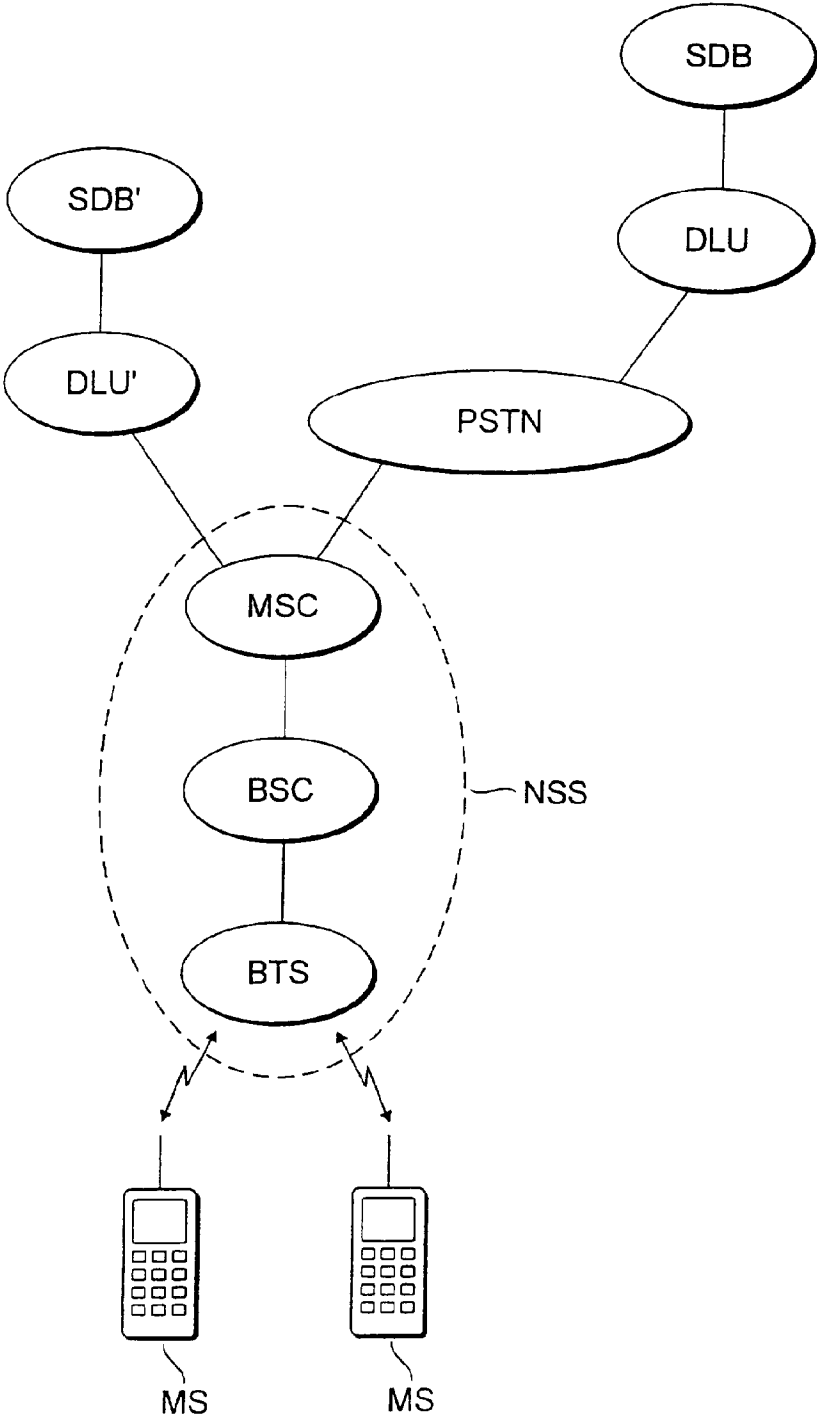
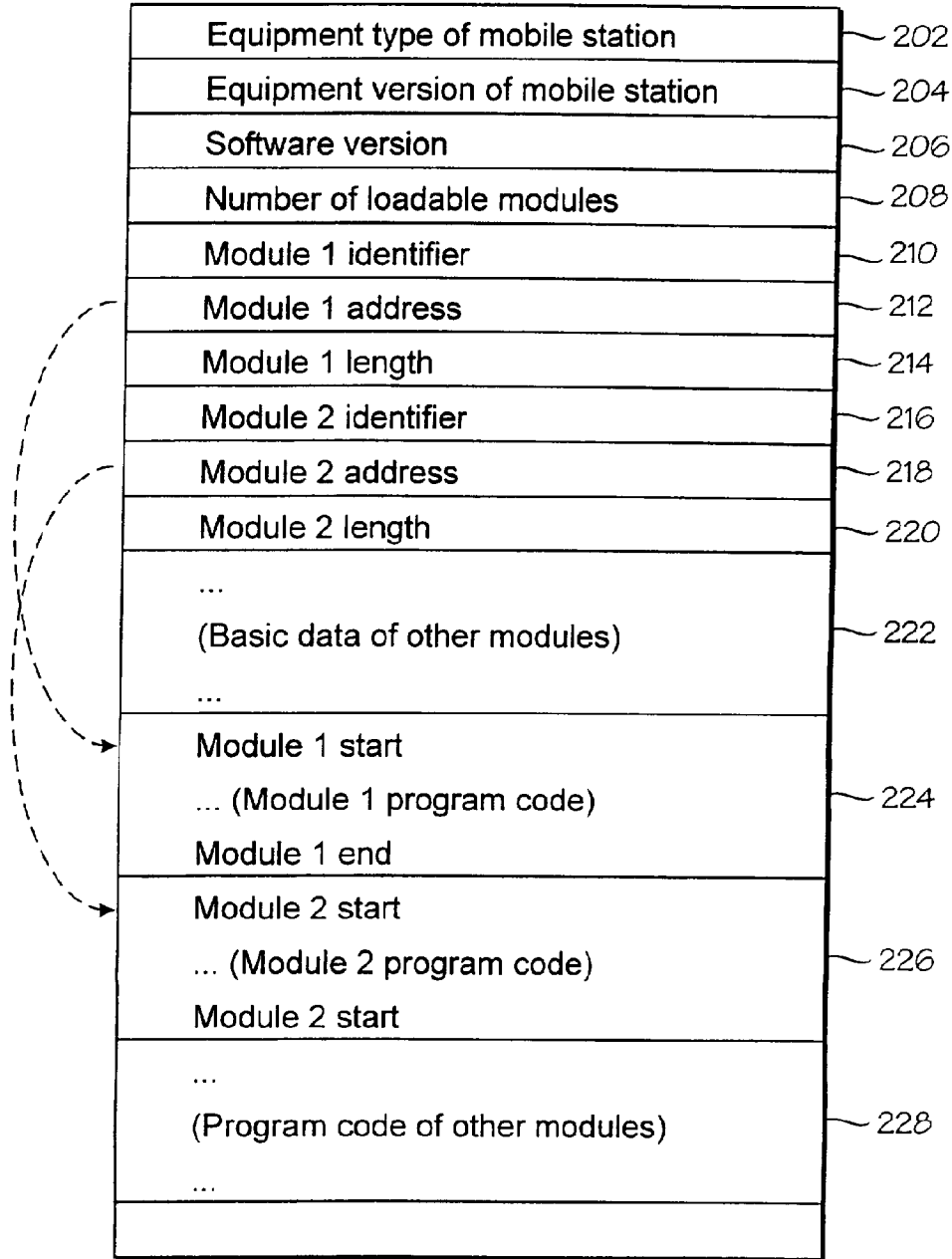


Fig. 2



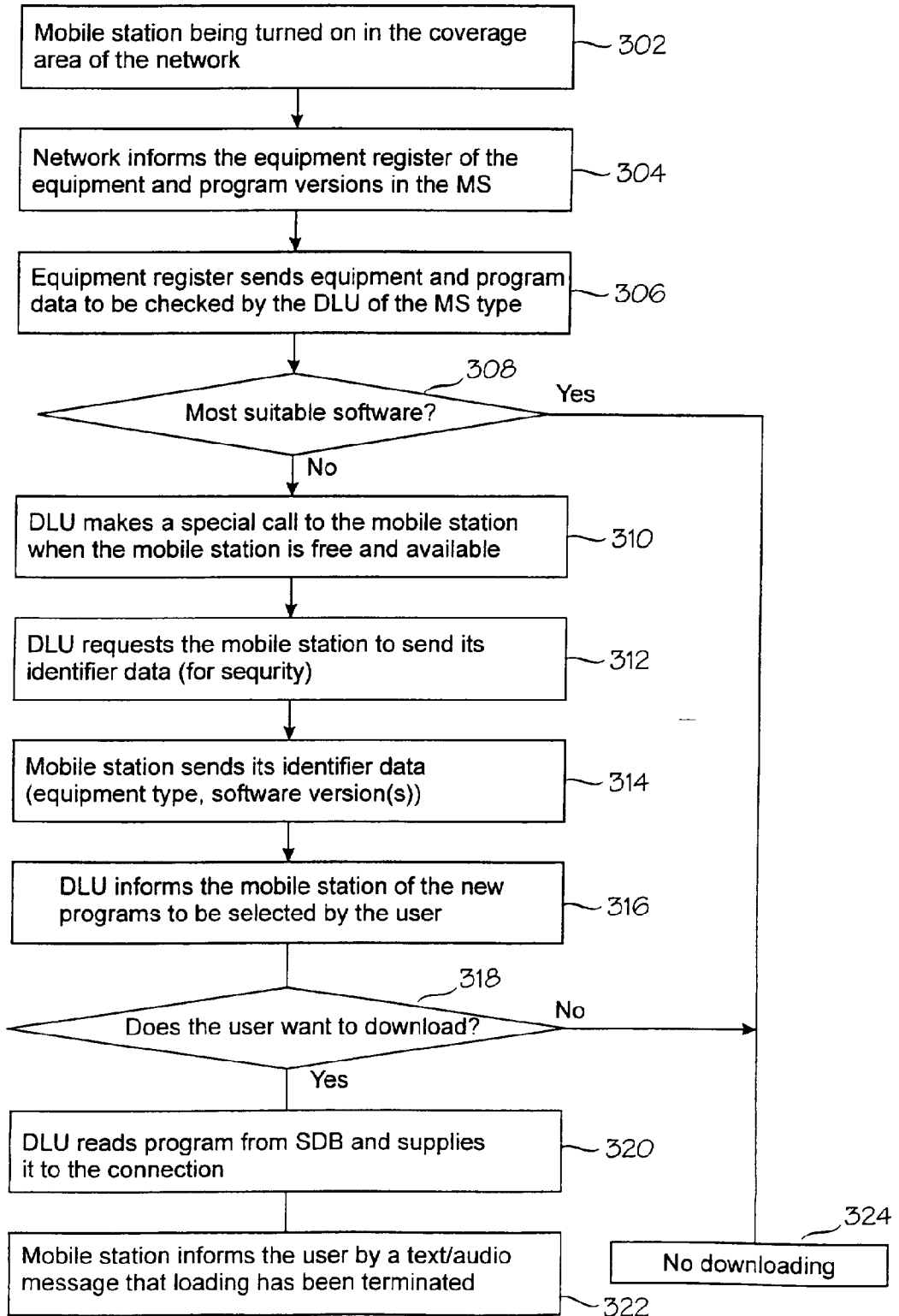


Fig. 4

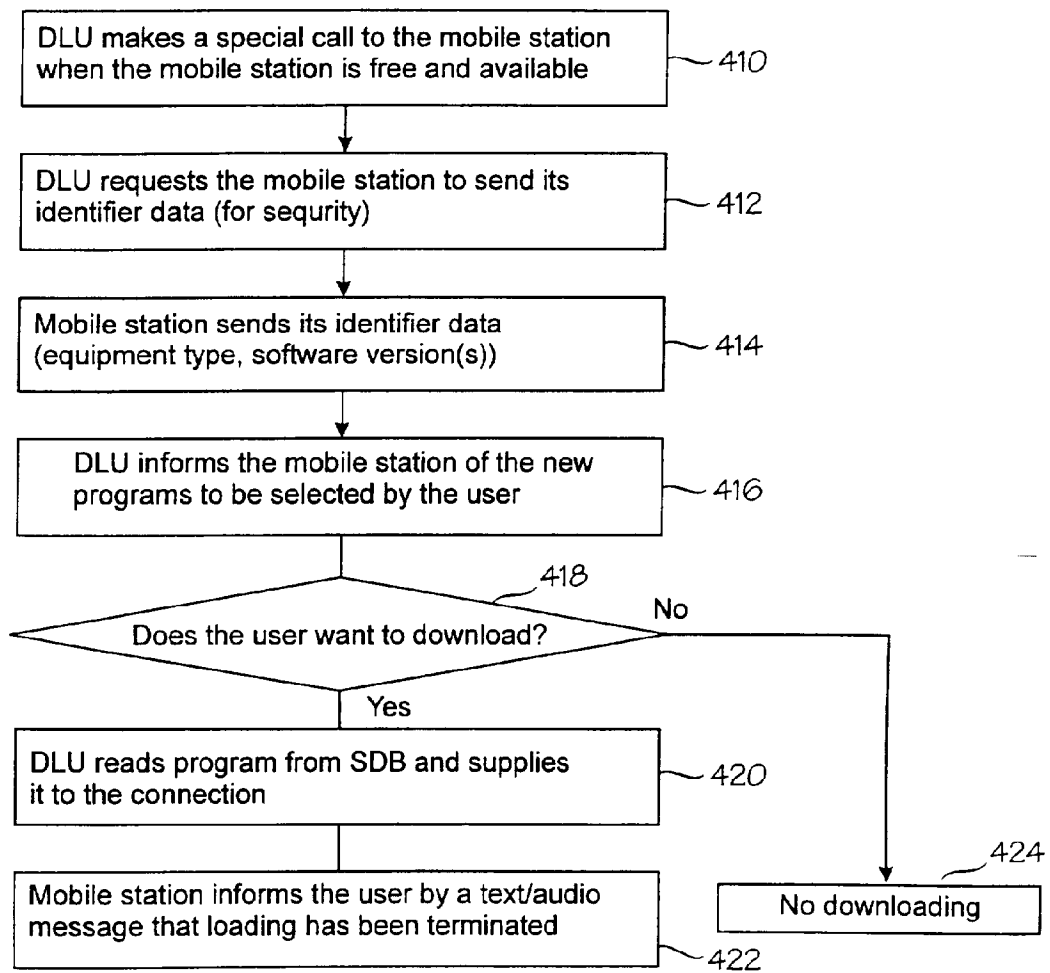
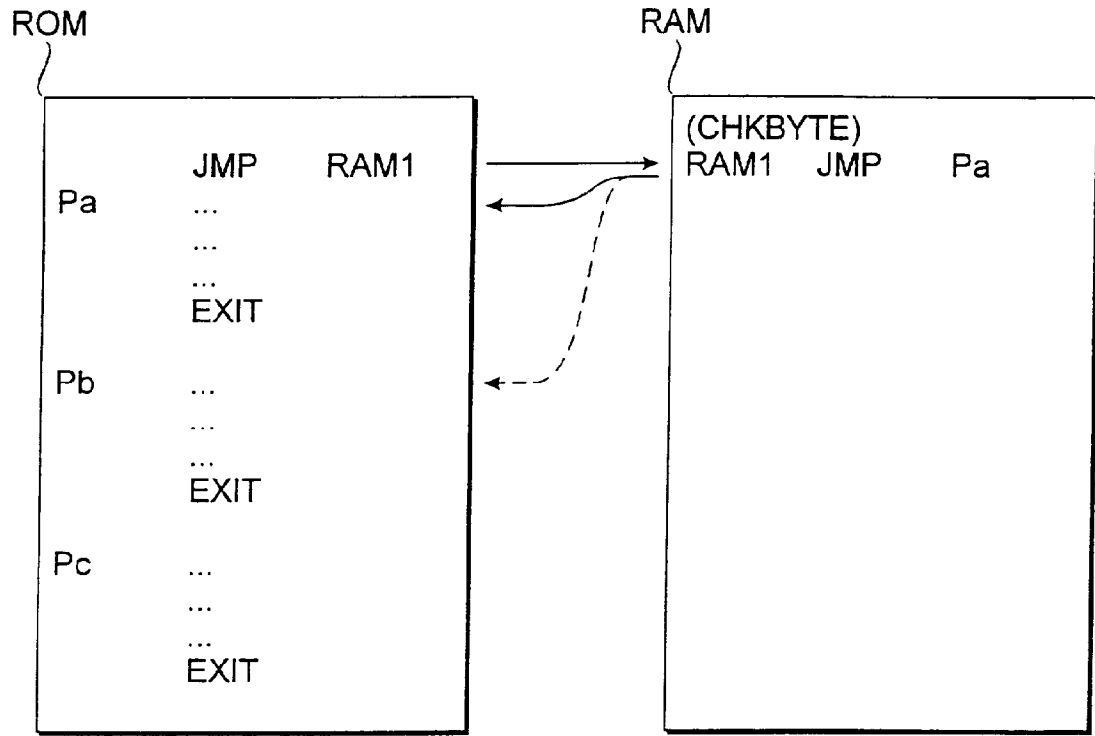


Fig. 5



6/6

Fig. 6A

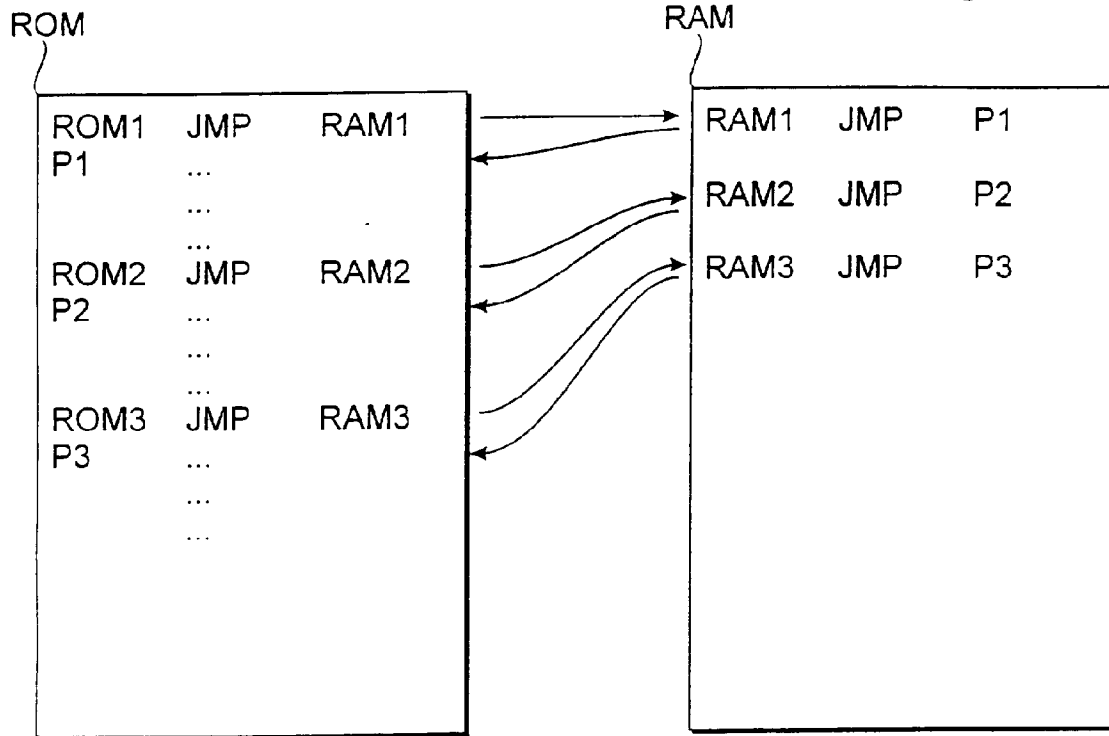
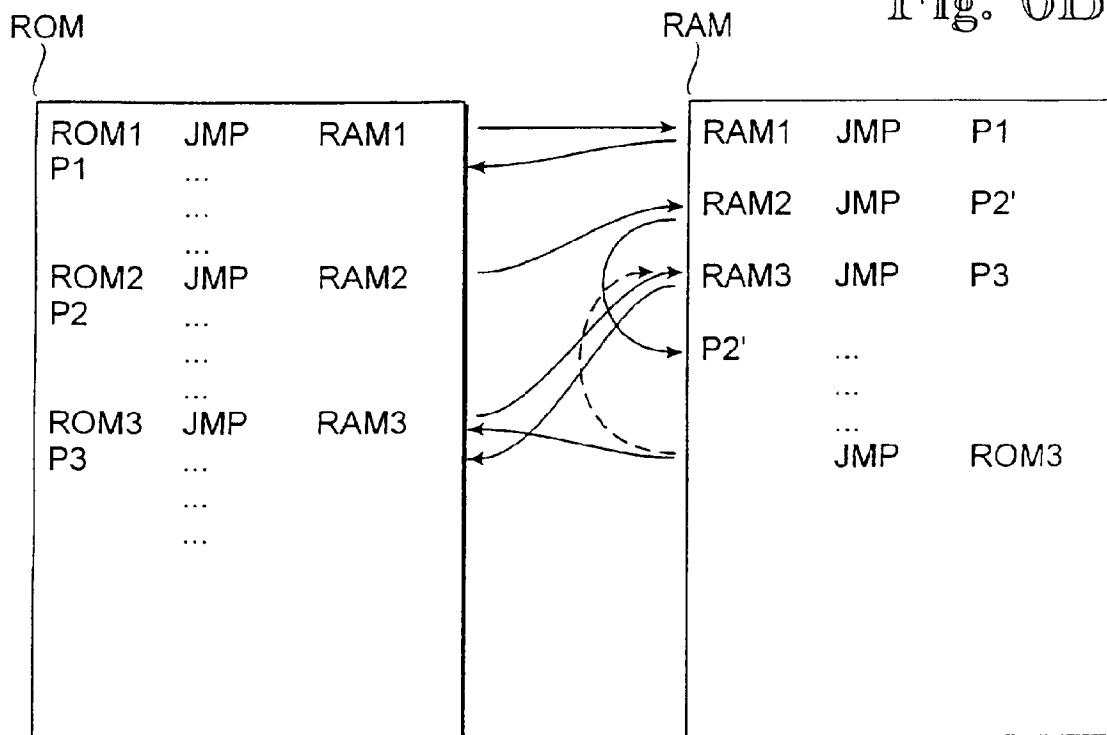


Fig. 6B



INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 96/00574

A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: H04Q 7/32 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC6: H04Q, H04B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5109403 A (MELVIN W. SUTPHIN), 28 April 1992 (28.04.92), column 6, line 4 - column 8, line 49, figures 4-7, abstract	1-7,10-12, 16,17,22
Y	--	9,18-21
X	US 5046082 A (ROBERT G. ZICKER ET AL), 3 Sept 1991 (03.09.91), column 27, line 62 - column 28, line 36; column 12, line 16 - line 24, abstract	1-8,16,17,22
Y	--	9
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
Date of the actual completion of the international search		Date of mailing of the international search report
10 March 1997		11-03-1997
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer Peter Hedman Telephone No. +46 8 782 25 00

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 96/00574

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4927789 A (THOMAS F. SHIRLEY, JR. ET AL), 22 May 1990 (22.05.90), see whole document	13,14
Y	--	18,20
X	EP 0627824 A1 (PHILIPS ELECTRONICS UK LIMITED), 7 December 1994 (07.12.94), column 3, line 52 - line 58; column 4, line 40 - column 5, line 27	13,15
Y	--	18,19
X	WO 9504425 A1 (ERICSSON GE MOBILE COMMUNICATIONS INC.), 9 February 1995 (09.02.95), page 3, line 2 - page 4, line 6; page 5, line 6 - page 6, line 26; page 9, line 5 - line 13, page 10, line 10 - line 13	16,17
Y	US 5418524 A (ROBERT D FENNELL), 23 May 1995 (23.05.95), see whole document	21
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INTERNATIONAL SEARCH REPORT
Information on patent family members

03/02/97

International application No.
PCT/FI 96/00574

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 5109403	28/04/92	NONE	
US-A- 5046082	03/09/91	NONE	
US-A- 4927789	22/05/90	NONE	
EP-A1- 0627824	07/12/94	JP-A- 6350510 US-A- 5553299	22/12/94 03/09/96
WO-A1- 9504425	09/02/95	CN-A- 1116025 DE-T- 4495679 DK-A- 32995 FI-A- 951504 FR-A- 2710224 GB-A- 2286095 GB-D- 9505959 JP-T- 8505027 SE-A- 9501027 US-A- 5418837	31/01/96 21/09/95 29/03/95 29/03/95 24/03/95 02/08/95 00/00/00 28/05/96 22/05/95 23/05/95
US-A- 5418524	23/05/95	CA-A- 2120346 EP-A- 0606448 JP-T- 7505035 WO-A- 9403879 CA-A- 2140438 CN-A- 1081778 CN-A- 1082783 EP-A- 0653126 JP-T- 7509082 US-A- 5302947 WO-A- 9403985	17/02/94 20/07/94 01/06/95 17/02/94 17/02/94 09/02/94 23/02/94 17/05/95 05/10/95 12/04/94 17/02/94

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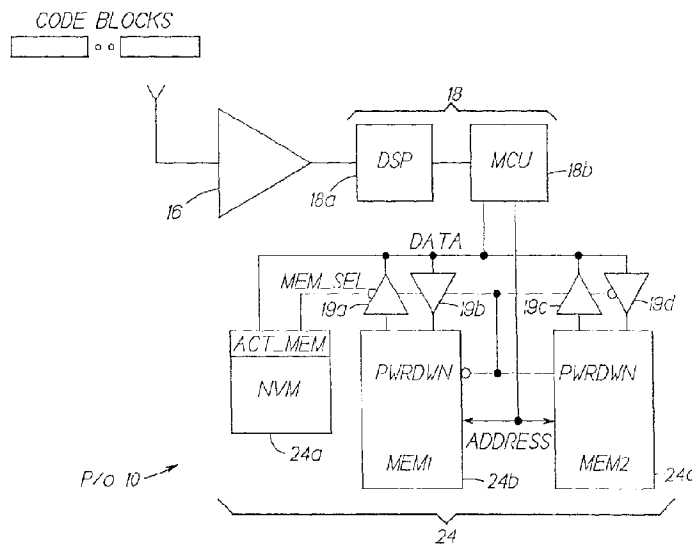
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(54) **Method and apparatus for updating the software of a mobile terminal using the air interface**

(57) A wireless user terminal (10), such as a cellular telephone, includes a transceiver (14, 16) for conducting bidirectional RF communications with a communications network (32) and a data processor (18b) for controlling the operation of the terminal. The terminal further includes (a) a first memory capable of storing a data processor program; (b) a second memory capable of storing a data processor program; (c) a memory device or register for storing a flag for indicating which of the

first and second memories is a currently Active memory, that stores a currently active data processor program, and which of the first and second memories is a currently Idle memory; and (d) circuitry for receiving another data processor program from the communications network and for storing the received another data processor program into the Idle memory. The circuitry operates while the data processor executes the data processor program stored in the Active memory.

FIG. 3



EP 0 804 046 A2

Description

This invention relates generally to radiotelephones and, in particular, to mobile terminals such as those capable of operation with a cellular network.

It is known in the prior art to download information into a wireless telephone subscriber set or radio modem through the air interface from a central site, as evidenced by U.S. Patent No. 5,297,191, "Method and Apparatus for Remotely Programming a Wireless Telephone Set" by I. Gerszberg, and by U.S. Patent No. 5,418,524, "Method and Apparatus for Over-the-Air Upgrading of Radio Modem Application Software", by R.D. Fennell.

In this latter U.S. patent a selective call receiver includes a processor and a memory. The processor receives upgrade data and upgrade installation software, upgrades the modem's application software using the upgrade data, and then deletes the upgrade installation software and upgrade data.

It can be appreciated that the ability to update the software of a mobile terminal using the air interface is a significant advantage to both network subscribers and network providers, as the update can be accomplished without requiring the subscriber to return the terminal to a dealer or service center. Using the air interface to upgrade the terminal's software enables the service provider to download new and enhanced value-added features to requesting mobile terminals, and/or to update all subscriber terminals to take advantage of revisions to the applicable air interface standard. An air interface standard can be considered to be a set of rules or protocols which must be followed to successfully operate the mobile terminal in a given network over the air (i.e., wireless radio) interface. The standard known as IS-136.1 is one such air interface standard.

It can then further be appreciated that it is important to provide an efficient and accurate technique to upgrade the operating program of a mobile terminal over the air interface so as to cause a minimum impact on the availability of the mobile terminal to the user.

It is an object of this invention to provide an efficient and accurate technique to update the operating software of a mobile terminal over the air interface.

It is another object of this invention to provide methods and apparatus for downloading operating software to a mobile terminal and for storing the downloaded software, without causing a significant disruption in service or availability of the mobile terminal.

A method of this invention is disclosed for operating a wireless mobile or user terminal having a transceiver for conducting bidirectional RF communications with a communications network. The method includes the steps of: (a) operating the terminal with a first computer program that is stored in a first memory; (b) receiving a second computer program from the communications network and storing the received second computer program into a second memory; and (c) after the second

computer program is stored in the second memory, operating the terminal with the second computer program. The step of receiving preferably receives the second computer program as a plurality of code blocks.

Further in accordance with this invention a wireless user terminal includes a transceiver for conducting bidirectional RF communications with a communications network and a data processor for controlling the operation of the terminal. The terminal further includes (a) a first memory capable of storing a data processor program; (b) a second memory capable of storing a data processor program; (c) a memory device or register for storing a flag for indicating which of the first and second memories is a currently Active memory, that stores a currently active data processor program, and which of the first and second memories is a currently Idle memory; and (d) circuitry for receiving another data processor program from the communications network and for storing the received another data processor program into the Idle memory. The circuitry operates while the data processor executes the data processor program stored in the Active memory.

Embodiments of the present invention will now be described, by way of example, of which:

Fig. 1 is a block diagram of a mobile terminal that is constructed and operated in accordance with an embodiment of this invention;

Fig. 2 is an elevational view of the mobile terminal shown in Fig. 1, and which further illustrates a cellular communication system to which the mobile terminal is bidirectionally coupled through wireless RF links; and

Fig. 3 is block diagram that illustrates in greater detail a portion of the mobile terminal of Fig. 1.

Reference is made to Figs. 1 and 2 for illustrating a wireless user or mobile terminal 10, such as but not limited to a cellular radiotelephone or a personal communicator, that is suitable for practicing this invention. The mobile terminal 10 includes an antenna 12 for transmitting signals to and for receiving signals from a base site or base station 30. The base station 30 is a part of a cellular network comprising the BMI 32 that includes a Mobile Switching Center (MSC) 34. The MSC 34 provides a connection to landline trunks when the mobile terminal 10 is registered with the network.

The mobile terminal includes a modulator (MOD) 14A, a transmitter 14, a receiver 16, a demodulator (DEMOD) 16A, and a controller 18 that provides signals to and receives signals from the transmitter 14 and receiver 16, respectively. These signals include signalling information in accordance with the air interface standard of the applicable cellular system, and also user speech and/or user generated data.

A user interface includes a conventional earphone

or speaker 17, a conventional microphone 19, a display 20, and a user input device, typically a keypad 22, all of which are coupled to the controller 18. The keypad 22 includes the conventional numeric (0-9) and related keys (#,*) 22a, and other keys 22b used for operating the mobile terminal 10. These other keys 22b may include, by example, a SEND key, various menu scrolling and soft keys, and a PWR key.

The mobile terminal 10 also includes various memories, shown collectively as the memory 24, wherein are stored a plurality of constants and variables that are used by the controller 18 during the operation of the mobile terminal. For example, the memory 24 stores the values of various cellular system parameters and the number assignment module (NAM). An operating program for controlling the operation of controller 18 is also stored in the memory 24 (typically in a ROM device). The memory 24 may also store data, including user messages, that is received from the BMI 32 prior to the display of the messages to the user. The construction of the memory 24, and its interface to the controller 18, is described in greater detail below with reference to Fig. 3.

The mobile terminal 10 also includes a battery 26 for powering the various circuits that are required to operate the terminal.

It should be understood that the mobile terminal 10 can be a vehicle mounted or a handheld device. It should further be appreciated that the mobile terminal 10 can be capable of operating with one or more air interface standards, modulation types, and access types. By example, the mobile terminal may be capable of operating with any of a number of air interface standards, including but not limited to IS-136, GSM, EIA/TIA 627, IS-91 and IS-95 (CDMA). Narrow-band AMPS (NAMPS), as well as TACS, mobile terminals may also benefit from the teaching of this invention. It should thus be clear that the teaching of this invention is not to be construed to be limited to any one particular type of mobile terminal or air interface standard.

The operating program in the memory 24 may include routines to present messages and message-related functions to the user on the display 20, typically as various menu items. The memory 24 also includes routines for implementing the method described below in relation to Fig. 3.

Reference is now made to Fig. 3 for showing a portion of (P/O) the mobile terminal 10 of Fig. 1 in greater detail. More particularly, the controller 18 is shown to be comprised of a digital signal processor (DSP) 18a and a microprocessor control unit (MCU) 18b. The DSP 18a is connected to the output of the receiver 16 and functions to demodulate received transmissions, decode any encoded voice or other transmissions, and to generally perform high speed signal processing of the received transmissions. The MCU 18b is connected to the DSP 18a, and operates on the decoded information to generally control the operation of the terminal 10 to

place and receive calls, to operate the keypad 22 and the display 20, to monitor the charge state of the battery 26, and other required functions. The software routines executed by the MCU 18b to operate the mobile terminal 10 are referred to herein as its operating program. A typical size of the operating program for a modern mobile terminal, such as a cellular telephone, is several hundred kilobytes.

The memory 24 is shown to include a non-volatile memory (NVM) 24a, such as an EEPROM, in which is stored the terminal's NAM(s), status flags, and other information that is required to be maintained when the terminal is powered down.

In accordance with this invention the memory 24 also includes a first memory (MEM1) 24b and a second memory (MEM2) 24c, both of which are addressable through an address bus sourced by the MCU 18b. The memories 24b and 24c are provided to store the operating program for the MCU 18b. The memories 24b and 24c may be conventional Flash-type memories that can be programmed in-situ, typically by providing an appropriate programming voltage that is derived either from the terminal's normal power supply or from an external power adapter/recharger. The memories 24b and 24c can be, by example, one Flash memory chip that is divided into two memory banks (each of which is considered as a separate memory for the purposes of this invention), or can be two separate Flash memories chips. In either case, one of the memories is at any given time designated as the Active memory, while the other is designated as the Idle memory. The MCU 18b executes program instructions out of the Active memory. Further in accordance with this invention the MCU 18b is enabled to load a received operating program into the currently Idle memory while continuing to operate the mobile terminal 10 from the Active memory. When the mobile terminal 10 is first constructed an operating program is preferably stored into one or the other of the memories 24b or 24c.

The NVM 24a stores an Active Memory (ACT_MEM) flag for specifying which of the memories 24b or 24c is the currently Active memory. The Active Memory flag can be a single bit. The state of the Active Memory flag can be considered as a memory select (MEM_SEL) signal used for enabling one of the memories 24b or 24c for being read by the MCU 18b, while enabling the MCU 18b to store an operating program into the other memory. This function is indicated schematically by the buffers 19a-19d (active high) which couple the memories 24b and 24c to the MCU data bus. By example, assume that when the Active Memory flag is zero the MEM 1 24b is specified as the Active memory, and when the Active Memory flag is a one the MEM2 24c is specified as the Active memory. When the Active Memory flag is zero then the buffer 19a is enabled for reading out of MEM1 24b, the buffer 19d is enabled for writing into MEM2 24c, and the buffers 19b and 19c are disabled. Conversely, when the Active Memory flag is a

one buffers 19a and 19d are disabled, buffer 19c is enabled for reading out of MEM2 24c, and buffer 19b is enabled for writing into MEM1 24b. The Idle memory, when not being loaded, may be powered down to conserve battery power.

It should be realized that the interface circuitry shown in Fig. 3 is not intended to represent an actual hardware implementation, but is provided to aid in the conceptual understanding of the invention. Those skilled in the art may devise a number of suitable hardware implementations for interfacing the memories 24b and 24c to the MCU 18b, when guided by the teaching of this invention.

As an example of the operation of the invention, assume that the MEM1 24b stores a currently valid operating program for the MCU 18b, and that the Active Memory flag is set to zero. The mobile terminal 10 then receives a message from the BMI 32 that a download of a new or revised operating program is to occur. Subsequently the BMI 32 begins transmitting the new or revised operating program to the mobile terminal 10 as a plurality of code blocks. By example, the code blocks can be sent using Short Message Service (SMS) messages, or can be sent over a data channel, or can be sent using System Operator Code (SOC) signalling, all of which are specified for use in the standard referred to as IS-136. Each code block is comprised of a plurality of machine-readable instructions, data, and the like that are required by the microprocessor which implements the MCU 18b to execute the mobile terminal operating program. Each code block also preferably includes some type of data integrity portion, such as cyclic redundancy check (CRC) syndrome bits and/or parity bits. The correct receipt of each code block may be required to be acknowledged (ACKed) by the MCU 18b before the next code block is transmitted by the BMI 32, or the MCU 18b may send a negative acknowledgement (NAK) only when an erroneous and uncorrectable code block is received. The received code blocks are passed through the DSP 18a to the MCU 18b, which stores the received code blocks into the MEM2 24c. After the new or revised program is completely received, the MCU 18b changes the Active Memory flag in the NVM 24a to a one, thereby designating MEM2 24c as the Active memory and MEM1 24b as the Idle memory. The MCU 18b then resets itself to an initial state and begins executing code from the memory 24c.

The previous program in the now-idle MEM1 24b can be erased by the MCU 18b, or it can be left intact until the next program download occurs, at which time it can be erased or simply written over. In some applications it may be desirable to leave the previous program stored in the Idle memory in case that it later becomes desirable to revert back to the previous operating program. By example, in the unlikely event that it is later discovered that the most recently loaded operating program was defective, the mobile terminal 10 could be instructed by the BMI 32 to revert to the previous program

for operation. This would be accomplished by simply changing the state of (i.e., toggling) the Active Memory flag.

It is also within the scope of the invention to store in either the NVM 24a or the Active memory 24b or 24c, an indication of the revision level of the currently active program, as well as the source of the program, the time and date at which the program was downloaded, and any other related information. For the case where the previous program is not erased, this identification information could also be retained. The stored program identification information may be subsequently interrogated from the BMI 32.

It is within the scope of the invention to provide the download control program itself in, by example, the NVM 24a, or to include it as part of the currently active program. That is, a download control program module of the currently active program is used to download the new program version into the Idle memory.

The downloaded program may be compressed prior to transmission by the BMI 32, and then decompressed by the mobile terminal 10 prior to storage into the currently Idle memory 24b or 24c. A number of suitable data compression and decompression techniques are well known in the art.

It can be appreciated that during a program download the mobile terminal 10 can remain registered with the network, can continue to make and receive calls, can send and receive messages, and can otherwise operate in a normal fashion. That is, the code blocks may be sent to the mobile terminal 10 over an extended period of time, during which the mobile terminal 10 continues to operate out of the currently Active memory 24b or 24c. It is within the scope of this invention, when operating in this mode, that the code blocks may be transmitted to the mobile terminal 10 even during an ongoing voice call as a background task. For example, code blocks may be sent on a digital speech channel during pauses in a conversation. Of course, the proper signalling and protocol must be first established between the mobile terminal 10 and the BMI 32 to implement this feature.

In order to download the new or revised operating program in a rapid fashion, it is also within the scope of this invention to place the mobile terminal 10 into a dedicated program download mode of operation, wherein the code blocks are continuously sent by the BMI 32 and received by the mobile terminal 10. When operating in this mode the mobile terminal 10 may be inhibited from receiving and originating calls and messages. However, the dedicated download mode can be terminated automatically if the user makes a call to an emergency service number. It may also be desirable to enable the user to terminate the dedicated download mode of operation so as to make a call, and to then reenter the dedicated download mode at the termination of the call. In this case the BMI 32 would begin by sending the next code block in the sequence of code blocks, at the point where the download operation was interrupted.

In either mode of operation the mobile terminal 10 continues to operate out the memory 24b or 24c that stores the currently active program until the BMI 32 indicates that the program download operation is completed. When the download operation is completed, the mobile terminal 10 is enabled to toggle the Active Memory flag, and to subsequently begin operating with the most-recently downloaded program. It should be noted that the mobile terminal 10 need not immediately begin operating with the new program. By example, a particular service provider may download a new operating program to several thousand mobile terminals over a period of days or weeks, and then later send a message to all of the mobile terminals to instruct them to begin using the new program.

In the various embodiments of this invention the new or revised program download operation can be initiated by a call placed from the mobile terminal 10 to the service provider, or vice versa. The program download can be accomplished in a point-to-point mode, that is, to one specific mobile terminal, or in a broadcast mode wherein a plurality of mobile terminals simultaneously receive the downloaded program.

It should be realized that a given operating program will typically be specific to a particular type of mobile terminal (e.g., manufacturer, model number, version, etc.), and will be written so as to be compatible with the particular microprocessor that implements the MCU 18b, the particular hardware and software architecture of the terminal, etc. As such, and by example, in order to implement one or more new network features the BMI 32 may be required to download a plurality of different versions of the new program, with each particular version being transmitted to a particular class or type of mobile terminal.

It should be apparent that while the invention has been described in the context of a number of exemplary embodiments thereof, a number of modifications to these embodiments may occur to one skilled in the art. For example, each of the memories 24b and 24c may be comprised of a plurality of memory chips, depending on the capacity of available memory chips and the size of the operating program. Thus, it will be understood by those skilled in the art that changes in form and detail may be made to the above described embodiments without, however, departing from the scope of the invention.

Claims

1. A method for operating a wireless user terminal (10) having a transceiver (14,16) for conducting bidirectional RF communications with a communications network (32), comprising the steps of:

operating the terminal (10) with a first computer program that is stored in a first memory (24b);

the step of operating including a step of receiving a second computer program from the communications network (18) and storing the received second computer program into a second memory (24c); and

after the second computer program is stored in the second memory (24c), operating the terminal (10) with the second computer program.

2. A method as set forth in claim 1, wherein the step of receiving receives the second computer program as a plurality of code blocks.

3. In a communications system comprising a communications network (32) and a plurality of wireless user terminals (10) each comprising a transceiver (14,16) for conducting bidirectional RF communications with the communications network (32) and a data processor (18b) for executing a stored program for controlling the operation of the terminal (10), a method for operating the system comprising the steps of:

operating each of the plurality of terminals (10) with a first computer program that is stored in a first memory (24b);

transmitting a second computer program from the communications network (32) to at least one of the plurality of terminals (10); and

in at least one of the plurality of terminals (10), receiving the second computer program from the communications network (32) and storing the received second computer program into a second memory (24b).

4. A method as claimed in any preceding claim wherein the step of receiving includes the step of temporarily terminating the receipt of the second computer program in the event an operator of the mobile terminal requires the use of the transceiver.

5. A method as set forth in claim 3 or 4, wherein the step of transmitting simultaneously transmits the second computer program to at least two of the plurality of terminals (10).

6. A method as set forth in claim 3 or 4, wherein the step of transmitting is accomplished in response to a call made by a terminal (10) to the communications network (32).

7. A method as set forth in claim 3 or 4, wherein the step of transmitting is accomplished in response to a call made by the communications network (32) to a terminal (10).

8. A method as set forth in claim 4, wherein the step of storing includes a step of changing a value of a flag for indicating which of the first and second memories is a currently Active memory that stores the received second computer program. 5

9. A method as set forth in claim 4, and further comprising the steps of:

receiving a command from the communications network (32) to activate the stored second computer program; 10

in response to the command, setting a flag to indicate that the stored second computer program is a currently active computer program; and 15

operating the terminal (10) with the stored second computer program. 20

10. A method as set forth in claim 9, and further comprising the steps of:

receiving a second command from the communications network (32) to deactivate the stored second computer program and to reactivate the first stored computer program; 25

in response to the command, setting a flag to indicate that the stored first computer program is a currently active computer program; and 30

operating the terminal (10) with the stored first computer program. 35

11. A method as set forth in claim 3 or 4, and further comprising a step of terminating the step of transmitting in response to a user originating a call from the terminal (10). 40

12. A method as set forth in claim 11, wherein the step of transmitting is terminated in response to the user originating a call to a predetermined telephone number. 45

13. A wireless user terminal comprising a transceiver for conducting bidirectional RF communications with a communications network and a data processor (18b) for controlling the operation of the terminal (10), said terminal (10) further comprising: 50

a first memory (24b) capable of storing a data processor program; 55

a second memory (24c) capable of storing a data processor program;

means (24a) for storing a flag for indicating which of the first and second memories is a currently Active memory that stores a currently active data processor program and which of the first and second memories is a currently Idle memory; and

means for receiving another data processor program from the communications network (32) and for storing the received another data processor program into the Idle memory, while the data processor (18b) executes the data processor program stored in the Active memory.

14. A terminal as claimed in claim 13, wherein said receiving means includes means for temporarily terminating the receipt of the another computer program in the event an operator of the mobile terminal requires the use of the transceiver.

15. A method of upgrading a wireless terminal having first and second memories, the method comprising:

operating the terminal according to first instructions in the first memory;

receiving second instructions over the air interface;

storing the second instructions in the second memory; and

operating the terminal according to the second instructions stored in the second memory.

16. A wireless terminal comprising:

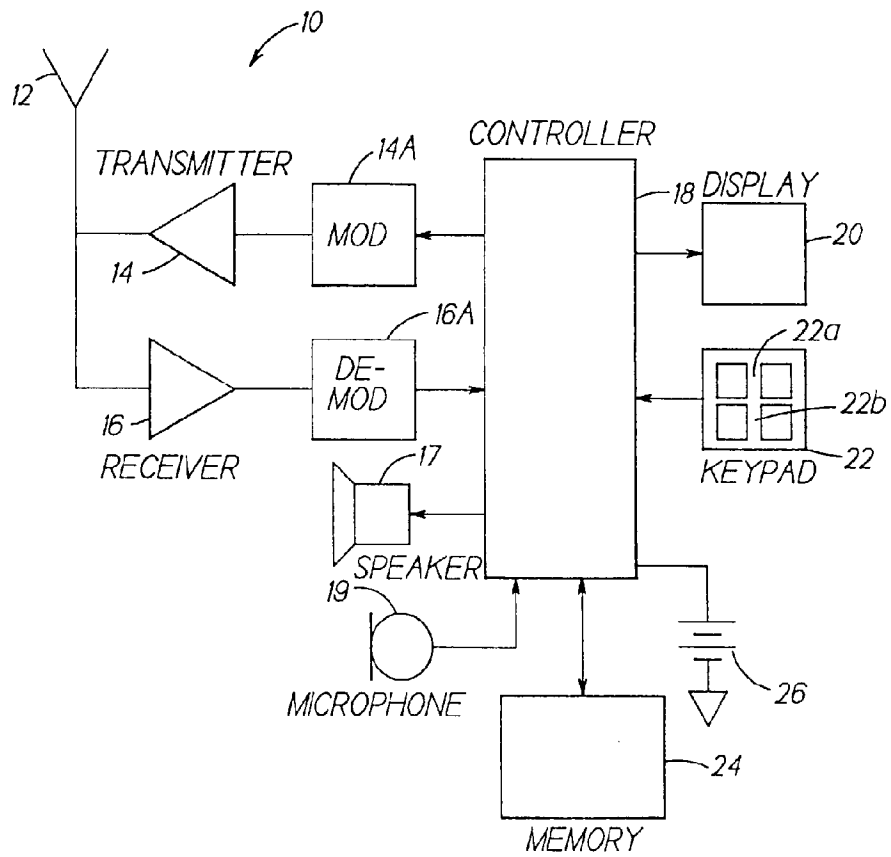
a first memory for storing first terminal operating instructions;

means for receiving second terminal operating instructions from the air interface;

a second memory for storing the second terminal operating instructions; and

means for selecting between the first and second terminal operating instructions.

FIG. 1



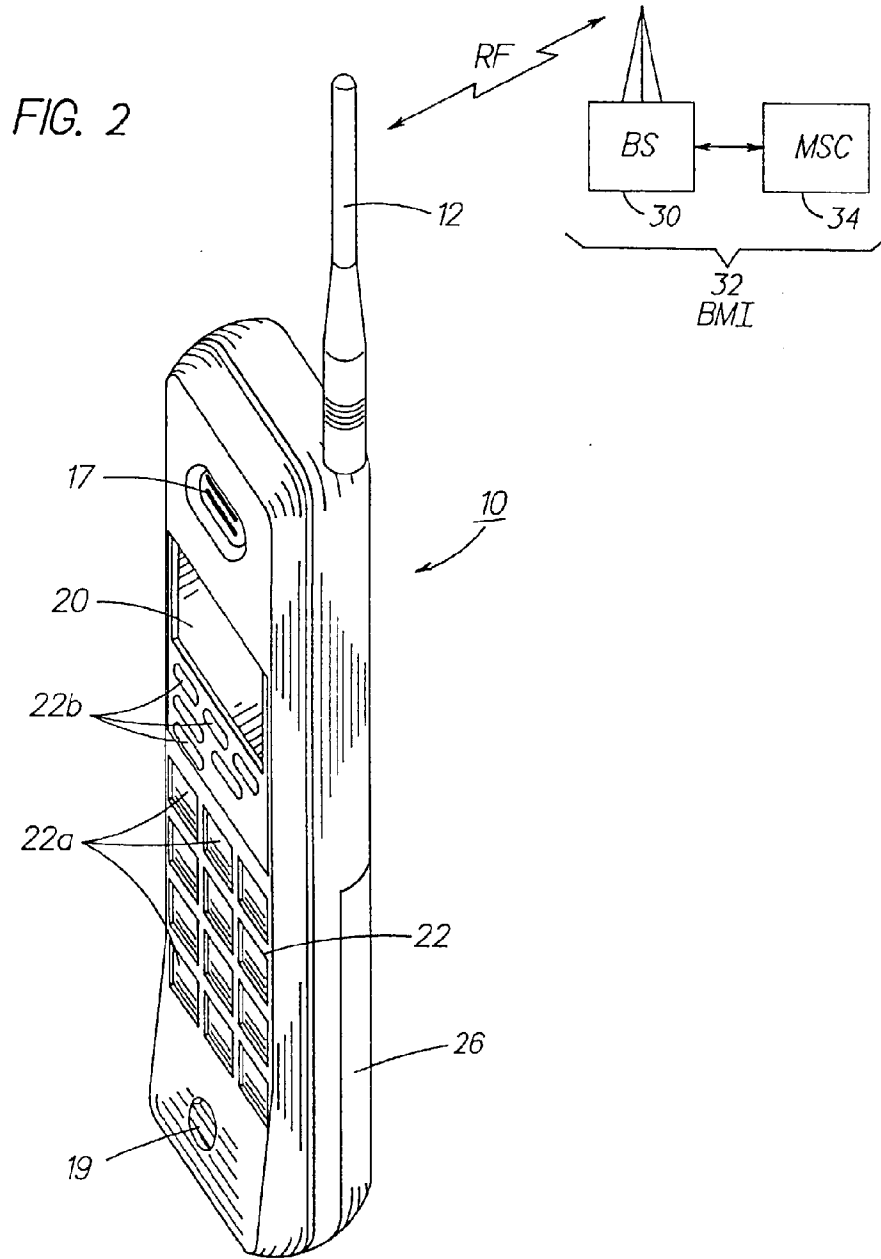
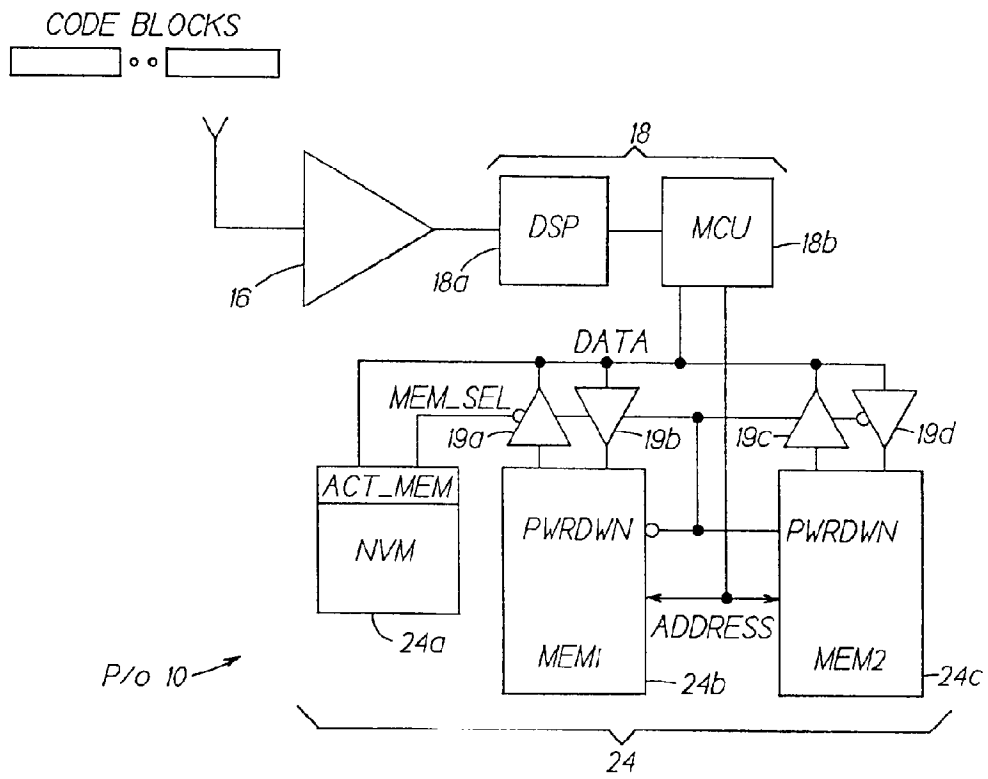


FIG. 3



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(54) **Configuring a radio unit**

(57) In a radio communications system, a method of configuring a first radio unit involves downloading data blocks from a second memory element of a second radio unit into a computer 152, via radio service software (RSS), processing the data blocks in the computer 163 and partitioning at least product specific data blocks into a first memory block of the computer 175 and at least common data blocks, such as channel data and bandwidth, into a second memory block of the computer 170. The common data blocks are then uploaded from the second memory block of the computer into a first memory element of the first radio unit 172. For system compatibility, the data is preferably transferred via ASCII characters.

This method enables common data programming of one radio communication product using the data stored in a different product and thus reduces the amount of information stored, and time taken, for the reconfiguration of radio units such as mobile phones.

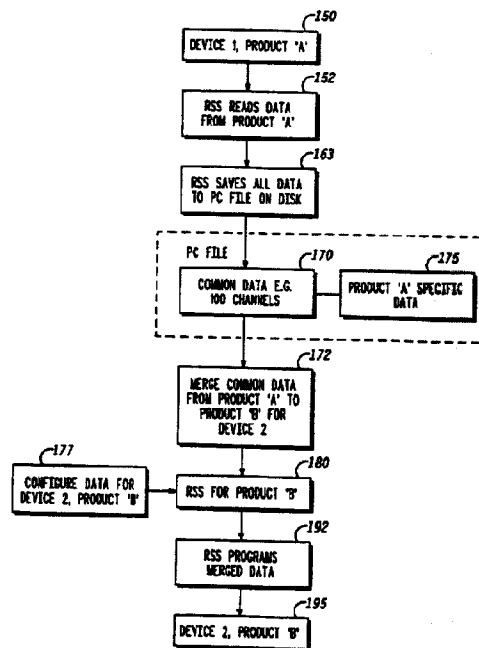
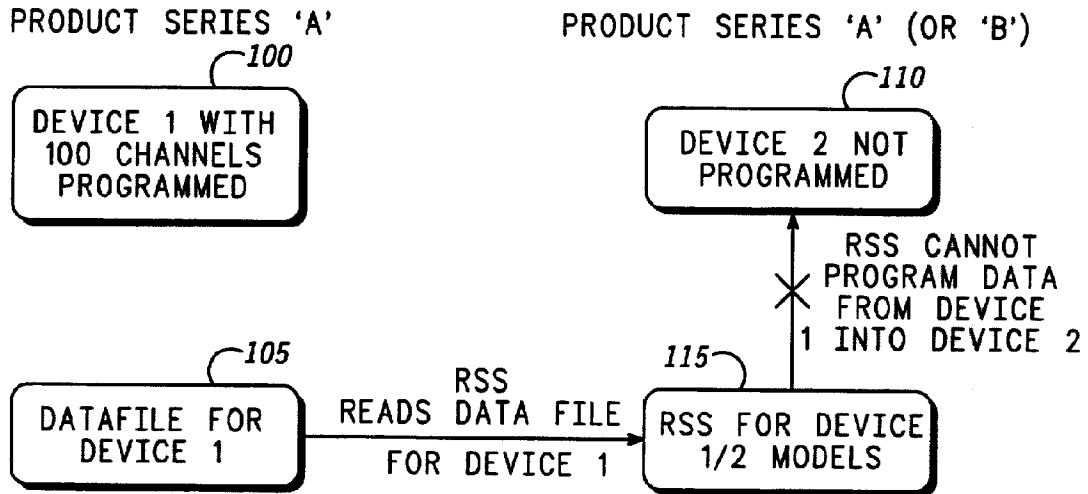


FIG. 3

GB 2 313 519 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.



-PRIOR ART-

FIG. 1

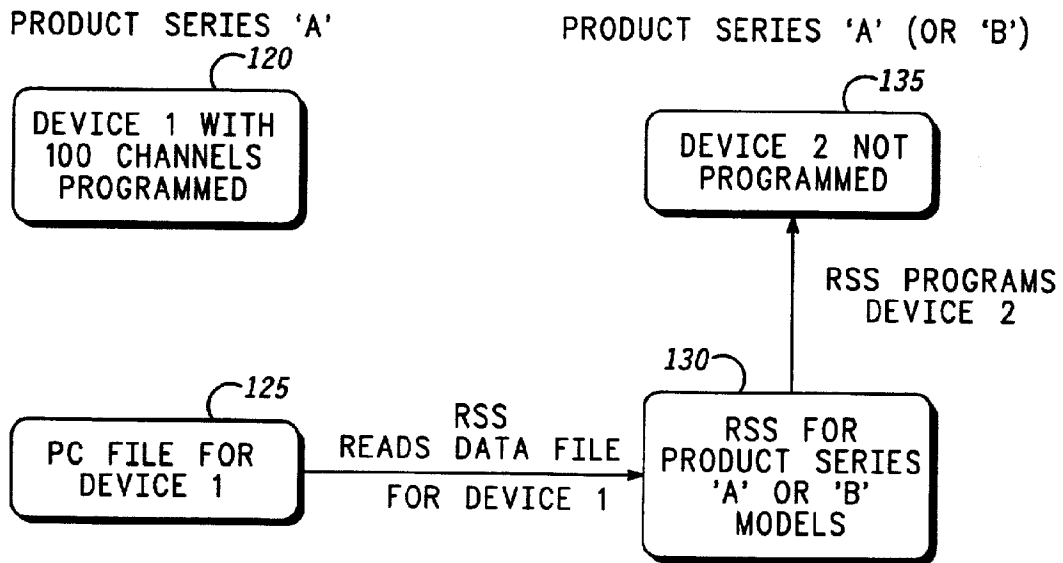


FIG. 2

2 / 2

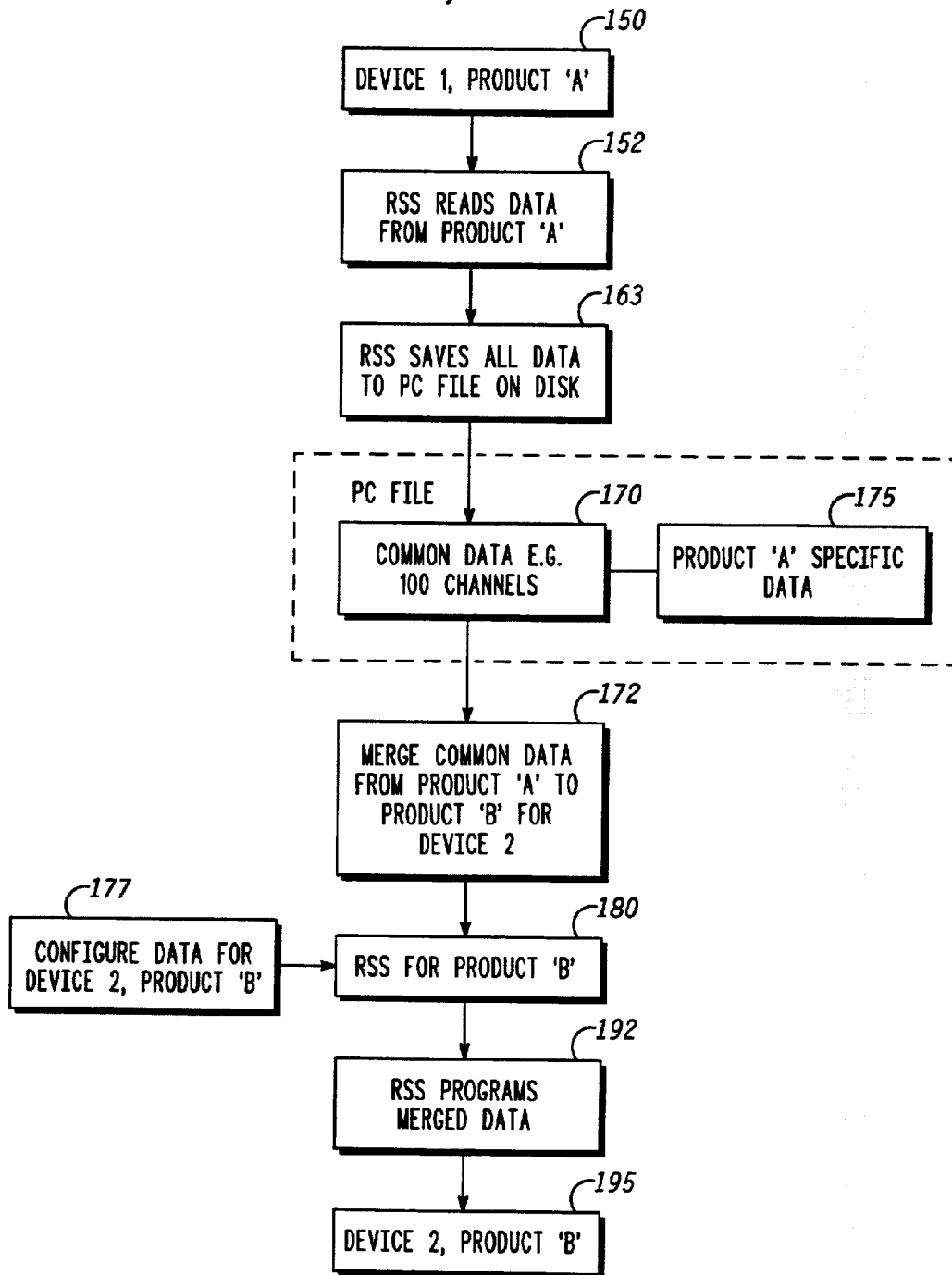


FIG. 3

METHOD FOR CONFIGURING RADIO UNIT

Field of the Invention

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This invention relates to the configuration of radio units via a memory element. The invention is applicable to, but not limited to, the re-programming of flash devices in wireless communication units using radio service software.

10 Background of the Invention

Most wireless communication units contain programmable memory elements. Such programmable memory elements often contain information about the communication unit model and/or specific data relating to the communication unit. With mobile and portable radio units, the specific data in the memory element is used to control the functionality of the radio unit. Programming the memory element is performed via a computer (PC) downloading or reading information of a radio unit via a 'codeplug' of the radio unit, where information in the memory element can be read, modified and (re-)written by using Radio Service Software (RSS) over a serial connection to the radio unit. This data can also be stored on a disk for back up purposes.

20 In the past, every 'codeplug file' on a disk could only be used for one radio unit (the radio unit with the same model number as in the file). Every attempt to read a file of a radio unit having a different model number to the one stipulated in the codeplug file is prevented as the structure of the data is different.

25 For this reason, it is necessary to enter the complete data for each and every radio unit into the respective codeplug file, even if their data is very similar, for example, entering the complete channel data for every radio unit, even if their data differed only in the power level.

30 FIG. 1 highlights the problems with the prior art programming of radio units via a codeplug file. A first radio unit 100, of product series 'A' has been programmed with data including 100 allocated frequency channels. A second radio unit 110, of product series 'A' has not been programmed. A RSS is able to read a first data file 105 for the first radio unit 100, but not re-use relevant data blocks of the first data file 105, that are equally applicable to a second data file 115 of the second radio unit 110. As shown, it is not possible to use

common data of that radio product series, stored in say, a first radio unit in the re-programming of the common data into a second radio unit.

The data file for the Motorola Storno CQM6000 (Trade Mark) radio unit uses a readable (ASCII) data format. This data file is structured in a functional manner, e.g. all channel related data for every variation of radio product is organised in a block structure, irrespective of whether it is product specific or not.

Some radio service software packages have the capability to 'clone' radio data. This process copies data from one radio unit into one or more other radio units. This process works only with radio units of the same product series and identical models.

This invention seeks to provide a method of programming such communication units, to mitigate the problems of excessive storage of information as highlighted above.

1 5

Summary of the Invention

In a preferred embodiment of the present invention, a method of configuring a first radio unit is provided. The method includes the steps of reading data blocks from a second memory element of a second radio unit into a computer, processing the data blocks in the computer and partitioning at least product specific data blocks into a first memory block of the computer and partitioning at least common data blocks into a second memory block of the computer. The at least common data blocks from the second memory block of the computer are then programmed into a first memory element of the first radio unit.

Advantageously, the partitioning of data blocks into generic functional portions enables a first radio unit to be programmed using data from a second radio unit when the second radio unit does not belong to the same product series or product type as the first radio unit.

In addition, data re-use of radio units is maximised and the independent nature of the configuration method reduces radio configuration and re-configuration times and memory requirements.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the drawings.

3 5

Brief Description of the Drawings

5 FIG. 1 is a block diagram of a prior art limitation of radio service software programming.

FIG. 2 is a block diagram showing an arrangement of radio service software programming according to a preferred embodiment of the invention.

10 FIG. 3 is a flow chart showing a method of configuring a first radio unit with common data from a second radio unit, according to a preferred embodiment of the invention.

Detailed Description of the Drawings

15 Referring first to FIG. 2, a block diagram showing an arrangement of radio service software programming according to a preferred embodiment of the invention. The first radio unit 120, of product series 'A' has been programmed with data including, amongst other parameters say, 100 allocated frequency channels. A second radio unit 135, of product series 'A' or 'B' has not been programmed or requires re-programming to join a different
20 radio group. A RSS is able to read a first data file 125 for the first radio unit 120, and re-uses relevant data blocks of the first data file 125, that are equally applicable to a second data file 115 of the second radio unit 110. It is now possible to use common data of that radio product series, stored in say, a first radio unit in the re-programming of the common data into a second radio unit.

25 Advantageously, the new wireless communication device data interchange file (data block) structure is product independent although it contains all the data required for specific modes of operation. The common data block is used to interchange the common part of the radio unit's data between totally different radio units, independent to their particular hardware
30 platforms. It is now possible to merge, amongst other data, channel data from mobile radios with the products specific data of a portable by programming the portable with the common part of the channel data of the mobile radio. The common data block is independent from the structure of the physical storage of a device and also independent from the user interface of a RSS. Due
35 to the fact that the data format is no longer product specific, setting up the factory programming is much easier. The common data block being reused for every new product. It is within the contemplation of the invention that the common data block can be further sub-divided into common data sub-blocks

and heirarchically organised such that portions of the common data are retrieved, read, merged or according to any other data functioning process, as desired, e.g. sub-dividing the common data block to mobile and portable power levels should they be different to each other, but common to all other mobile and portable radio units.

Referring to FIG. 3, a flow chart is provided showing a method of configuring a first radio unit with common data from a second radio unit, according to a preferred embodiment of the invention. The method includes the steps of a radio service software (RSS) reading data from a first radio unit of product type 'A', as shown in step 152. The RSS saves all the data to a memory element, as in step 163. The data is stored in at least two distinct areas on say, a computer: at least one common data block, as shown in step 170 and a radio unit specific data block, as shown in step 175. The common data from the first radio unit is then merged (programmed) to the second radio unit, as in step 172. If required, the RSS programs the radio unit specific data blocks of the first radio unit as shown in step 177 and step 180. The data for the first radio unit is merged, as in step 192, and the first radio is programmed for operation, as shown in step 195.

In the preferred embodiment of the invention, the common data blocks are in ASCII format and may include any or all of the following: frequency channel data, channel numbers, channel names, channel bandwidth, pre-emphasis, de-emphasis, frequency deviation, noise canceller data, signalling data, squelch type, PL/DPL data, programming data, push-to-talk time out data and power level data. The product specific data blocks may include any or all of the following: system data including conventional, trunking or secure, alignment data, device specific data and interface data.

A typical scenario where the preferred embodiment of the invention is especially advantageous is where mobile 'A' and base 'A' have different hardware, application software and a different codeplug layout to mobile 'B' and base 'B'. Radio system 'A', with base 'A', and mobile 'A' radio units, plans to expand its coverage area and/or number of radio users by combining additional units of base 'B' and mobile 'B' design into the system. All radio units in the system must use the same set of frequency channels and signalling features by which to communicate. Previously, a dealer uses the RSS for the new base 'B' and types in all such common data (channel data, signalling parameter etc.). This may well introduce human error into the programming function. Then the dealer programs the data into the each of the

base 'B' designs. For the mobile 'B' radio units, the dealer uses the RSS for the mobile 'B' and dealer programs the data into the each of the mobile 'B' designs.

5 Using the preferred embodiment of the invention, the dealer now only requires the "common" data from any of the base 'A' or mobile 'A' radio units to program all of the base 'B' or mobile 'B' radio units. Any special device data may then be added if required, which may not be the case, resulting in a much more streamlined process of re-configuring the radio units. It is within the contemplation of the invention that it is possible to read out the common data direct from a radio unit (not using a data file stored on disk or computer). The
10 selection of the ASCII character set makes it possible to transfer and read data from every computer platform. Hence, the data file is a fully transparent raw ASCII file which can be loaded with every editor or text tool.

In addition, the time to set-up the data in a radio unit is reduced, by using a common file format for all devices and reusing common data. The
15 common data blocks are reused for all programming tools. This is performed with the RSS and the factory programmer. Both tools use exactly the same source and will still operate on different hardware platforms. Significantly, this invention also reduces any development time associated with designing the factory programmer and ensures compliance between the different
20 programming tools.

Thus a method of configuring communication units is provided that reduces the amount of information storage, typically required, in radio service software applications, speeds up a programming or re-configuration time and allows significant re-use improvements over previous radio service software
25 processes.

Claims

1. A method of configuring a first radio unit, the method comprising the steps of:
 - 5 reading data blocks from a second memory element of a second radio unit into a computer;
 - processing the data blocks in the computer;
 - partitioning at least product specific data blocks into a first memory block of the computer;
 - 10 partitioning at least common data blocks into a second memory block of the computer;
 - programming the at least common data blocks from the second memory block of the computer into a first memory element of the first radio unit.
- 15 2. The method of configuring a first radio unit according to claim 1, wherein the first radio unit does not belong to a same product series or product type as the second radio unit.
- 20 3. The method of configuring a first radio unit according to any of the preceding claims, wherein the method is performed during a factory set up of the first radio unit using radio service software and independent use of common data blocks and product specific data blocks reduces a set-up time of the first radio unit.
- 25 4. The method of configuring a first radio unit according to any of the preceding claims, wherein the common data blocks are in ASCII format and include at least one of the following: frequency channel data, channel numbers, channel names, channel bandwidth, pre-emphasis, de-emphasis, frequency deviation, noise canceller data, signalling data, squelch type, PL/DPL data, programming data, push-to-talk time out data and power level data.
- 30 5. The method of configuring a first radio unit according to any of the preceding claims, wherein the common data blocks are heirarchically
- 35 organised to provide common data sub-blocks.

6. The method of configuring a first radio unit according to any of the preceding claims, wherein the product specific data blocks include at least one of the following: system data including conventional, trunking or secure, alignment data, device specific data and interface data.

5

7. A method of reprogramming a first memory element substantially as described herein with respect to FIG. 3 of the drawings.



Application No: GB 9610954.1
Claims searched: 1 to 7

Examiner: Mr Jared Stokes
Date of search: 18 July 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.O): G4A (AFL) H4L (LDSK, LDLX, LDSX, LECC)
Int Cl (Ed.6): G06F (9/445) H04Q (7/20, 7/22, 7/32)
Other: On-Line: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2 294 787 A (Motorola) Whole document, esp. fig.3	
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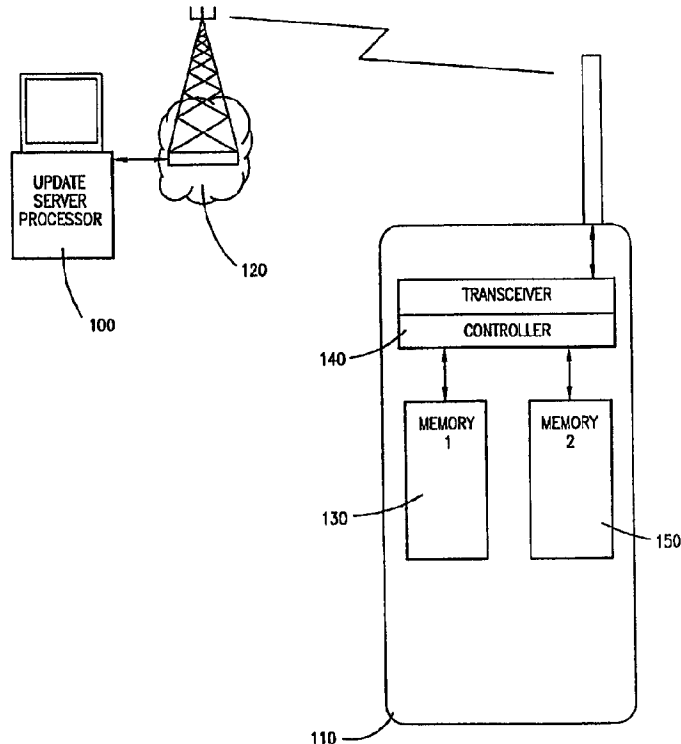
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(54) Title: METHOD AND APPARATUS FOR REMOTELY UPGRADING CONTROL SOFTWARE IN A CELLULAR TELEPHONE

(57) Abstract

The present invention comprises a method and apparatus for downloading software into a remotely located cellular telephone (110) via wireless communication. The cellular telephone (110) includes two memories (130, 150) for storing software with one memory (130) storing the current software and the second memory (150) available for downloading new software. The present invention further includes a processor (100) in communication with the cellular telephone (110) via cellular telephone network (120). The processor (100) contains the new software and controls the downloading of the software from the processor (100) into the cellular telephone memory (150). The cellular telephone (110) includes a controller (140) for loading the received software into the cellular telephone memory and for performing a checksum on the new software.



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**METHOD AND APPARATUS FOR REMOTELY UPGRADING
CONTROL SOFTWARE IN A CELLULAR TELEPHONE**

BACKGROUND OF THE INVENTION

5 Technical Field of the Invention

The present invention pertains in general to a method and apparatus for remotely upgrading software in a cellular telephone, and more particularly, to remotely upgrade software in a cellular telephone via wireless communication using the Interim Standard-136 protocol.

10 Description of Related Art

Cellular telephones are typically programmed with two pieces of software, a first piece is hard coded in programmable read only memory (PROM) and a second, upgradable piece, is loaded into flash Programmable Read Only Memory (flash-PROM). The upgradable portion contains control software for the cellular telephone.

15 Due to a variety of reasons including the addition of new features and "bug fixes," among others, the control software loaded in the flash-PROM may be periodically upgraded. If the reason for upgrading the control software occurs before the cellular telephone is shipped to a customer, the cellular telephone can be reprogrammed at the factory or at various points along the distribution chain. If, however, the reason for

20 upgrading occurs after the customer has received the cellular telephone a cellular telephone customer will be required to bring the cellular telephone to a vendor for reprogramming. Alternatively, if the change to the software is minor, the cellular telephone customer may choose not to upgrade the cellular telephone. This may affect the quality of speech, reduce the number of functioning features, etc. resulting in an

25 image of poor quality for the particular brand of cellular telephone. It would be advantageous therefore, to devise a method and apparatus to reprogram a cellular telephone remotely using a wireless communication link. Furthermore, it would be advantageous if such a method and apparatus retained the old software until the

30 upgraded software has been tested and verified.

30

-2-

SUMMARY OF THE INVENTION

The present invention comprises a method and apparatus for downloading software into a remotely located cellular telephone via wireless communication. The cellular telephone includes two memories for storing software with a first memory storing the current software and the second memory available for downloading a new version of the software. The cellular telephone also includes a controller for loading the software received via wireless communications into the cellular telephone memory. The controller further calculates a checksum on the received data.

The present invention also includes an update server processor in communication with the cellular telephone via a cellular telephone network. The update server processor contains the new version of the software and controls the downloading of the software into the cellular telephone.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, reference is made to the following detailed description taken in conjunction with the accompanying drawings wherein:

Figure 1 illustrates a functional block diagram of an apparatus for a remotely downloading software into a cellular telephone; and

Figure 2 illustrates a flow diagram for a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF EMBODIMENTS

Although the description of the preferred embodiment details the implementation of the invention in the Interim Standard-136 protocol, the particular protocol is used by way of example and it is understood that the present invention can be practiced to other cellular telephone standards.

Referring now to Figure 1, there is illustrated an apparatus for remotely downloading software into a cellular telephone. An update server processor 100 communicates with a cellular telephone network 120 which in turn provides wireless communication to a cellular telephone 110. The update server processor 100 contains

-3-

the new version of the software and controls the process for downloading the new software into the cellular telephone 110.

In addition to the functionality normally located within the cellular telephone 110, the cellular telephone 110 further contains a controller 140, a first memory 130, and a second memory 150. The controller 140 communicates with the update server processor 100 and loads software transmitted to the cellular telephone 110 from the update server processor 100 into either the first memory 130 or the second memory 150. The controller 140 designates one of the two memories 130 or 150 as active and the other as inactive with the active memory containing the software currently used by the cellular telephone 110. The controller 140 can also toggle between the two memories 130 and 150, thereby designating the formerly active memory as inactive, and conversely, designating the formerly inactive memory as active. Toggling between the memories 130 and 150 results in the cellular telephone 110 switching to use the software contained in the newly designated active memory. Before reaching the cellular telephone subscriber, the cellular telephone 110 is loaded with software in one of the two memories 130 or 150 at the factory and the same memory is designated as active. For purposes of this disclosure it is assumed that the software loaded at the factory is loaded into the first memory 130 and that the first memory 130 is designated as active and the second memory 150 is designated as inactive.

When a new version of the software is available, the update server processor 100 transmits a message via the cellular telephone network 120 to the cellular telephone 110 offering the option to download the new version of the software. The cellular telephone subscriber can choose to ignore the message, in which case the cellular telephone 100 continues to operate using the software currently located in the memory designated as active. Alternatively, the cellular telephone subscriber can choose to download the new version of the software immediately or at some time in the future, in which case the cellular telephone subscriber follows the instructions provided in the message offering to download the new software. Typically, the cellular telephone subscriber is instructed to depress a specific key or keys to initiate the downloading process.

-4-

If the cellular telephone subscriber accepts the offer to download the new software either now or in the future, the cellular telephone 110 transmits an acceptance code and the telephone number of the cellular telephone to the update service processor 100. The update server processor 100 receives the acceptance code and telephone number, and when it is ready to download the software, transmits a command instructing the cellular telephone 110 to prepare to receive the new software. The cellular telephone 110 responds to the command by transmitting an acknowledgment message to the update server processor 100 and waits for a data transfer to the cellular telephone. The update server processor 100 transmits the new version of the software to the cellular telephone 110 and the controller 140 loads the new software into the inactive memory, which in this example is the second memory 150.

The controller 140 calculates a checksum on the new software transmitted by the update server processor 100 and compares the calculated checksum against a checksum transmitted to the cellular telephone 110 by the update server processor 100. If the calculated checksum does not match the transmitted checksum, the controller 140 requests a retransmission, does not toggle the designation of the two memories 130 and 150, and the cellular telephone 110 continues to operate using the original software, which for this example is located in the first memory 130. If, on the other hand, the checksum is successful the controller 140 toggles the designation of the two memories 130 and 150. Thus, for the example, memory 150 containing the new software is designated as active, and conversely, memory 130 is designated as inactive. The cellular telephone 110 now uses the new software located in the second memory 150 which becomes the current version of the software. Finally, the cellular telephone 110 transmits a message to the update server processor 110 acknowledging the successful update.

Referring additionally now to Figure 2, there is illustrated a flow diagram for a preferred embodiment of the present invention. The update server processor 100 sends an offer to remotely update the cellular telephone software (step 200). The update server processor 100 uses a Short Message Services (SMS) of the cellular telephone network 120 to transmit a SMS message to either a single cellular telephone

-5-

or to a plurality of cellular telephones. The offer to update the cellular telephone software appears on an alphanumeric display of the cellular telephones intended to receive the offer. The process of sending the SMS messages is well known in the industry. Alternatively, the update server processor 100 can place a cellular telephone call to the intended cellular telephone 110 and announce the offer to update the cellular telephone software.

After receiving the offer to update the software the cellular telephone subscriber can choose to ignore the offer by doing nothing resulting in the cellular telephone 110 continuing to operate using the software currently residing in the active memory, which for this example is the first memory 130. Alternatively, the cellular telephone subscriber can choose to accept the offer (step 210) to update the software by following the instructions contained in the offer to update. To accept the offer, the cellular telephone subscriber is typically instructed to press a single or a series of keys located on the cellular telephone 110.

In response to the cellular telephone subscriber's acceptance of the update, the cellular telephone 110 transmits a SMS message to the update server processor 100, wherein the message contains an acceptance code and the telephone number of the cellular telephone 110 (step 220). The update server processor 100 receives the acceptance code and transmits a SMS message containing a command instructing the cellular telephone 110 to wait for a program download (step 230) and the cellular telephone 110 responds by transmitting a SMS message containing an acknowledgment of the command (step 240). In response to receiving the acknowledgment from the cellular telephone 110, the update server processor 100 begins downloading software (step 250). To download the software, in a first embodiment, the update server processor 100 places a cellular telephone call to the cellular telephone 110 via the cellular telephone network 120, and in another embodiment, the phone could call the processor to have the software downloaded, thereby opening up a digital traffic channel between the update server processor 100 and the cellular telephone 110. If the subscriber does not select immediate download, he/she will be given a telephone number which he/she can call at a later date and receive the upgraded software.

-6-

In a first embodiment of the present invention, the update server processor 100 downloads the software by placing a call to the cellular phone and performing an Interim Standard-136 data transfer to the cellular telephone 110 on the digital traffic channel. The update server processor 100 transmits a header containing the length of the file to be downloaded and a checksum performed on the file by the update server processor 100 and further transmits the software to the cellular telephone 110.

In a second embodiment of the present invention, the update server processor 100 rather than performing an Interim Standard-136 data transfer, instead places a call to a cellular phone and transmits the software via SMS messages on the digital traffic channel. The process of transmitting SMS messages on the digital traffic channel is well known in the industry. As in the first embodiment, the update server processor 100 transmits a header containing the length of the file to be downloaded, a checksum for the data being transmitted as well as the actual software in the SMS message.

As the cellular telephone 110 receives the software using either of the two embodiments of the present invention, the controller 140 places the software in the inactive memory, which in the case of this example is the second memory location 150. After the software has been downloaded into the memory of the cellular telephone 110 the controller 140 calculates a checksum on the downloaded software (step 260). The controller 140 compares the calculated checksum against the transmitted checksum to determine whether the software transfer was successful (step 270). If an error was detected, the cellular telephone 110 sends a SMS message to the update server processor 100 requesting a retransmission of the software (step 280) and the update server processor 100 retransmits the software beginning with the transmission of the command instructing the cellular telephone 110 to prepare for a software download (step 230). Otherwise, if no errors were detected, the controller 140 designates the memory containing the newly downloaded software, which for this example is the second memory 150 as the active memory, and conversely, designates the formerly active memory, in this case the first memory 130 as inactive (step 310). This redesignation or toggling of the two memories 130 and 150 results in the cellular telephone using the newly downloaded software in place of the older software. Finally, the cellular telephone 110 releases the call and transmits a SMS message on

-7-

the DCCH containing an acknowledgment that the update was successful to the update server processor 100 (step 320).

5 Although the preferred embodiments of the methods and apparatus of the present invention have been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it is understood that the invention is not limited to the embodiments disclosed, but is capable of numerous rearrangements, modifications, and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

-8-

WHAT IS CLAIMED IS:

1. A method for scheduling the remote downloading of software into a cellular telephone, the method comprising the steps of:
 - 5 sending, by a processor, a first short message services message to the cellular telephone, wherein the message contains an offer to download the software and instructions for accepting the offer;
 - accepting the offer to download the software in a manner consistent with the instructions contained in the first short message services message; and
 - 10 transmitting, by the cellular telephone, a second short message services message to the processor, wherein the message contains an acceptance code and the telephone number of the cellular telephone.

2. A method for downloading software to a cellular telephone, the message comprising the steps of:
 - 15 transmitting, by a processor, a first short message services message to the cellular telephone, wherein the message contains a command for the cellular telephone to prepare to receive software;
 - transmitting, by the cellular telephone, a second short message services message, wherein the message contains an acknowledgment in response to the first message;
 - 20 transmitting, by the processor, the software; and
 - receiving, by the cellular telephone, the software.

3. The method of Claim 2, wherein the step of transmitting the software further includes transmitting a header containing a length of the software and a
25 checksum of the software.

4. The method of Claim 3, further including the steps of:
 - calculating a checksum on the downloaded software;
 - 30 comparing the calculated checksum against the checksum contained in the transmitted header; and

-9-

requesting a retransmission of the software if the calculated checksum does not match the transmitted checksum.

5 5. The method of Claim 2, wherein the software is transmitted as an IS-136 data transmission on a digital traffic channel.

6. The method of Claim 2, wherein the software is transmitted as a short message services message on a digital traffic channel.

10 7. The method of Claim 2, wherein the step of receiving the software further includes loading the transmitted software into an inactive memory of the cellular telephone.

15 8. A method for activating software downloaded into an inactive memory of a cellular telephone comprising the steps of:

transferring control of the cellular telephone from current software contained in an active memory to the software contained in the in-active memory; and

designating the formerly active memory as in-active and further designating the formerly inactive memory as active resulting in the downloaded software being the current software.

20

9. The method of Claim 8, further including the step of transmitting a short message services message, wherein the message contains an acknowledgment that the update was successful.

25

10. An apparatus for downloading software to a cellular telephone comprising a processor containing the software to be downloaded, the processor communicating with a cellular telephone network to transmit the software to the cellular telephone, and the processor further for controlling downloading of the software.

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-10-

11. The apparatus of Claim 10 wherein the processor transmits and receives commands and acknowledgments for downloading the software into the cellular telephone via a short message service of a cellular telephone network.

5 12. The apparatus of Claim 10, wherein the processor transmits the software via a short message services message on a digital traffic channel of a cellular telephone network.

10 13. The apparatus of Claim 10 wherein the processor transmits the software as an IS-136 data transmission on a digital traffic channel of a cellular telephone network.

14. An apparatus for receiving downloaded software transmitted to a cellular telephone comprising:

15 an active memory positioned within the cellular telephone for storing current software used by the cellular telephone;

an inactive memory positioned within the cellular telephone for storing downloaded software transmitted to the cellular telephone via wireless communications and;

20 a controller positioned within the cellular telephone communicating with the active and inactive memory, the controller for loading the downloaded software transmitted to the cellular telephone into the inactive memory, the controller further for activating the inactive memory containing the downloaded software and deactivating the active memory containing the current software, thereby transferring
25 control of the cellular telephone from the current software to the downloaded software.

15. The apparatus of Claim 14, wherein the controller receives and transmits commands and acknowledgments for downloading the software into the cellular telephone via a short message services of a cellular telephone network.

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-11-

16. The apparatus of Claim 14, wherein the controller receives the downloaded software via a short message services message on a digital traffic channel of a cellular telephone network.

5 17. The apparatus of Claim 14, wherein the controller receives the downloaded software as Claim 13 as an IS-136 data transmission on a digital traffic channel of a cellular telephone network.

10 18. The apparatus of Claim 14, wherein the controller further calculates a checksum on the software downloaded into the inactive memory and compares the calculated checksum against the checksum of the downloaded software transmitted to the cellular telephone, the controller further requesting a retransmission of the software if the calculated checksum does not match the transmitted checksum.

15 19. The apparatus of Claim 18 wherein the controller further transmits an acknowledgment if the calculated checksum matches the transmitted checksum.

1 / 2

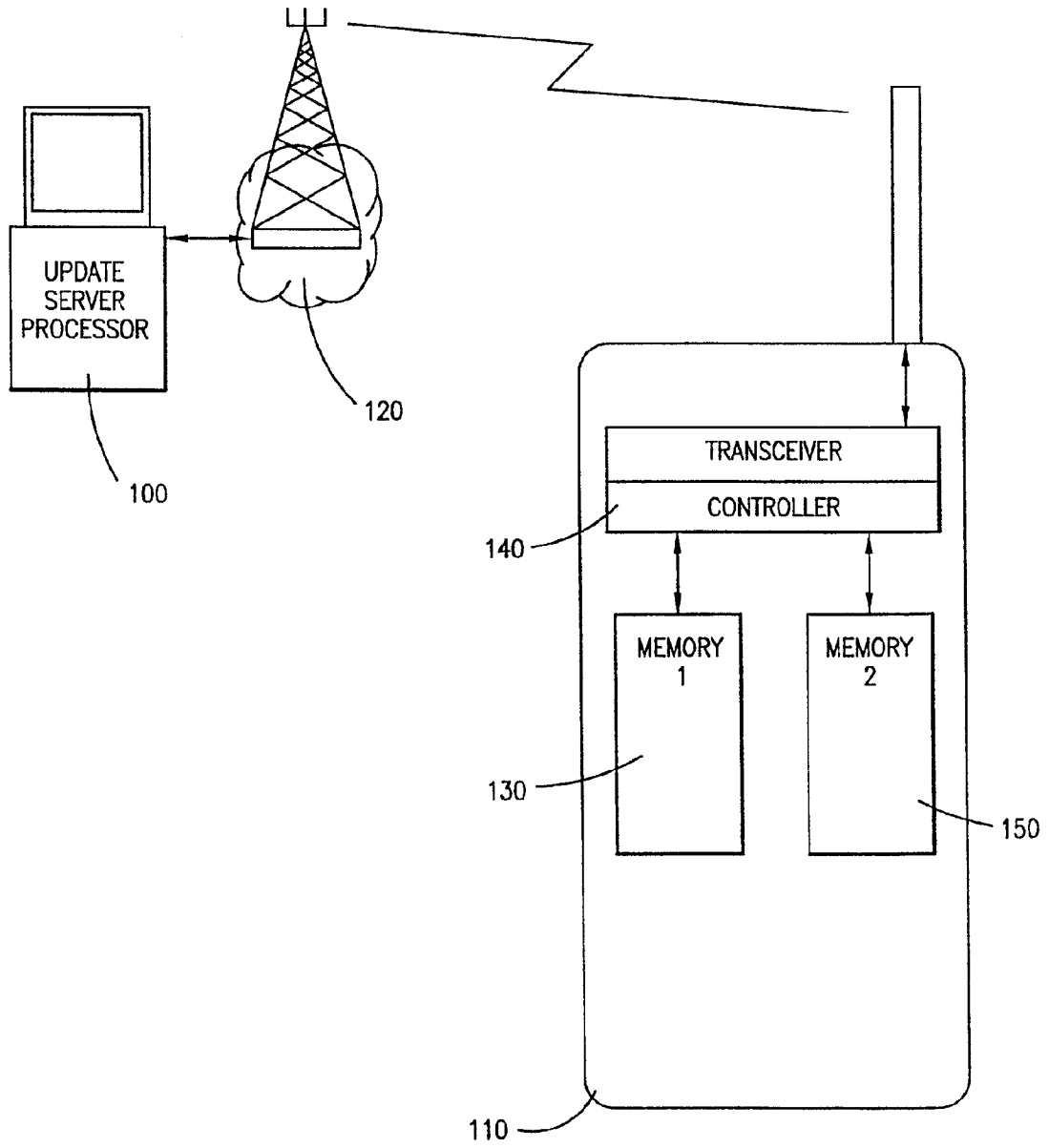


FIG. 1

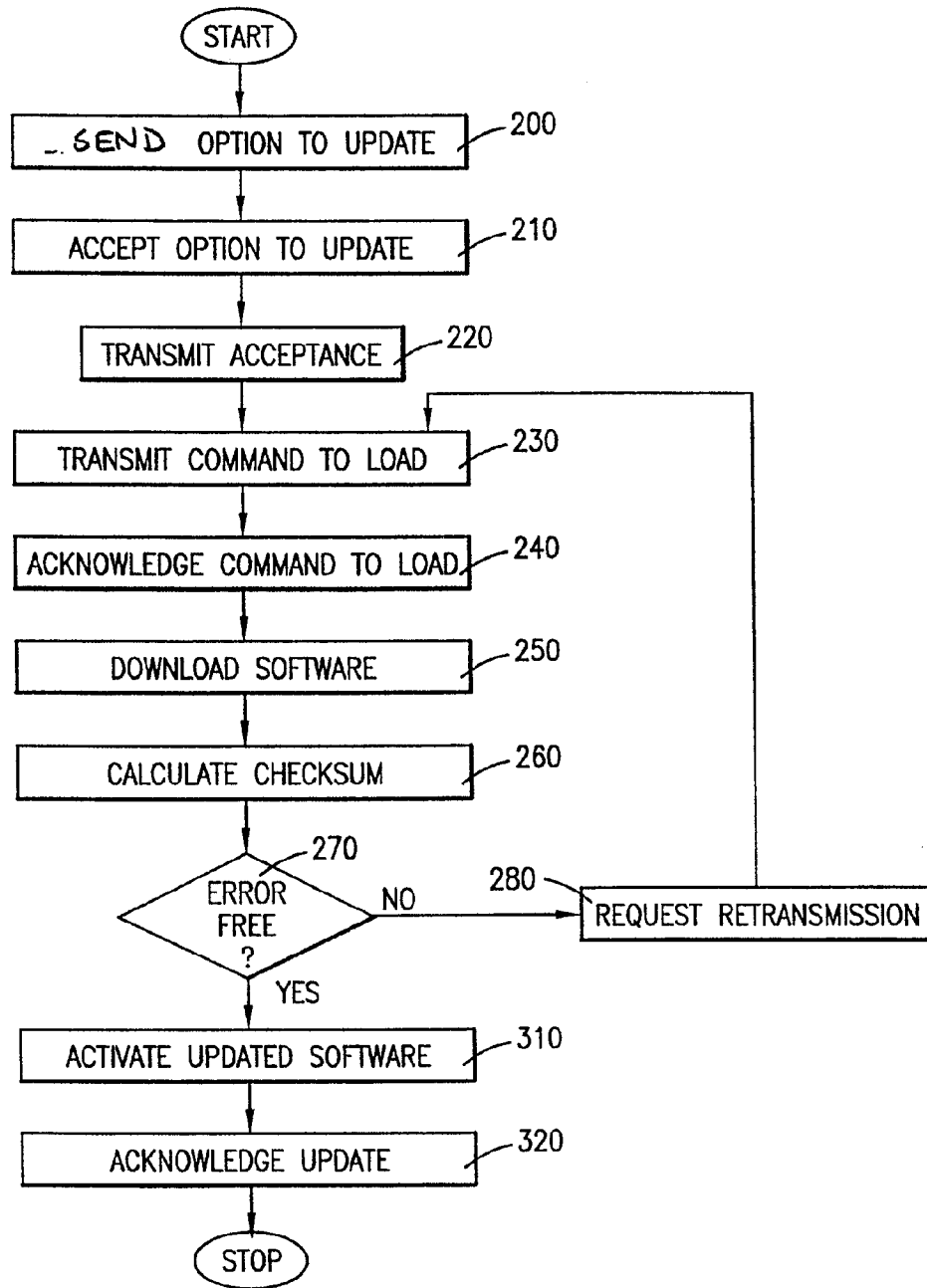


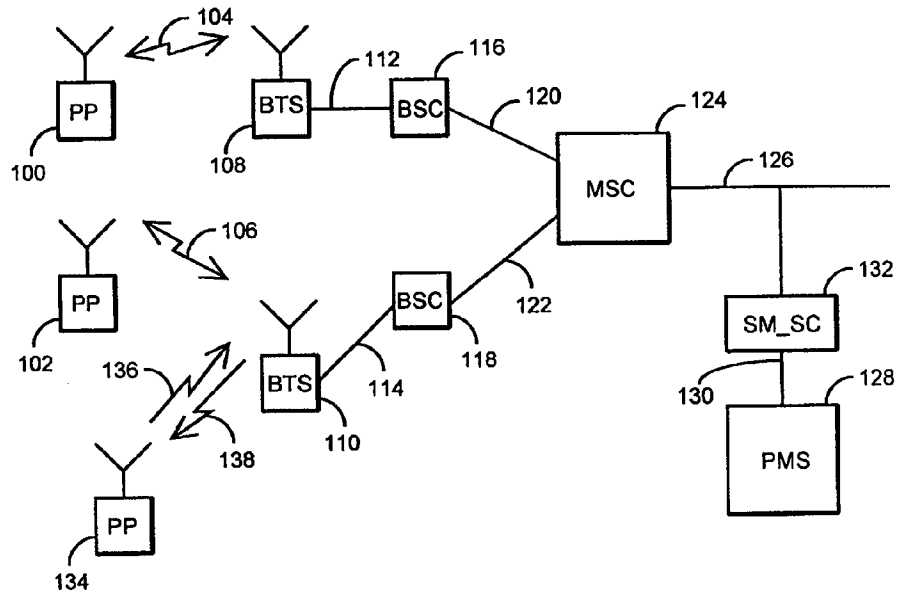
FIG.2



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<p>(21) International Application Number: PCT/FI98/00792 (22) International Filing Date: 12 October 1998 (12.10.98) (30) Priority Data: 973944 13 October 1997 (13.10.97) FI (71) Applicant (for all designated States except US): NE-PRODUCTS OY [FI/FI]; Tutkijantie 4, FIN-90570 Oulu (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): SAVOLAINEN, Kimmo [FI/FI]; Marjasuontie 1 C 15, FIN-90450 Kempele (FI). (74) Agent: PATENTTITOIMISTO TEKNOPOLIS KOLSTER OY; c/o Kolster Oy AB, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).</p>		<p>(81) Designated States: CN, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>Without international search report and to be republished upon receipt of that report.</i></p>

(54) Title: METHOD OF INSTALLING A TERMINAL, AND A WIRELESS TELEPHONE SYSTEM



(57) Abstract

The invention relates to a telephone system and a method of installing a terminal in the telephone system comprising a number of terminals (100, 102) and a management system (128) which controls and monitors the operation of the terminals having device-specific operational parameters set by the management system. To enable swift installation of the terminals, when a new terminal (128) is put to use in the system for the first time, the terminal sends the management system (128) a message indicating the terminal in question, and the management system starts controlling the terminal and sends the necessary operational parameters to the terminal on the basis of the message.

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METHOD OF INSTALLING A TERMINAL, AND A WIRELESS TELEPHONE SYSTEM

FIELD OF THE INVENTION

The invention relates to a method of installing a terminal in a telephone system comprising a number of terminals, and a management system which controls and monitors the operation of the terminals having device-specific operational parameters set by the management system.

BACKGROUND OF THE INVENTION

As cellular radio systems become increasingly common and their coverage areas grow more extensive and as they often replace systems implemented by fixed line telephone connections, it has become necessary to develop telephone systems which utilize cellular radio systems. Such telephones are needed for example in regions where no fixed line telephone connections exist, or in applications in which a terminal is placed in an environment where no connection with a fixed network is easily available, such as moving vehicles. The present invention can be applied particularly to systems implemented by cellular radio systems.

Such systems and terminals are, for example, pay phones, so-called wireless local loop (WLL) terminals, payment terminals in stores and mobile smart card terminals by which money is transferred between a bank and a smart card.

Let us first examine pay phone systems. An important characteristic of a pay phone for the pay phone operator is the control and monitoring of the pay phone. Consequently, pay phone systems comprise a management system. The pay phones convey control and monitoring information to the management system. This information comprises traffic and failure reports, notifications of maintenance need, in coin box telephones the number of coins, in card phones the information on cards used, the manner of communication with the management system, etc. The management system, in turn, controls the operation of the pay phones by setting the parameters of the pay phones. Such phone-specific parameters include the phone number, the tariff information on the calls, the phone card types accepted, the language options of the phone and the voice volume.

Some operational parameters can be given default values already at the factory when the devices are being manufactured and delivered to the operator. Most operational parameters are, however, dependent on the loca-

tion of the telephone. In the tariff information, for example, a local call has different initial numbers at different locations. Hence, all operational parameters cannot be set in the devices at the factory, since no information exists on the future location of the devices. This applies also to so-called SIM cards which are used in GSM-based phones. Not until when the devices are put to use in the target country are the SIM cards installed in the pay phones by the operator.

Hence, most operational parameters have thus far been fed to the pay phone to be installed in connection with the installation. The task has been performed manually via the telephone user interface. Alternatively, memory circuits having different contents have been manufactured, and in connection with the installation a memory circuit comprising the correct information has been installed in the telephone. Furthermore, the specific phone number of the device has been fed to it. These procedures usually take about 20 minutes. Feeding the information to the device on the installation site is slow and errors are easily made. Moreover, in accordance with a further method the installer has made a call on the device to the management system of the operator in which the management system manager has loaded the device-specific information into the telephone. This alternative has enabled telephone installations to be carried out only when the management system site has been manned, and the procedure is still time-consuming.

The known methods are thus extremely problematic; the operators appreciate rapid and easy installation of pay phones.

Similar procedures and problems apply also to other telephone systems in which the terminals communicate with the management system of the telephone system. The payment terminals in stores, for example, may communicate with the management system in a similar manner and require similar operational parameters as the pay phones.

BRIEF DESCRIPTION OF THE INVENTION

The invention thus relates to a method and a system by which the prior art problems above can be solved. This is achieved by a method described in the introduction, which is characterized in that when a new terminal is put to use in the system for the first time, the terminal sends the management system a message indicating the terminal in question, and that the man-

agement system starts controlling the terminal on the basis of the message and sends the necessary operational parameters to the terminal.

The invention further relates to a telephone system comprising a number of terminals and a management system which controls and monitors
5 the operation of the terminals which are arranged to store and use the device-specific operational parameters set by the management system. The telephone system of the invention is characterized in that the terminal of the system comprises means for detecting when the terminal is put to use in the system for the first time, and means for sending a message indicating the terminal
10 in question to the management system which is arranged to start controlling the terminal on the basis of the message and send the necessary operational parameters to the terminal.

The preferred embodiments of the invention are disclosed in the dependent claims.

15 Several advantages can be achieved by the method and system of the invention. At the factory, all devices to be delivered to the customers can be delivered with the same settings and software, which significantly simplifies the logistics. It is relevant for the operator that the installation becomes easier and swifter. The automation of installation reduces potential errors. Installations
20 can be carried out irrespective of whether the management system is manned or not.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in closer detail in connection with the preferred embodiments with reference to the accompanying drawings,
25 in which

Figure 1 is a diagram illustrating a structure of a telephone system,

Figure 2 is a diagram illustrating another structure of a telephone system,

30 Figure 3 is a block diagram showing an example of the structure of the pay phone terminal of the system in accordance with the invention.

DETAILED DESCRIPTION OF THE INVENTION

In the following, the invention will be described in closer detail using a pay phone system which is implemented by the digital GSM mobile phone system as an example without restricting to it, however. It will be obvious that
35 the solution of the invention can be implemented with slight modifications in

any telephone system implemented by other techniques, in which the terminals have device-specific operational parameters set by the management system.

Figure 1 illustrates a structure of a pay phone system implemented in a cellular radio system. The system comprises a number of pay phones 100 to 102, each connected to base stations 108 to 110 via radio paths 104 to 106. For the radio path and the base station, the terminals operating as pay phones do not differ from regular subscriber terminals in any way. The base stations 108 to 110 typically communicate with base station controllers 116 to 118, each controlling several base stations, via transmission lines 112 to 114 which can be implemented by means of an optical cable, a copper cable or a link connection. The base station controllers 116 to 118, in turn, communicate with a mobile switching centre 124 via transmission lines 120 to 122, said mobile switching centre controlling the operation of the base station controllers and forwarding the calls of the terminals to a fixed network or to the other parts of the cellular radio system via transmission lines 126.

The pay phone system further comprises a management system 128 which controls and monitors the operation of the pay phones 100 to 102. In the GSM system used as an example, the control equipment 128 in the pay phone system is connected utilizing, for example, an X.25 interface 130, to a short message service centre 132 which, in turn, is connected to GSM cellular networks and their mobile switching centres. The above description of a cellular radio system thus applies to the GSM system, but it is obvious that although in the other systems the detailed structure deviates from the described one, the structures are similar in relevant parts. It should be noted that also in the GSM system the pay phone system can be implemented without the short message service centre by connecting the control equipment 128 of the pay phone system to the cellular radio system in some other known ways, by a modem, for example.

Let us examine a situation in which a new pay phone 134 is to be installed in the system. In the solution of the invention the pay phone is arranged to detect when a device is switched on for the first time. This can be implemented by a so-called "first use" flag, in other words by setting a predetermined memory location to a particular value. When the device is switched on after the physical installation, the device reads the contents of the memory location and on account of the programming detects that the switch-on is the

first one. In such a case the device does not start its regular activity but sends the management system 128 a message 136 indicating the pay phone in question. The management system starts controlling the pay phone 134 on the basis of the message and sends the necessary operational parameters to the pay phone in a reply message 138. The operational parameters of each pay phone to be installed in the system have already in advance been programmed or set in the management system. Alternatively, the management system sets the operational parameters of the pay phone to be installed in the system on the basis of the location of the pay phone.

10 The pay phone sends the message 136 as a short message, for example. The pay phone cannot know its phone number at this stage, but the short message service centre 132 attaches the number to the short message. Alternatively, in the GSM system a data call can be made. Connection data on where to and in what manner the first message 136 is to be sent has already
15 in advance been programmed in the pay phone at the factory.

The message sent by the pay phone may comprise information on the location of the pay phone in the network, for example the identifier of the base station. In such a case the location of the pay phone can thus be defined with an accuracy of the base station or the base station antenna sector. A
20 more accurate geographical estimate of the location of the pay phone can also be incorporated into the message by the GPS system, for example.

In a preferred embodiment of the invention the first message of the pay phone does not comprise information on location, but if the information is needed the management system queries the pay phone for the information
25 before setting the operational parameters.

Figure 2 illustrates another preferred embodiment of the invention. The figure shows a pay phone system from the mobile switching centre 124 onwards, the rest of the system being as described in Figure 1. However, the figure shows two management systems 128, 200 of the pay phones, the former 128 being the management system of the operator and the latter 200 the
30 management system of the pay phone manufacturer. In accordance with a preferred embodiment of the invention, the pay phone to be installed sends a message to a predetermined general management system 200, for example the system of the manufacturer. This management system 200 sends the pay
35 phone the information on the connection data about the separate management system 128 of the pay phone. Next, the pay phone sends another mes-

sage on the basis of the connection data received to its management system 128 which starts controlling the pay phone and sends the necessary operational parameters to the pay phone.

Figure 3 illustrates an example of a preferred embodiment of a pay phone of the system in accordance with the invention. The pay phone of the invention comprises a cellular radio transceiver 300, and a control unit 304 which is directly connected to a transceiver 302 without a two-wire connection. The terminal of the invention further comprises a charge collecting means 306 which is connected to the control unit 304. Depending on the implementation, the charge collecting means can accept phone cards, credit cards, smart cards and coins as means of payment. The terminal typically further comprises a selection means 310 by which the desired phone number is selected, a display unit 308 and an earpiece 312. The terminal may further comprise means 314 enabling a "hands free" facility, comprising a speaker 316 and a microphone 318 and the necessary amplifiers. If desired, some or all of the above components can be directly integrated into the transceiver 300, but they can also be implemented as separate means although structurally within the same case.

If necessary, the transceiver unit 300 serves to set up a radio connection to a base station to enable a call to be transmitted. The unit 300 is also responsible for all procedures associated with the radio path and call maintenance commonly assigned to the mobile phone.

The control unit 304 serves to control the pay phone. The control unit typically comprises a micro processor, fixed and reprogrammable memory circuits, multiplexing means and switches. The control unit controls the operation of the other units of the device, registers made calls and is responsible for charging. The operational parameters of the pay phone are usually stored in the control unit memory. These phone-specific parameters include the phone number, the tariff information on the calls to be made, the language options on the display of the phone and the voice volume. The operation of the control unit does not principally deviate from the operation of the control units of the known pay phones excluding the inventive features described here.

In the pay phone of the system in accordance with the invention, the control unit 304 detects when the pay phone is put to use in the system for the first time. This can be implemented in the way already described above by using the "first use" flag. The control unit 304 controls the transceiver unit 300

in such a manner that the unit sends the management system 128 a message indicating the pay phone in question. In the pay phone system of the invention, the management system is arranged to start controlling the pay phone on the basis of the message and send the necessary operational parameters to the pay phone. The transceiver unit 300 sends the message as a short message
5 or as a data call, as described above. For certain parts, the method of the invention is most preferably implemented by software. For the pay phone, this applies particularly to detecting the first use, controlling the message sending, receiving the operational parameters and storing in the pay phone memory.

10 The invention is described above in closer detail using a pay phone system as an example. It is obvious that the solution of the invention can be implemented in any telephone system implemented by other techniques, in which the terminals have device-specific operational parameters set by the management system, for example systems in which the terminals are payment
15 terminals used in stores. In such a case the operational parameters comprise, for example, information on the languages available at the terminal, the acceptable charge cards, the control information of the cards and optionally the price codes of products. Furthermore, the wireless local loop systems can also utilize the installation solution of the invention, and systems whose terminals
20 are mobile smart card terminals by which money is transferred between a bank and a smart card.

Although the invention is described above with reference to the example in accordance with the accompanying drawings, it is to be understood
25 that the invention is not restricted thereto but it can be modified in many ways within the scope of the inventive idea disclosed in the appended claims.

CLAIMS

1. A method of installing a terminal in a telephone system comprising a number of terminals (100, 102), and a management system (128) which controls and monitors the operation of the terminals having device-specific operational parameters set by the management system, **characterized** in that when a new terminal (134) is put to use in the system for the first time, the terminal sends the management system (128) a message indicating the terminal in question, and that the management system starts controlling the terminal on the basis of the message and sends the necessary operational parameters to the terminal.
2. A method as claimed in claim 1, **characterized** in that the telephone system is implemented by a cellular radio system.
3. A method as claimed in claim 1, **characterized** in that the connection data on the management system has been programmed in advance in the terminal to be installed.
4. A method as claimed in claim 1, **characterized** in that the message sent by the terminal indicates the location of the terminal.
5. A method as claimed in claim 1, **characterized** in that after receiving the message from the new terminal, the management system sends an inquiry about the location of the terminal.
6. A method as claimed in claim 1, **characterized** in that the operational parameters of each terminal to be installed in the system have been set in the management system in advance.
7. A method as claimed in claim 4 or 5, **characterized** in that the management system sets the operational parameters of the terminal to be installed in the system on the basis of the location of the terminal.
8. A method as claimed in claim 1, **characterized** in that the terminal sends the message to a predetermined, general management system which sends information on the connection data about the separate management system of the terminal, and that the terminal sends on the basis of the connection data received another message to its management system which starts controlling the terminal and sends the necessary parameters to the terminal.
9. A method as claimed in claim 2, **characterized** in that the message is sent as a short message.

10. A method as claimed in claim 2, **characterized** in that the message is sent as a data call.

11. A method as claimed in claim 1, **characterized** in that the operational parameters comprise information on the languages available at the terminal, acceptable charge cards and their control information.

12. A method as claimed in any one of the preceding claims, **characterized** in that the telephone system is a pay phone system and that the terminals are pay phones.

13. A method as claimed in any one of the preceding claims, **characterized** in that the terminals are payment terminals used in stores.

14. A method as claimed in any one of the preceding claims, **characterized** in that the terminals are mobile smart card terminals.

15. A method as claimed in any one of the preceding claims, **characterized** in that the terminals are wireless local loop terminals.

16. A method as claimed in claim 12, **characterized** in that the operational parameters comprise tariff information.

17. A telephone system comprising a number of terminals (100, 102, 134) and a management system (128) which controls and monitors the operation of the terminals which are arranged to store and use the device-specific operational parameters set by the management system, **characterized** in that the system terminal comprises means (100) for detecting when the terminal is put to use in the system for the first time, and means (100) for sending a message indicating the terminal in question to the management system (128) which is arranged to start controlling the terminal on the basis of the message and send the necessary operational parameters to the terminal.

18. A telephone system as claimed in claim 17, **characterized** in that the terminal comprises means (100) for sending the message as a short message.

19. A telephone system as claimed in claim 17, **characterized** in that the terminal comprises means (100) for sending the message as a data call.

20. A telephone system as claimed in any one of the claims 17 to 19, **characterized** in that the telephone system is a pay phone system and that the terminals are pay phones.

21. A telephone system as claimed in any one of the claims 17 to 19, **characterized** in that the terminals are payment terminals used in stores.

22. A telephone system as claimed in any one of the claims 17 to 5 19, **characterized** in that the terminals are mobile smart cards.

23. A telephone system as claimed in any one of the claims 17 to 19, **characterized** in that the terminals are wireless local loop terminals.

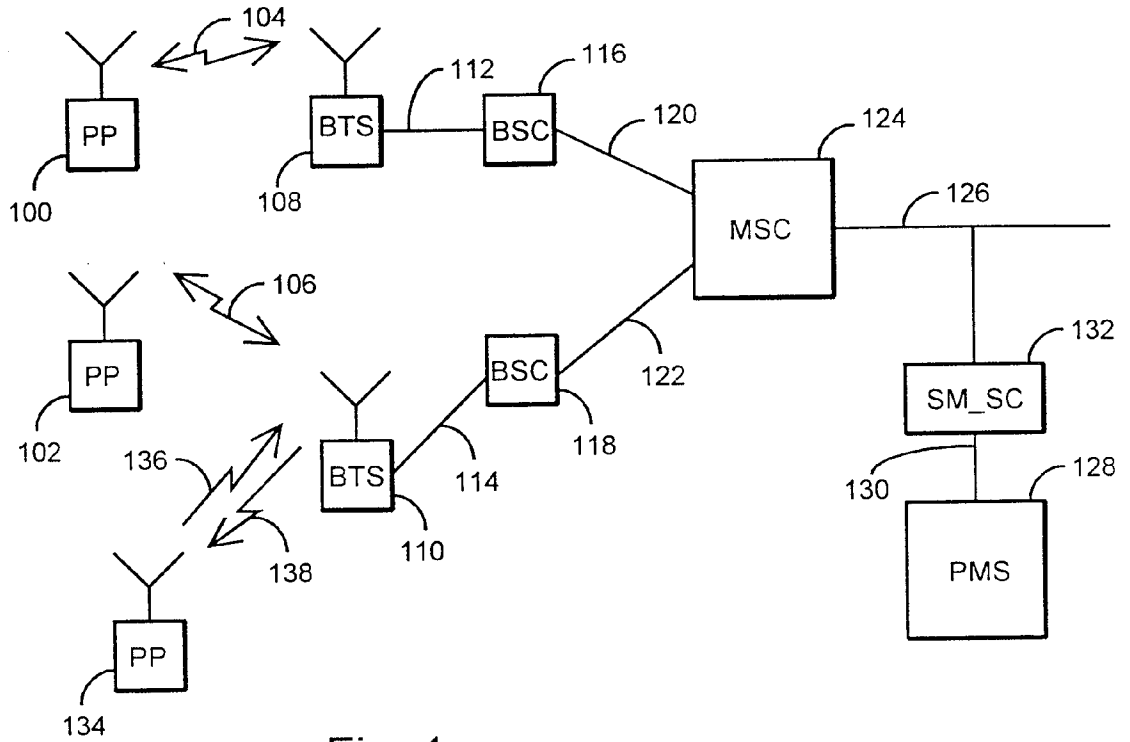


Fig. 1

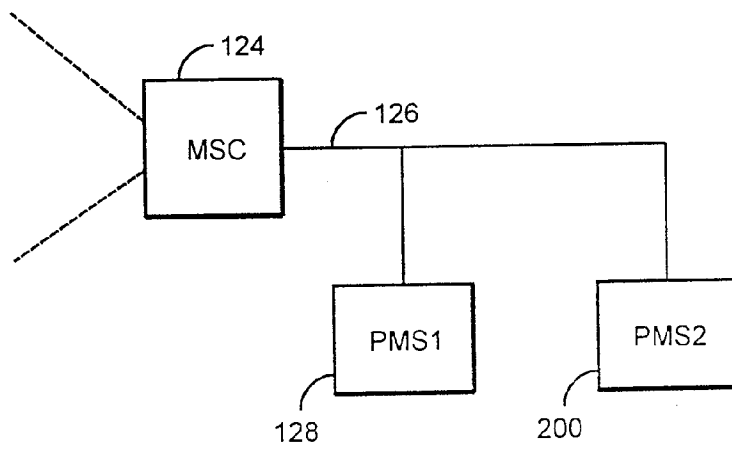


Fig. 2

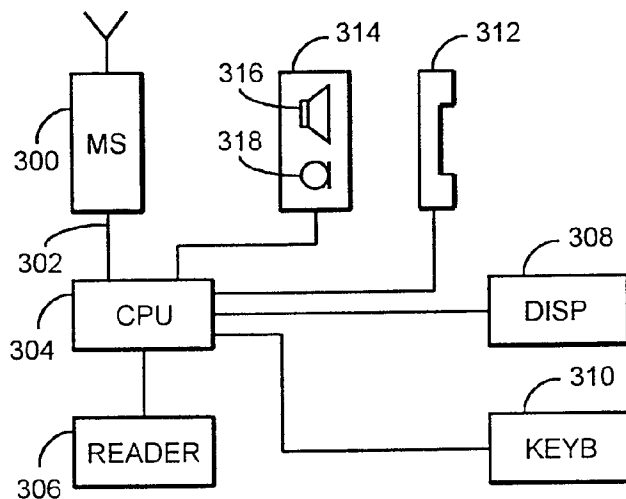


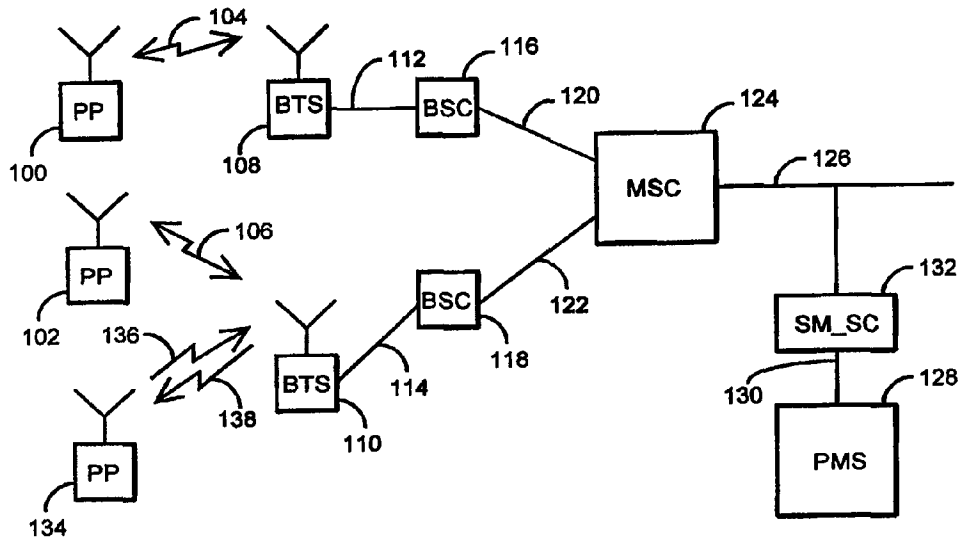
Fig. 3



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<p>(21) International Application Number: PCT/FI99/00323 (22) International Filing Date: 21 April 1999 (21.04.99) (30) Priority Data: 980887 22 April 1998 (22.04.98) FI (71) Applicant (for all designated States except US): NE-PRODUCTS OY [FI/FI]; Elekroniikkatie 13, FIN-90570 Oulu (FI). (72) Inventors; and (75) Inventors/Applicants (for US only): SAVOLAINEN, Kimmo [FI/FI]; Marjasuontie 1 C 15, FIN-90450 Kempele (FI). PARKKINEN, Jukka [FI/FI]; Kraaselintie 11 B, FIN-90580 Oulu (FI). HUTTUNEN, Martti [FI/FI]; Kandintie 1 G 46, FIN-90570 Oulu (FI). KANTOLA, Matti [FI/FI]; Hiidentie 4 C 2, FIN-90550 Oulu (FI). PERÄLÄ, Martti [FI/FI]; Valtatie 5 A 11, FIN-90520 Oulu (FI). (74) Agent: PATENTTITOIMISTO TEKNOPOLIS KOLSTER OY; c/o Kolster OY AB, Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).</p>		<p>(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.</i></p>

(54) Title: METHOD OF UPDATING TERMINAL SOFTWARE IN A TELEPHONE SYSTEM



(57) Abstract

The invention relates to a terminal, telephone system and method for updating terminal software in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software. At least one software is stored in the memory (204) of the terminal. To enable the memory to be preferably implemented, when a task having no corresponding software in the memory of the terminal is selected, the terminal downloads the necessary software in the memory of the terminal from the management system (128).

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METHOD OF UPDATING TERMINAL SOFTWARE IN A TELEPHONE SYSTEM

FIELD OF THE INVENTION

The invention relates to a method of updating terminal software in a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software, the method comprising at least one software being stored in the memory of the terminal.

BACKGROUND OF THE INVENTION

With radio telephone systems becoming more common and their coverage areas growing more extensive often replacing systems implemented by fixed line telephone connections, it has become necessary to develop telephone networks utilizing radio telephone systems, such as cellular radio systems. Such telephones are needed for instance in a region where no fixed line telephone connections have been built, or in applications in which the terminal is placed in an environment with no connection to a fixed network readily available, for example in moving vehicles. The present invention can be applied particularly to systems implemented by means of cellular radio systems.

Possible systems and terminals include pay phones, wireless local loop (WLL) terminals, in-store payment terminals and smart card terminals that enable money to be transferred between a bank and a smart card.

In current terminals, most functions are implemented by means of software. A terminal comprises a processor and a memory in which necessary software is stored. When the user selects a function, the software is read in the memory and executed. Terminal design involves an inevitable compromise between the number of functions and the memory capacity available. For reasons of cost, the size of the memory to be placed in the terminals cannot be limitlessly increased; the number of functions is thus restricted by the memory.

As an example, examine a pay phone system implemented by means of a radio system. The system comprises a number of pay phones, each being connected to base stations via a radio path. As far as the radio path and the base stations are concerned, terminals operating as pay phones do not differ from common terminal equipment in any way. To enable charging, the pay phones comprise a charging means, which can typically be a reader for a pay card. Various pay cards abound, including different credit cards, loadable pay cards and bank cards. Furthermore, different card-type

variations exist, depending on the manufacturer and provider of the card. In addition, the same card can be used to select different functions. Each card variation necessitates in the terminal software that supports the card, called a card application. The card application comprises functions necessary for the user interface, card control and performing a transaction by the card, for example a payment transaction.

If card applications that support all card types were stored in the memory of a terminal reading a card, the amount of memory capacity needed would increase so much that the result would be an expensive terminal. Furthermore, adding new card applications in terminals would necessitate the software of the entire equipment to be changed in equipment maintenance.

In addition to pay phones, other wireless card-reading devices, such as pay card loading devices enabling electronic money to be loaded into pay cards from a bank account, also suffer from similar problems to those described above.

BRIEF DESCRIPTION OF THE INVENTION

An object of the invention is thus to provide a method and an apparatus implementing the method so as to enable the above problems to be solved. This is achieved with a method of the type disclosed in the introduction, the method being characterized by the terminal downloading necessary software into the memory of the terminal from the management system when a task having no corresponding software in the memory of the terminal is selected.

The invention further relates to a terminal in a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals, the terminal comprising means for storing one or more softwares controlling the functions of the terminal. The terminal of the invention is characterized by comprising means for downloading software necessary at a given time from the management system.

The invention further relates to a telephone system comprising a number of terminals and a management system controlling and monitoring the operation of the terminals, the terminals in the system being arranged to store in their memory at least one software controlling the functions of the terminal. The system of the invention is characterized by the terminal being arranged to download software necessary at a given time from the management system

when a task having no corresponding software stored in the memory of the terminal is selected.

The preferred embodiments of the invention are disclosed in the dependent claims.

5 The invention is based on the idea that a terminal does not have all necessary software continually stored, but software can be downloaded from a telephone system when necessary. If a pay phone is used as an example, the terminal can store in its memory five cards that were last used. When a new user inserts a card into a device and the required card application does not
10 exist in the memory, the device downloads the software from the system. The system can keep the necessary software on a particular server or on some other apparatus, for example in connection with a mobile services switching centre or a pay phone services switching centre.

 Several advantages are achieved with the method and system of
15 the invention. The solution of the invention enables the price of a terminal to be kept low, since the amount of necessary memory capacity does not have to be increased although the number of functions and acceptable pay cards the terminal is supposed to allow increases. Further, the terminal characteristics can readily be updated according to need and location.

20 BRIEF DESCRIPTION OF THE DRAWINGS

 The invention is now described in closer detail in connection with the preferred embodiments with reference to the accompanying drawings, in which

 Figure 1 is a block diagram illustrating the structure of a telephone
25 system,

 Figure 2 shows an example of the structure of a terminal of a system in accordance with the invention at a block diagram level,

 Figure 3 illustrates the structure of a terminal memory block, and

 Figure 4 shows a flow diagram of a method of the invention.

30 DETAILED DESCRIPTION OF THE INVENTION

 Hereinafter, the invention will be described in closer detail using a pay phone system as an example, the pay phone system being implemented by means of a digital GSM mobile telephone system without, however, being restricted thereto. It is obvious that the solution of the invention can be imple-
35 mented with minor changes on any telephone system implemented by other

types of techniques when the system comprises terminals some of whose functions are performed by software applications.

Figure 1 illustrates the structure of a pay phone system implemented in a cellular radio network. The system comprises a number of pay phones 100 to 102, each being connected to base stations 108 to 110 via a radio path 104 to 106. As far as the radio path and the terminals are concerned, terminals operating as pay phones do not differ from common subscriber terminals in any way. Typically, the base stations 108 to 110 are connected to base station controllers 116 to 118, each controlling a plurality of base stations, via transmission lines 112 to 114, which can be implemented by means of an optical cable, a copper cable or a link connection. The base station controllers 116 to 118, in turn, are connected via transmission lines 120 to 122 to a mobile services switching centre 124, which controls the operation of the base station controllers and forwards the calls of the terminals to a fixed network or to the other parts of the cellular radio system by means of transmission lines 126.

The pay phone system further comprises a management system 128 controlling and monitoring the operation of the pay phones 100 to 102. In the pay phone system of the GSM system given by way of example the control equipment 128 is connected, utilizing for instance an X.25 connection 130, to a short message centre 132 in turn being connected to GSM cellular networks and the mobile services switching centres thereof. The above-mentioned description of a cellular radio system thus applies to the GSM system, but it is obvious that although the structure in other systems differs in details from the described one, the relevant parts in the structure are similar. It is to be noted that also in the GSM system the pay phone system can be implemented without a short message centre by using other known manners, for example by means of a modem, to connect the pay phone system's control equipment 128 to the cellular radio system.

Figure 2 illustrates an example of a preferred embodiment of a pay phone of the system in accordance with the invention. The pay phone of the invention comprises a cellular radio transceiver 200 and a control unit 204 having a direct connection 202 to the transceiver 200 without a two-wire connection. The terminal of the invention further comprises a charging means 206 connected to the control unit 204. Depending on the implementation, the charging means can accept call cards, credit cards or smart cards as means of

payment. Typically, the terminal further comprises a selection means 210 for selecting a desired phone number, display equipment 208, and an earpiece 212. The terminal can also comprise means 214 enabling a hands-free function and comprising a loudspeaker 216, a microphone 218 and necessary amplifiers. If desired, some or all of the above components can be placed integrated directly in the transceiver 200, but they can also be implemented as separate means while it is possible that the components are located inside the same housing structurally.

To enable a call to be transmitted, the transceiver 200 serves to set up a radio connection to the base station when necessary. The unit 200 is also responsible for all procedures associated with the radio path and call maintenance normally assigned to a mobile telephone.

The control unit 204 is responsible for controlling the pay phone. The control unit typically comprises a micro processor, fixed and reprogrammable memory circuits, multiplexing means and switches. The control unit controls the operation of the device's other units, keeps a record of made calls, being also responsible for charging. The operation parameters are usually stored in the memory of the control unit. These phone-specific parameters include the phone number, tariff information on calls to be made, language options on the phone's display, and the voice volume used. Excluding the inventive features described herein, the operation of the control unit does not differ greatly from the operation of the control units of the known pay phones.

Also the structure of the terminal can differ in its details from the above description, depending on the use of the terminal. If the terminal is an in-store payment terminal, for example, the device does not necessarily comprise audio parts, such as a microphone and a loudspeaker. At its simplest the device comprises a cellular radio transceiver, a control unit and a charging means, which can be integrated with each other structurally or, alternatively, components also detachable from each other to be temporarily combined for the duration of a transaction, call payment or purchase to be made, for example.

Software necessary for the terminal is stored in the memory of the control unit 204. This software includes software necessary for pay card variations, i.e. card applications. A card application comprises functions necessary for the user interface, card control and performing a card transaction, for example a payment transaction.

Figure 3 illustrates the structure of a memory. The memory, preferably implemented by one or more reprogrammable flash memory circuits, typically comprises a plurality of blocks 300 to 308 wherein software necessary for the device and other data are stored. Part of the memory is assigned to the storage of card applications, for example a block 306. A number of card applications 310 to 318 can be downloaded into this block. The memory can also be implemented in other ways, for example with battery-secured SRAM memory circuits.

Examine next the method of the invention by means of Figure 4 showing a flow diagram of a preferred embodiment of the method of the invention. In step 400 a user has inserted a card into a card reader 206 of a terminal. In step 402 the terminal examines the different functions of the card, feasible credit card alternatives, for example. In case there are several alternatives, the user is allowed to select the function to be used. Next, in step 406, it is checked whether the application required by the selected function exists in the memory of the terminal. The application keeps a record of applications in its memory at a given time. If the application exists in the memory, it can be activated in step 408.

If the application does not exist in the memory of the terminal, next it is checked in step 410 whether the application exists in the management system. Information on downloadable applications in the management system can be stored either in the terminal, or the terminal can request the information of the management system. If the application is not found in the management system, the function is rejected in step 412 and if the card comprises several functions a new one is inquired of the user.

If the application exists in the management system, the terminal inquires in step 414 about the amount of memory required by the application. Next, the terminal checks 416 whether the amount of memory required by the application is free. If there is not enough memory, an application to be removed from the memory is selected and it is removed in step 418 in order to vacate the memory for the use of the new application. The terminal can let the user select the application to be removed or, alternatively, the terminal itself can perform the selection on the basis of a predetermined criterion. A criterion can be formed, for example, such that applications used last are to be stored and an application that has been unused for the longest period of time is to be removed.

Next, in step 420 the terminal informs the management system of the free memory area in which the application should be placed. Referring to Figure 3, for example, the terminal can indicate that a memory area 312 is free for the application. In step 422, the management system downloads the application into the memory area indicated by the terminal. Subsequently, the application is ready to be put to use in step 424.

In another embodiment of the invention the management system does not control the placement of the application in the memory of the terminal but only transmits the application to the terminal, which itself places the application in its memory.

In addition to pay card applications, the downloadable software of the invention can comprise articles moved in an electronic form, such as tickets or information on timetables.

The method steps of the invention related to the terminal can preferably be implemented by software in the control unit 204 of the terminal. The connection to the management system required by the method can preferably be implemented using a data call connection. A data call is a call type available in digital radio networks, corresponding to a modem connection in analogue systems.

The terminal of the invention allows the user to be informed of the method used for example by displaying a message "wait - downloading software" or the like on the terminal's display 208.

Although the invention has been described above with reference to the example in accordance with the accompanying drawings, it is obvious that the invention is not restricted thereto but it can be modified in many ways within the scope of the inventive idea disclosed in the attached claims.

CLAIMS

1. A method of updating terminal software in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals wherein some terminal functions are implemented by means of software, the method comprising
5 at least one software being stored in the memory (204) of the terminal, **characterized** by the terminal downloading necessary software into the memory of the terminal from the management system (128) when a task having no corresponding software in the memory of the terminal is selected.
- 10 2. A method as claimed in claim 1, **characterized** by the software being downloaded by means of a data call connection.
3. A method as claimed in claim 1, **characterized** by the terminal storing in its memory a predetermined number of various softwares, and software stored in the memory being removed in connection with the
15 download of new software.
4. A method as claimed in claim 1, **characterized** by the terminal storing in its memory as many softwares as possible, and software stored in the memory being removed in connection with the download of new software when the memory is full.
- 20 5. A method as claimed in claim 3 or 4, **characterized** by the software to be removed being selected by the user of the terminal.
6. A method as claimed in claim 3 or 4, **characterized** by the software to be removed being selected by the terminal on the basis of a predetermined criterion.
- 25 7. A method as claimed in claim 1, **characterized** by the software being software necessary for processing a pay card fed into the terminal.
8. A method as claimed in claim 7, **characterized** by the software comprising information necessary for the terminal's user interface, pay card control and transactions performed by the pay card.
30
9. A method as claimed in claim 1, **characterized** by the software stored in the memory at a given time being stored in a flash memory element divided into small blocks.
10. A method as claimed in claim 1, **characterized** by the
35 software comprising articles moved in an electronic form.

11. A method as claimed in claim 10, **characterized** by the software comprising information on timetables.

12. A method as claimed in claim 1, **characterized** by the terminal detecting a pay card having been fed into the reader of the terminal and the user having selected an application, and the terminal

5 checking whether the software necessary for implementing the application exists in the memory of the terminal, and

transmitting a download request to the management system, the request comprising information on the necessary software, and the management system

10 transmitting the necessary software to the terminal, and the terminal storing the software in its memory.

13. A method as claimed in claim 1, **characterized** by the task to be performed being selected by the user of the terminal.

14. A method as claimed in claim 1, **characterized** by the task to be performed being selected by the terminal.

15. A terminal in a telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals, the terminal comprising means (204) for storing one or more softwares controlling the functions of the terminal, **characterized** by comprising means (204) for downloading software necessary at a given time from the management system.

16. A terminal as claimed in claim 15, **characterized** by the terminal comprising means (204) for storing in the memory a certain number of softwares, and the terminal comprising means (204) for replacing a previous software in the memory with software to be downloaded.

17. A terminal as claimed in claim 16, **characterized** by the terminal comprising means (204) for selecting software to be removed.

18. A terminal as claimed in claim 15, **characterized** by the terminal comprising a card reader (206).

19. A terminal as claimed in claim 15, **characterized** by the memory means of the terminal being implemented by a flash memory circuit divided into small software blocks (300 to 318).

20. A telephone system comprising a number of terminals (100, 102) and a management system (128) controlling and monitoring the operation of the terminals, the terminals in the system being arranged to store in their

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memory at least one software controlling the functions of the terminal, **characterized** by the terminal being arranged to download software necessary at a given time from the management system when a task having no corresponding software stored in the memory of the terminal is selected.

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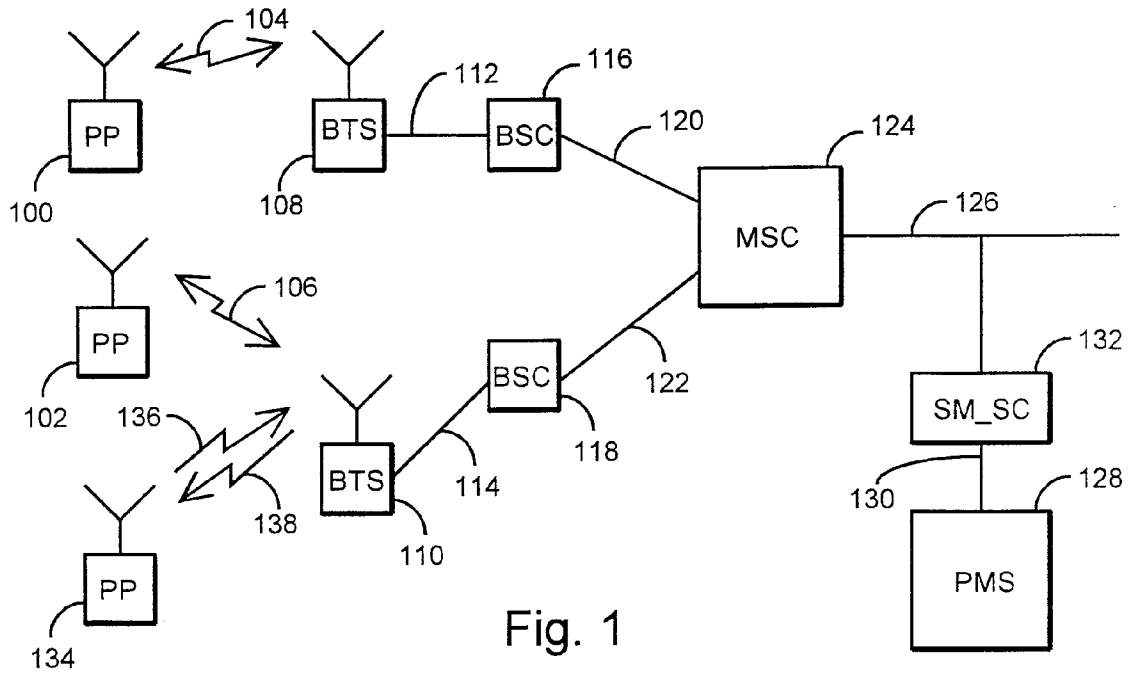


Fig. 1

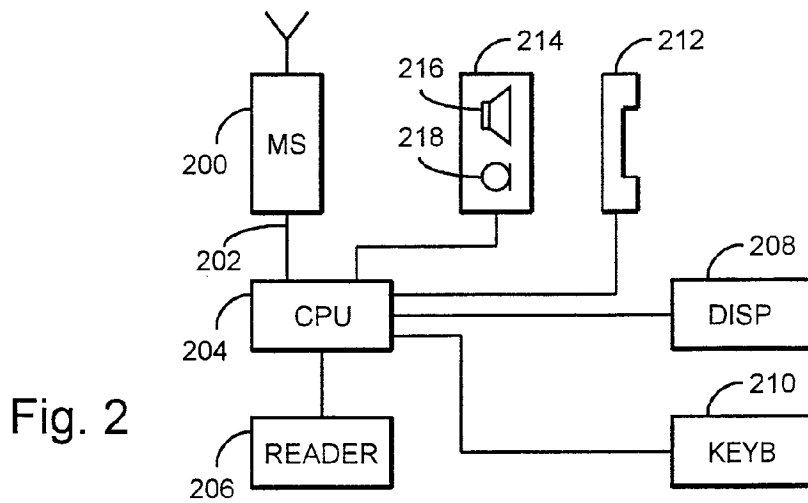


Fig. 2

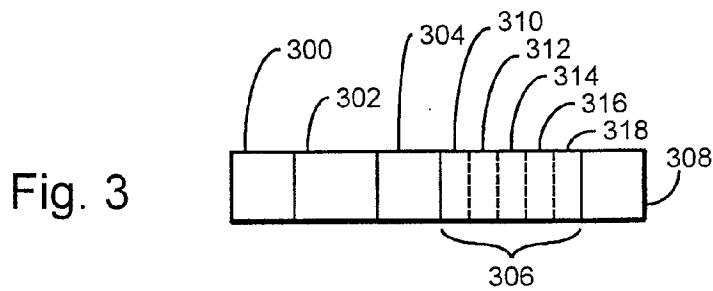


Fig. 3

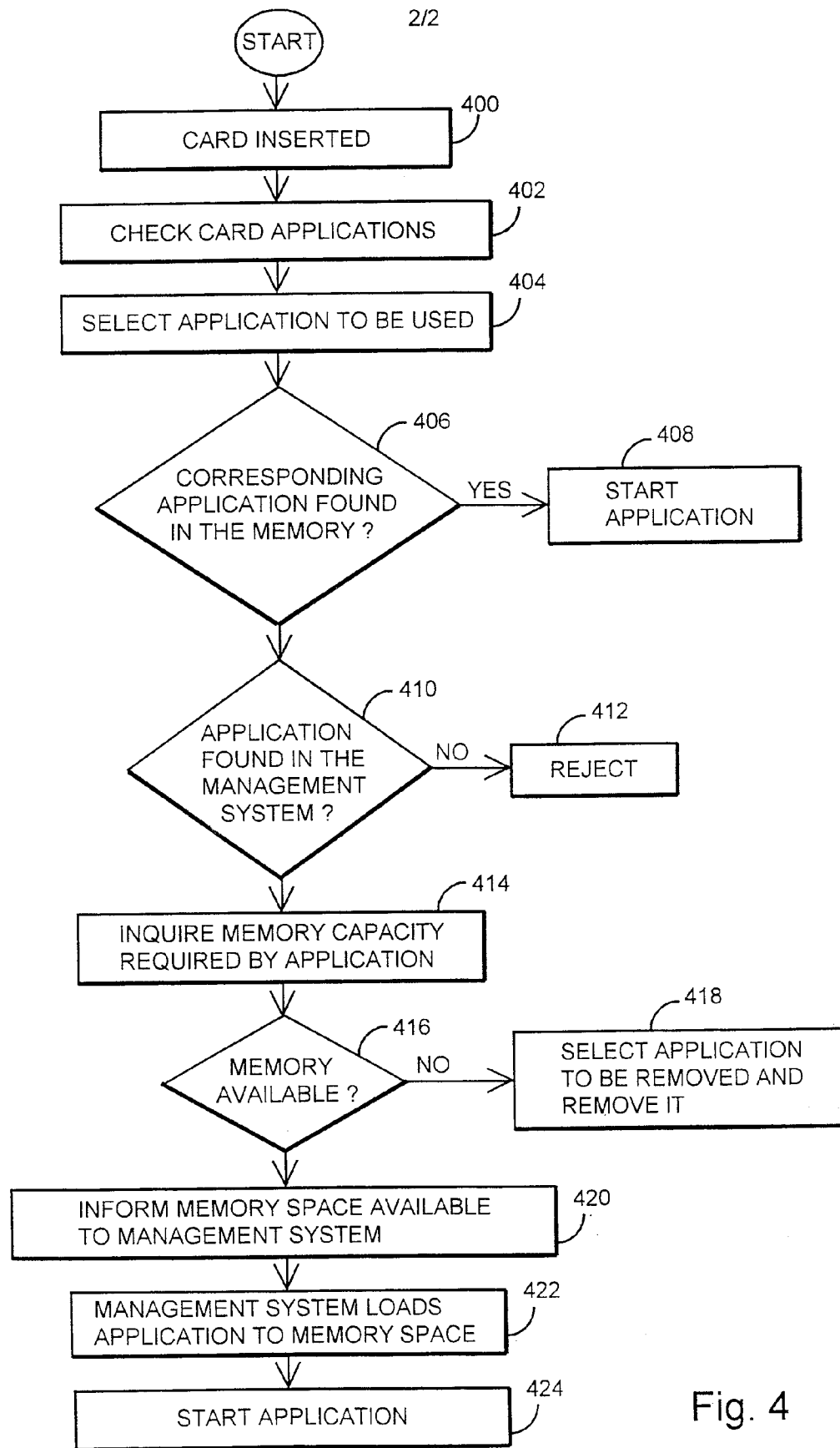


Fig. 4



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<p>(21) International Application Number: PCT/ZA99/00092</p> <p>(22) International Filing Date: 17 September 1999 (17.09.99)</p> <p>(30) Priority Data: 98/8696 23 September 1998 (23.09.98) ZA</p> <p>(71)(72) Applicant and Inventor: VAN BERGEN, Johannes, Cornelis [ZA/ZA]; 365 Bush Street, Willowpark Manor, P.O. Box 74158, Lynnwoodridge 0040 Pretoria (ZA).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): CILLIERS, Petrus, Johannes [ZA/ZA]; 230 Roos Street, Meyerspark, 0184 Pretoria (ZA).</p>		<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
<p>(54) Title: ALARM AND IMMOBILISER WITH GSM CELLULAR PHONE</p>		
<p>The diagram illustrates the CELL-EYE system architecture. It features a central GSM Repeater (3) that acts as a hub. On the left, a Vehicle Equipped with Cell-Eye System (2) and a Property Equipped with Cell-Eye System (1) are shown. Both the vehicle and the property are connected to the GSM Repeater. On the right, a Remote GSM Cell-Phone (4) is also connected to the GSM Repeater, forming a triangular network structure.</p>		
<p>(57) Abstract</p> <p>A security system called CELL-EYE is disclosed. The system is designed for protecting specific property, human life and the prevention of vehicle-theft and irregular and willful intrusion of property through the detection and automatic reporting of security violations to a specific GSM mobile unit via the DATA and SMS service of the GSM mobile telephone network. The CELL-EYE system includes a controller and memory unit for the verification of the identity of incoming calls, and the activation, deactivation and programming of the CELL-EYE via validated incoming calls received by an alarm linked GSM mobile unit and modem from a remote GSM mobile unit. When activated the controller performs a mode 1 alarm procedure which monitors the alarm outputs of a vehicle or property security system via an alarm sensing interface. When an alarm is detected, the controller automatically places an outgoing call to a designated remote GSM mobile unit and indicates the nature of the alarm via a GSM SMS message. The CELL-EYE controller also includes a program to perform a mode 2 localization procedure which automatically reports the location of the GSM repeater station nearest to the CELL-EYE GSM unit to a remote GSM mobile unit via a GSM SMS message when the CELL-EYE is remotely programmed to do so, thus facilitating the localization and tracking of a stolen vehicle equipped with a CELL EYE system. The CELL EYE also includes a vehicle immobilizer and protection interface for performing a mode 3 procedure upon the reception of an incoming call to the vehicle-installed GSM mobile unit. A mode 3 procedure activates the immobilizer systems in a stolen vehicle to facilitate the rapid recovery of the vehicle.</p>		

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ALARM AND IMMOBILISER WITH GSM CELLULAR PHONE

TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to vehicle and property security and alarm equipment, vehicle tracking equipment and stolen vehicle recovery equipment. More specifically, the present invention relates to a system to interface conventional vehicle and property security and alarm equipment and vehicle immobilization equipment to a linked GSM mobile telephone system to detect alarms, to report such alarms to the owner or security service provider, to report the location of a vehicle to the owner or security service provider and to remotely activate conventional immobilization equipment installed in a vehicle.

BACKGROUND TO THE INVENTION

Residential housebreaking and vehicle theft are among the five most frequently occurring crimes. An increasing number of residential property owners possess security systems for the detection of irregular or willful intrusion linked to audible alarm systems for alerting others to a potential crime. An increasing number of vehicle owners possess vehicles equipped with intrusion detection systems and vehicle immobilization systems aimed at reducing the incidence of vehicle theft or hijacking or theft from motor vehicles. Most housebreakings, vehicle thefts and hijacks occur in metropolitan areas and along highways. Most stolen and hijacked vehicles are removed to particular locations along known metropolitan routes. Vehicle and property insurance rates are generally increasing. The number of users of cellular mobile telephone systems are also daily expanding. Most metropolitan areas and highways are serviced by the GSM mobile cellular phone network. The proliferation of GSM cell-phone users and the proliferation of conventional alarm systems without a direct link to the owner or to a security service provider, presents an opportunity for linking the two systems via a dedicated and integrated controller integrated with an installed GSM cell-phone system which permits two-way communication between the owner or security service provider and an unattended cell-phone unit installed in a vehicle or property.

Alarm notification and reporting systems which use conventional telephone lines are available for use in connection with residential property and other buildings. Such systems provide for automatic calls to a security service provider when a security violation has occurred. Such systems can be rendered useless when the phone lines are cut or when the conventional phone system is not functional. The reliability of such building-installed alarm systems can be enhanced by means of an unattended GSM cellular phone equipped with an automatic call initiating controller.

Sophisticated vehicle tracking systems are available for use in stolen vehicle recovery systems and fleet management systems which use a Global Positioning Satellite System (GPS) device installed in the vehicle to pinpoint the vehicle location. Such systems also require a dedicated radio communication system to report the vehicle location to the tracking service, often via satellite communication system. Such systems require the involvement of a security service provider which is equipped with appropriate mobile reception equipment and vehicle location display equipment in order to process the GPS data. There is a need for a low cost vehicle tracking system which uses the GSM mobile phone network and which permits the owner to take control of the action following a vehicle theft or hijack or to make use of any security service provider equipped with a GSM mobile phone in assisting him to take action following an alarm, theft or hijack.

By the remote activation of vehicle immobilization systems including fuel starvation valves and interruption of current to the ignition system, stolen vehicles can be immobilized by the use of a GSM cell-phone before such vehicles reach inaccessible or high risk areas and thus the rapid recovery of such vehicles can be facilitated.

SUMMARY OF THE INVENTION

Owner controlled security: The invention called a CELL-EYE system relates to an owner controlled remote alerting device comprising a method of and apparatus for using the GSM cellular phone network to send a message to the owner of a vehicle equipped with a CELL-EYE device or to the owner of a property equipped with such a device or to a designated security service provider in order to alert such owner or security provider of an attempted intrusion of the property, or attempted theft of a vehicle or of attempted theft from a vehicle.

Elements of the system: The CELL-EYE system comprises an installed battery operated GSM mobile unit which will be referred to as the Alarm Linked Unit (ALU). The ALU is linked with a controller and memory unit which in turn is linked with a vehicle security system or a property security system and its alarms via appropriate interfaces. The interfaces of said CELL-EYE system comprises an alarm sensing interface and

a controller with signalling means for generating an outgoing call and a SMS message from the installed GSM mobile unit to a remote GSM cellular phone in response to a number of alarm conditions which correspond to irregular or willful disturbance of the vehicle or property, and an immobilizer/protection interface to activate a vehicle immobilizer or protection unit when an instruction for such action is received via an incoming call to the installed GSM mobile unit.

Purpose of the CELL-EYE: It is the purpose of the said CELL-EYE system to assist the owner or security service provider to protect specific property, human life, and to prevent any criminal intervention thereon, to reduce the likelihood of successful housebreaking, to assist owners, security service providers and police departments in recovering stolen vehicles, to assist security service providers and police departments in apprehending criminals and to reduce insurance rates.

Definitions: To be consistent with GSM vocabulary a call from the ALU to the GSM network is named "mobile originated call" or "outgoing call" and a call from the GSM network to an ALU is called "mobile terminated call" or "incoming call".

The GSM mobile unit which is installed in the vehicle or property and linked to the vehicle or property security system will be referred to as the Alarm Linked Unit (ALU) in order to distinguish it from other GSM mobile units which may be used in the utilization of the invention. Likewise the specific remote GSM mobile unit which is used to receive messages sent by the CELL-EYE and to communicate with the ALU will be referred to as the Remote Message Unit (RMU).

Automatic owner alerting function: The said CELL-EYE system is designed to automatically initiate an outgoing call to a preprogrammed RMU and indicate by means of a SMS message the nature of the disturbance. The message sent by the ALU is intended to alert the owner or security service provider of a criminal act perpetrated on the said vehicle or property and in the case of a vehicle to report to the owner or security service provider the location of the cellular mobile phone repeater station within whose immediate surroundings the ALU is located.

Remote activation: The controller of the said CELL-EYE system is designed to be activated by remote control via an incoming call carrying a coded Short Message Service (SMS) message. The said CELL-EYE system also allows the owner or security service provider to remotely activate a vehicle immobilization or protection system via the ALU.

Improvement in property-installed security systems: Low cost property-installed intrusion detection and alarms systems without an automatic dialling facility to a security service provider can be enhanced without the involvement of a dedicated security service provider through the addition of the said CELL-EYE system which can be programmed to contact the owner via the GSM cellular phone network and report to the owner the nature of the security violation. The owner can then, if necessary contact a security service provider or police department. Through its link to the GSM cellular phone system via a controller and memory unit the said CELL-EYE system also permits the remote activation or deactivation of alarms in the property protected by such a device.

Vehicle localization and tracking: The present invention provides also for a vehicle localization and tracking facility through an interface which relays the locality of the GSM cellular network repeater station nearest to the unattended GSM cellular mobile phone installed in a vehicle to the owner or security service provider by means of the GSM short message service (SMS). Thus the present invention provides a low cost alternative to satellite linked vehicle tracking systems by the use of the information available through the GSM network which indicates on any active mobile unit the location of the nearest GSM network repeater tower.

Remote immobilization and protection: The present invention also provides for a remote activation interface which links vehicle immobilization systems to the ALU installed in the vehicle. Such remote activation is an extension of existing systems which permit remote activation of a vehicle tracking transmitter installed in the vehicle. Furthermore, hijacked vehicles can be immobilized only when they are well away from an abandoned owner or driver thus reducing the likelihood of retaliation by the hijackers. The immobilization facility together with the localization and tracking facility provided by the CELL-EYE invention, promotes rapid recovery of a stolen vehicle.

Remote programming: A further advantage of the two-way communication between an owner and the protected which is possible with the present invention, is the facility which allows the owner to remotely

activate or program the security system by means of a telephone call from the owner's cellular phone to the CELL-EYE installed in the vehicle or property. Such programming could include periodic customization of the level of security appropriate for a particular situation and presetting alarm parameters such as the numbers that must be dialled when an alarm condition is detected, how frequently such calls need to be repeated and what to do if connection to a particular called number is not available at the time. Remote activation and programming of the device also alleviates the need for a user accessible interface to the CELL-EYE system.

Panic button function: If a panic button in the hijacked vehicle or in the protected property is depressed by an occupant, the said CELL-EYE system will automatically be activated and initiate an outgoing call and send a SMS message to a preprogrammed RMU which could be a number different from that used for mode 1 operation. The said RMU will display the number of the ALU that originated the call and then a SMS message will indicate that the call originated with the depression of a panic button. In the case of a vehicle installed CELL-EYE system, the system will then automatically go into mode 2 operation and indicate the location of the GSM repeater nearest to the ALU until by means of a SMS message on the RMU until the said CELL-EYE system is de-activated from a RMU by an incoming call to the ALU followed by a request and validation of the PIN code. The said automatic initiation of an outgoing call will be initiated without the CELL-EYE system having first been activated by means of an incoming call. This function of the said CELL-EYE system is intended to alert a friend or security service provider to take action to come to the aid of the person who depressed the panic button.

Identification of ALU originating the outgoing call: The said CELL-EYE system facilitates owner controlled handling of security violations in either vehicles or property through the messages received on his RMU. The ALU originating the outgoing call to the RMU is identified by means of the caller line identification feature which is available on most GSM cellular phone units. This feature will indicate to the owner or security service provider the cell-phone number of the ALU which originated the call and SMS message.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

Without limiting the scope of the present invention an example of the invention will now be described with reference to the accompanying drawings in which:

- Figure 1 is a diagram depicting the environment in which the present invention is designed to operate.
- Figure 2 is block diagram of a preferred embodiment of the present invention. Figure 2 depicts the elements which comprise the CELL-EYE system incorporating an installed GSM mobile unit without keypad and with a linked modem. The arrows in the block diagram indicate the direction of information flow.
- Figure 3 is a block diagram depicting the elements which replace the modem in a CELL-EYE system incorporating an installed GSM mobile unit with keypad and without a linked modem, where the GSM mobile unit is linked to the controller and memory unit via electromechanical interfaces. The arrows in the block diagram indicate the direction of information flow.

A more complete understanding of the present invention may be derived by referring to the detailed description and claims when considered in connection with the FIGURES. In the accompanying FIGURES the same reference numbers refer to the same elements of the system throughout the FIGURES.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the accompanying drawing in Figure 1 the said CELL-EYE system is designed to operate in an environment where:

property 1 is a property which is equipped with a property security system and said CELL-EYE system installed near the controller or alarms of the property security system,

vehicle 2 is a vehicle which may, but need not include with a hidden vehicle security system which may include an alarm and a vehicle immobilization and protection system.

Said CELL-EYE system is installed in said vehicle, and said property or said vehicle are linked to a GSM

cellular mobile phone network with a multiplicity of GSM mobile network repeaters 3, where each cell is defined by the range of a particular repeater,

remote GSM cell-phone 4 (RMU) which may be in possession of the owner of said property or said vehicle, or in possession of a security service provider designated by the owner to monitor and respond to calls from said CELL-EYE system,

and said RMU is linked to said CELL-EYE system via the GSM mobile phone network represented by the repeater 3.

Referring to Figure 2, the preferred operation of the said CELL-EYE system is now described.

Remote activation: The CELL-EYE system can only be activated, de-activated or programmed via an incoming call to the ALU 16 and its associated modem. An activation call can be initiated from any hand-held GSM mobile unit. Upon reception of such an incoming call the controller will respond by initiating an SMS message requesting a PIN code to be entered. The CELL-EYE does not have a keypad to activate it or set any parameters. This ensures that the CELL-EYE can be hidden inside a vehicle and that any communication from a hand-held GSM cellular phone to the CELL-EYE is a secure communication conditioned on the use of two valid PIN codes, one for activating the hand-held GSM unit and the other for communicating to the unattended GSM mobile unit. The PIN code of the CELL-EYE is stored in non-volatile memory on the controller board. It can be changed only by providing the previous PIN code or a factory default PIN code. If the PIN code is entered incorrectly, the CELL-EYE sends up to two subsequent requests for the PIN code. If a valid PIN code is not entered upon the third trial, the CELL-EYE enters a locked mode which bars it from responding to any incoming calls for one hour.

Mode 1 operation: The remote alerting mode of operation (mode 1) of the said CELL-EYE system involve the following subsystems:

- a) the disturbance sensors 11,
- b) the vehicle or property security system 12,
- c) the alarm sensor interface 13,
- d) the panic button 17,
- e) the controller and memory unit 14,
- f) the modem 15, and
- g) the installed GSM mobile unit 16 with an integral antenna.

Mode 2 operation: The said localization mode of operation (mode 2) of the said CELL-EYE system involve the following subsystems:

- a) the installed GSM mobile unit (ALU) 16
- b) the modem 15, and
- c) the controller and memory unit 14.

The mode 2 operation of the CELL-EYE system involves the following steps using the said subsystems:

- a) the installed CELL-EYE system receives an incoming call from a RMU,
- b) the identity of the caller is interrogated by the CELL-EYE returning a SMS message to the caller to indicate that a PIN code be entered,
- c) the caller enters a PIN code on the RMU which is received by the ALU and validated by the controller of the CELL-EYE system by comparison with a code stored the nonvolatile memory of its controller and memory unit .
- d) the CELL-EYE system returns a SMS message to indicate that the PIN has been validated,
- e) the operator using the RMU enters a code to activate mode 2 operation of the CELL-EYE system,
- f) the controller of the CELL-EYE system interrogates the ALU via the modem to determine the location of the nearest repeater as indicated by the GSM mobile phone network,
- g) the controller of the CELL-EYE system converts the returned location to the AT codes required for initiating a SMS message to the RMU via the modem and ALU
- h) steps f) and g) are repeated at preprogrammed intervals until the call is terminated by the RMU.

Mode 3 operation: The said remote immobilization and protection mode of operation (mode 3) of the said CELL-EYE system involve the following subsystems:

- a) the mounted GSM mobile unit 16
- b) the modem 15,

- c) the controller and memory unit 14,
- d) the vehicle immobilizer/protection interface 18, and
- e) the vehicle immobilizer/protection actuators 19

Communication devices: Communication to and from the CELL-EYE system to the user of the system is accomplished by means of a GSM mobile phone unit, the alarm linked unit 16, which is installed in the property or vehicle, together with a modem 15 which is designed to operate with the ALU.

Input devices: The CELL-EYE system is designed to be linked to input devices installed in the same property of vehicle namely the disturbance sensors 11 which form part of the vehicle or property security system 12 which has alarm outputs. The alarm outputs are detected and converted to digital form by the alarm sensor interface 13 which forms part of the CELL-EYE system. A panic button 17 installed in the property or vehicle provides a direct input to the controller and memory unit 14 of the CELL-EYE system.

Output devices: The CELL-EYE system is designed to be linked to output devices installed in the same vehicle namely vehicle immobilizer or protection actuators 19 which may form part of the vehicle security system 12 or may separate elements. The vehicle immobilizer or protection actuators 19 are linked to the vehicle immobilizer or protection interface 18 which forms part of the CELL-EYE system. The vehicle immobilizer or protection interface 18 convert digital output signals from the controller and memory unit 14 to appropriate signals for activating the immobilizer or protection actuators.

Power supply elements: The power supply for the CELL-EYE system will be a rechargeable battery 20 with a standby lifetime of at least 48 hours. The said power supply will provide power for the following elements of the CELL-EYE system:

- a) the alarm sensor interface 13,
- b) the controller and memory unit 14,
- c) the modem 15,
- d) the alarm linked GSM mobile unit 16, and
- e) the vehicle immobilizer/protection interface 18.

The said battery 20 will be independent of the existing power supply or battery of the vehicle or property security system 12 and the power supply for the vehicle immobilizer/protection interface unit 18 so as to provide the facility for remote notification of the owner or security service provider of a power failure or disconnection of the vehicle battery. The said battery of the CELL-EYE system will be continuously charged from an external power source by means of a battery charging unit 21. In the case of a vehicle-installed CELL-EYE system the battery of the CELL-EYE system will be charged from the battery of the vehicle 22 using a battery charging unit 21. In the case of a property-mounted system the CELL-EYE system will be charged by means of the same battery charging unit 21 designed to be used in a vehicle-installed system, but with an additional external mains to 12 V DC converter 23.

Disturbance sensors 11: The disturbance sensors 11 and the vehicle or property security system 12 may be either be one of the following:

- a) part of an existing security installation in a vehicle or property,
- b) an external security system installed with the specific purpose of linking with the CELL-EYE system, or
- c) part of a security system integrated in the same enclosure with the other elements of the said CELL-EYE system.

The disturbance sensors 11 may include any appropriate sensors which could detect irregular or willful disturbance of the vehicle or property which may be associated with a criminal act, such as but not limited to the following:

- a) a micro switch or magnetically operated sensors which can detect the opening or attempted opening of a door or window, glove compartment or engine compartment of a vehicle,
- b) an accelerometers which can detect the movement of a vehicle or piece of property such as a safe,
- c) continuity sensors which can detect the breaking of a window,
- d) intrusion sensors operating by the interruption of an infrared light beam,
- e) infrared or ultrasonic sensors for detecting movement of a human body within a designated area,
- f) current loop sensors which can detect the interruption of power from either the mains or from a battery or detect the interruption of power to the telephone system which would occur if telephone wires are cut,
- g) a panic button linked to the vehicle or property security system,
- h) tampering sensors such as micro switches which can detect the attempted removal of the security system, the radio installed in the vehicle, the vehicle immobilizer, or the enclosure of the said CELL-

EYE system,

- i) sensors indicating interruption of power to the security system 12 or a disconnection of the vehicle battery 22,
- g) any other sensors intended to operate with the security system 12, or
- j) any device expressly installed to detect an attempted intrusion or theft of the vehicle or property or anything within it, whether such sensors form part of a separate security system 12, or not..

The vehicle or property security system 12: The security system 12 should preferably be a system approved by the appropriate vehicle security system certification authorities and be installed by an qualified and approved installer. It is assumed that except for the case of the depression of a panic button, the security system 12 will for its normal operation be activated after an appropriate code has been entered on a keypad or after a button on a coded remote activation transmitter has been pressed to transmit an activation signal to a receiver which forms part of the said security system. For security systems installed in buildings, the said system is assumed to provide for a sufficient delay time for the user to leave the building before it becomes active.

Panic button 17: The panic button 17 may be a normally open switch mounted in an accessible place in the vehicle or property where said panic button is connected directly to the controller and memory unit of said CELL-EYE system in order to permit automatic activation of the said CELL-EYE system by an occupant of the vehicle or property. Said panic button may also be such a switch which forms part of an installed security system which is also directly connected to the CELL-EYE system.

Alarm sensor interface 13: The alarm sensor interface 13 forms part of said CELL-EYE system and is a subsystem which detects any relevant output from the vehicle or property security system 12 where such output is specifically activated in response to the detection of irregular or willful disturbance of the vehicle or property. Such output may include but should not be limited to the following:

- a) the switching on of indicator lights on the security system,
- b) the switching on or flashing of vehicle or property lights,
- c) the application of power to a siren or audible alarm,
- d) the production of sound by means of a siren or audible alarm, or
- e) the initiation of a telephone call to a security service provider from a property-installed security system.

The alarm sensor interface 13 which forms part of the said CELL-EYE system is intended to convert such an output from the vehicle or property security system 12 to a digital electronic signal compatible with required inputs of the controller and memory unit 14. The alarm sensor interface 13 contains circuits to perform the following functions:

- a) a time and frequency filtering function to minimise the likelihood of its activation by extraneous signals not related specifically to the output of security system 12,
- b) a latching function to keep its output signals in the active state even after termination of the alarm indicating outputs of the security system 12,
- c) a reset function which resets the output signals of the alarm sensor interface after the reception of digital inputs from the ALU 16 via the modem 15 and the controller and memory unit 14.

Controller and memory unit 14: The controller and memory unit 14 which form part of the said CELL-EYE system is intended to control the operation of the CELL-EYE system through the interpretation of incoming calls, the automatic initiation of outgoing calls, the processing of DATA it receives from either the alarm sensor interface 13 or the ALU, and the activation of the vehicle immobilizer/ protection interface 18. The controller and memory unit 14 comprises a micro controller with nonvolatile memory and associated digital circuits and software to perform the following functions:

- a) generate the AT commands implemented by the GSM SMS message service for initiating outgoing calls from the ALU to the RMU via the modem,
- b) interpret the AT control commands received from the RMU via the modem and ALU,
- c) respond to incoming calls by first generating the AT commands required for requesting a PIN code from the RMU,
- d) compare a PIN code received from the RMU with the code stored in memory and generates the AT commands to send a confirmation message to the RMU if the PIN code is accepted,
- e) provide a disarming period during which the CELL-EYE system is de-activated for a preprogrammed duration if the programmed maximum duration between the reception of a first incoming call and the provision of a valid PIN code has expired,
- f) provide a disarming period during which the CELL-EYE system is de-activated for a preprogrammed duration in case a valid PIN code is not received in three trials,

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- g) responds to messages received by the ALU in an appropriate way such as updating the PIN code stored in memory, updating the phone number to be used for automatic notification of a security violation, updating the phone number to be used in response to a panic button depression, activation or de-activation of the automatic call function, activation or de-activation of the vehicle localization function,
 - h) generate signals to activate a vehicle immobilizing or protection system,
 - i) automatically initiates an outgoing call to a preprogrammed RMU when any of outputs of the alarm sensor interface are set,
 - j) generate the SMS codes to indicate to a preprogrammed RMU the nature of the alarm which initiated the call,
 - k) automatically initiate an outgoing call to another preprogrammed RMU in response to a depression of the panic button 17 and generate the SMS codes to indicate that the call was originated by the depression of a panic button,
 - l) automatically interrogate the ALU for the location of the nearest GSM repeater if the vehicle localization function is activated,
 - m) convert the location of the nearest GSM repeater station as supplied through the GSM network to the ALU to a SMS message which is sent to the designated RMU at regular intervals,
 - n) activates the vehicle immobilizer/protection interface 18 if a validated request for such activation is received from a RMU, and
 - o) any other functions which are required for the implementation of the intended functions of the CELL-EYE system.

The controller unit of the CELL-EYE system will contain firmware in non-volatile memory for the handling of the SOFT-ON power up feature when power is connected to the ALU and modem. The same firmware will ensure that the ALU module does not power itself off or cause itself to be powered off by the SOFT-ON circuitry operating inadvertently, due to power fluctuations.

Modem 15: The modem 15 is a GSM modem integrated with the GSM mobile unit 16 to facilitate data communication between the controller and memory unit 14 and the GSM mobile unit 16. In one embodiment of the CELL-EYE system this modem forms part of an integrated GSM module and modem. The data communication mode is asynchronous mode serial communication at up to 9600 bit/s. The modem is designed to interpret the commands sent to the said modem by the controller for the purpose of activating various functions of the GSM mobile unit 16 and to convert data inputs from the GSM mobile unit 16 to the codes which can be interpreted by the controller and memory unit 14.

Alarm linked GSM mobile unit 16: The alarm linked GSM mobile unit 16 (ALU) is preferably a GSM mobile unit without keypad. It may be but is not limited to being a FALCOM A2 GSM mobile unit with modem. This unit is a fully type approved cellular phone. It has the facility for an internal or external SIM card. In the preferred embodiment the external SIM card reader, if used, is to be placed in a hidden but accessible part of the vehicle or property for example in a locked compartment. The external SIM card reader will be connected to the GSM mobile unit by means of a cable and a 6-pin connector. In a building-installed system the internal SIM card option may be used. The GSM mobile unit will be configured for voiceless DATA and SMS mode operation.

Vehicle immobilizer/protection system interface 18 and vehicle immobilizer/protection actuators 19: The vehicle immobilizer/protection interface 18 comprises circuits for converting the digital output signals from the controller/memory unit 14 to signals for electrically activating external immobilizer/protection actuators 19 in the vehicle or the actuators of an immobilizer/protection system integrated with the CELL-EYE system. Immobilization or protection of the vehicle may be achieved by one or more of the following means:

- a) interruption of the current to the starter solenoid of the vehicle via an electrically activated switch which activates a normally closed relay that interrupts the power to the starter solenoid or starter motor whenever there would be an attempt to start the vehicle by means of the ignition switch,
- b) interruption of current to the ignition system of the vehicle via an electrically activated switch which supplies current to a normally closed relay,
- c) interruption of the fuel flow to the engine system via an electrically operated switch which supplies current to an electrically operated fuel valve which is normally closed,
- d) activation of an electrically operated brake or wheel locking system,
- e) activation of an electrical lock which prevents the engine compartment of the vehicle from being opened to gain access to the vehicle battery 22 or to override other immobilization systems 19.

DETAILED DESCRIPTION OF THE EMBODIMENT OF THE SYSTEM INCORPORATING ELECTROMECHANICAL INTERFACES

Referring to the accompanying drawing in Figure 3 the following preferred embodiment is used for implementation of the CELL-EYE system with a standard GSM handheld cell-phone with keypad and silent ringer (vibrator) which is used as an ALU in stead of a dedicated GSM mobile unit without keypad but with modem as described above:

Electromechanical dialling interface 24: One embodiment of the link between the controller and memory unit 14 and the standard GSM cell-phone with integral keypad used for this embodiment, comprises an electromechanical dialling device linked with the controller and memory unit. The objective of the mechanical dialling system is to dial a preprogrammed number on the ALU through controlled electromechanical depression of the keys on the keypad of a standard cell-phone inserted into a hidden container.

The said electromechanical dialling device 24 consists of a set of plunger-type solenoids arranged on a backing plate in an array matching the location of the keys on the keypad of a particular GSM handheld cell-phone which is inserted in an enclosure equipped with the mechanical interface. The said backing plate forms a hinged side of the enclosure designed to hold a standard GSM cell-phone in position for unattended operation. When the hinged side is closed, the backing plate is positioned with the solenoids just touching the keys of the ALU. The direction of movement of the solenoid plungers is perpendicular to the backing plate.

When energized by the controller, the solenoids of said electromechanical device move in such a way as to depress the corresponding keys on the keypad of the cell-phone. The solenoids are energised by digital output of the controller unit 14 via transistor current amplifiers. For this embodiment the controller is programmed to energize the solenoids in such a way as to initiate transmission of an outgoing call and a GSM SMS message to the owner's RMU. The owner will receive an indication of the origin of the call by means of the caller line identification message which is available on the GSM network on any GSM mobile phone configured for displaying such a message. The corresponding SMS message is coded to indicate to the owner the nature of the irregular or willful disturbance of the vehicle or property.

The electromechanical system will repeatedly dial the said SMS message to the owner at preset intervals ranging from 5 minutes to 30 minutes until the battery of the cell-phone is drained, or the call is terminated by the remote RMU or the system is de-activated by removal of the cell-phone from the enclosure.

The silent ringer detector 25: One embodiment of the link between the ALU and the controller and memory unit of the said CELL-EYE system comprises a circuit for the electromechanical detection of an incoming call on an installed ALU equipped with a silent ringer. The silent ringer comprises a vibrating element designed to alert the user of such a GSM mobile unit of an incoming call. In the present embodiment of the CELL-EYE system the vibrator movement indicating an incoming call is detected by means of an integrated circuit accelerometer mounted in the housing for the GSM mobile unit in close proximity to the ringer.

The accelerometer output is processed by a filter circuit which responds only to the vibration frequency of the ringer and not to vehicle vibrations. The output of the filter circuit provides a digital signal which is interpreted by the controller and memory unit to activates an external immobilization system or an integrated vehicle immobilization system via the vehicle/protection interface 18 of the said CELL-EYE system.

In summary, the present invention provides for interfaces between conventional alarm systems and an installed GSM cellular phone to facilitate:

- a) the reporting of security violations via automatic calls directing coded SMS messages to a remotely located GSM mobile phone equipped with SMS service,
- b) the provision of information on the locality of the unattended GSM mobile phone to a remote GSM cellular phone via the SMS service,
- c) the activation and programming of the installed GSM mobile unit by means of DATA messages sent from a remote GSM cellular phone, and
- d) the activation of vehicle immobilization systems via DATA messages received by the installed GSM

mobile unit from a remote GSM mobile phone or via the detection of an incoming call to the installed GSM cellular phone via a silent ringer detector.

The present invention has been described with reference to preferred embodiments. However, those skilled in the art may recognise that changes may be made in this preferred embodiment without departing from the scope of the present invention. It is foreseen that the present invention may be adapted to incorporate additional capabilities and features that may become available. Such additional features may include the further processing of data passed between the remote GSM mobile unit and the unattended GSM mobile unit installed in the vehicle or property to achieve various desired levels of security and desired false alarm rates. Those skilled in the art will recognise that the specific tasks and procedures described herein in connection with the preferred embodiment may be altered significantly without departing from the scope of the present invention. These and other changes and modifications which are obvious to those skilled in the art are intended to be included within the scope of the present invention.

CLAIMS

1. A security system called a CELL-EYE system is disclosed which operates with GSM digital mobile communication devices for protecting specific property, human life and for the prevention of vehicle-theft and irregular and willful intrusion of property through
 - the detection and reporting of alarm outputs of vehicle or property security systems by an unattended device;
 - the notification of a remote person or security service provider of the depression of a panic button in a vehicle or building;
 - the localization and tracking of a vehicle; and
 - the remote activation of a vehicle immobilization system.Said CELL-EYE system comprises:
 - a GSM mobile unit installed in a vehicle or property
 - a modem linked to said GSM mobile unit for the reception and transmission of DATA and SMS messages via the GSM mobile network:
 - a vehicle or property security system having an electronic or audible output signal which is activated to indicate an irregular and willful attempt of vehicle theft or intrusion of property
 - an alarm sensor interface linked to the alarms of a vehicle or property security system;
 - a panic button which is to be mounted in a hidden but accessible location in a vehicle or in an appropriate location in a building or property
 - a vehicle immobilizer and protection interface linked to a vehicle immobilizer system;
 - a controller and memory unit coupled to said modem and via the modem coupled to said GSM mobile unit, and coupled to said alarm sensor interface, to said panic button and to said vehicle immobilization interface;
 - a rechargeable battery to provide power to all the elements of the CELL-EYE system, excluding the said vehicle or property security system or the vehicle immobilization and protection actuators;
 - a battery charging unit for charging said rechargeable battery from an external 12 V battery or AC mains power to 12 V DC converter
 - an AC mains power to 12 V DC converter to provide power for said battery charging unit for property-installed CELL-EYE systems

data control means for responding to user input through incoming calls with data received via said installed GSM mobile unit, for initiating a message exchange with the originator of an incoming call to request the entering of a PIN code and to confirm the validity of the received PIN code, for changing the PIN code stored in the memory unit in response to a validated incoming call requesting such change of PIN code, for changing the stored numbers to which outgoing calls should be made in response to certain alarm conditions, for changing the stored parameters for unattended operation of the CELL-EYE system, for responding to an alarm condition indicated by said alarm sensor interface by initiating outgoing calls to send data and SMS messages to a stored number or numbers via the modem to said installed GSM mobile unit, for responding to the depression of said panic button by initiating outgoing calls to send SMS messages to a preprogrammed stored number or numbers via said installed GSM mobile unit, and for activating said vehicle immobilizer and protection interface in response to a validated incoming call with data specifically requesting such immobilization;

memory means for storing programmed procedures, codes and data retrieved from incoming calls communicated to said memory means via the said installed GSM mobile unit, modem and controller,

and for records of the status of alarm systems;

timing control means for determining the duration between repeated requests for a valid PIN code, the duration of a disarming and deactivation period of the CELL-EYE system after reception of an invalid PIN code, the duration between repeated calls to stored numbers, the duration of intervals between the activation of vehicle immobilizer systems, the duration of time over which a vehicle fuel starvation actuator is closed and any other timing function required for the intended operation of the CELL-EYE system. The parameters of the timing control means can be set via the said controller by incoming data carrying calls to the CELL-EYE GSM mobile unit and modem;

alarm sensing means implemented in the said alarm sensor interface for converting the audible or electronic alarm outputs of said vehicle or property security system to a digital signal compatible with the said controller;

2. A security system operating with GSM digital mobile communication devices as claimed in claim 1 wherein said user input to and remote programming of the CELL-EYE system can be achieved via an incoming call from another remote GSM mobile unit. Only after the provision of a valid PIN code will the installed GSM mobile unit permit the user to activate or deactivate the said CELL-EYE system or change any of the stored numbers, codes or parameters of the system.

3. A security system operating with GSM digital mobile communication devices as claimed in claim 1 additionally comprising

message control means forming part of said controller and memory unit and coupled to said remote programming means and alarm sensing means for transmitting to a remote GSM mobile unit SMS messages defined by said alarm parameters corresponding to specific alarm conditions. The messages are recorded and stored in the memory unit by said remote programming control means. Coupled to said message control means are means for encoding the outputs of said alarm sensor interface as SMS messages.

4. A means of effecting outgoing calls on a security system which uses conventional GSM digital mobile communication devices which are not equipped with an integral modem but do have a keypad for receiving user input comprising:

an electromechanical interface consisting of a set of plunger-type solenoids arranged on a backing plate in an array matching the location of the buttons of a particular GSM handheld mobile unit which is inserted in the rigid plastic housing for the mechanical interface;

a driver circuit for converting digital signals from the controller unit to suitable power levels for activating the said plunger-type solenoids for duration of time sufficient to effect a depression of the corresponding key on the keypad of the said mounted GSM mobile unit; and

a message control means for converting the programmed codes, numbers and messages to a set of signal for the sequential activation of the set of solenoids in said electromechanical interface in order to initiate an outgoing call in response to an alarm condition indicated by said alarm sensor interface.

5. A means of effecting activation of a vehicle immobilizer or protection actuator with a security system which uses conventional GSM digital mobile communication devices which are not equipped with an integral modem but do have a silent ringer for alerting the user to an incoming call. The said means of implementing the said vehicle immobilizer or protection interface comprises:

an integrated circuit accelerometer mounted in the rigid plastic housing for the GSM mobile unit in close proximity to the silent ringer of said GSM mobile unit;

a filter circuit which responds to the vibration frequency of the silent ringer and not to vehicle vibrations;

a latching circuit which is activated by the output of the said filter circuit to provide an output to the said vehicle immobilizer or protection actuators. Said latching circuit can be reset by the depression of a hidden reset button on the housing for the said mounted GSM mobile unit equipped with silent ringer or by removal of the said GSM mobile unit.

FIGURES

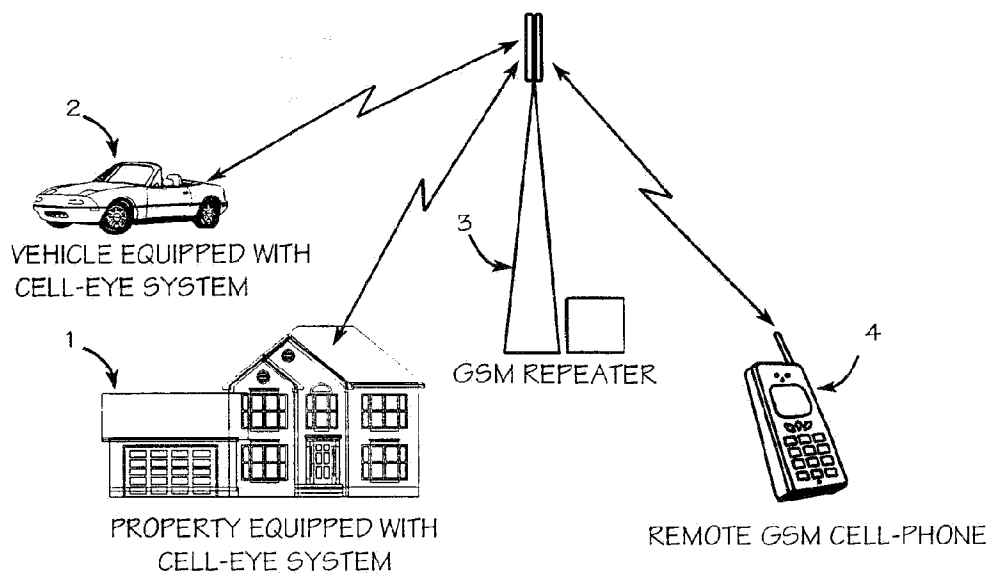


FIGURE 1

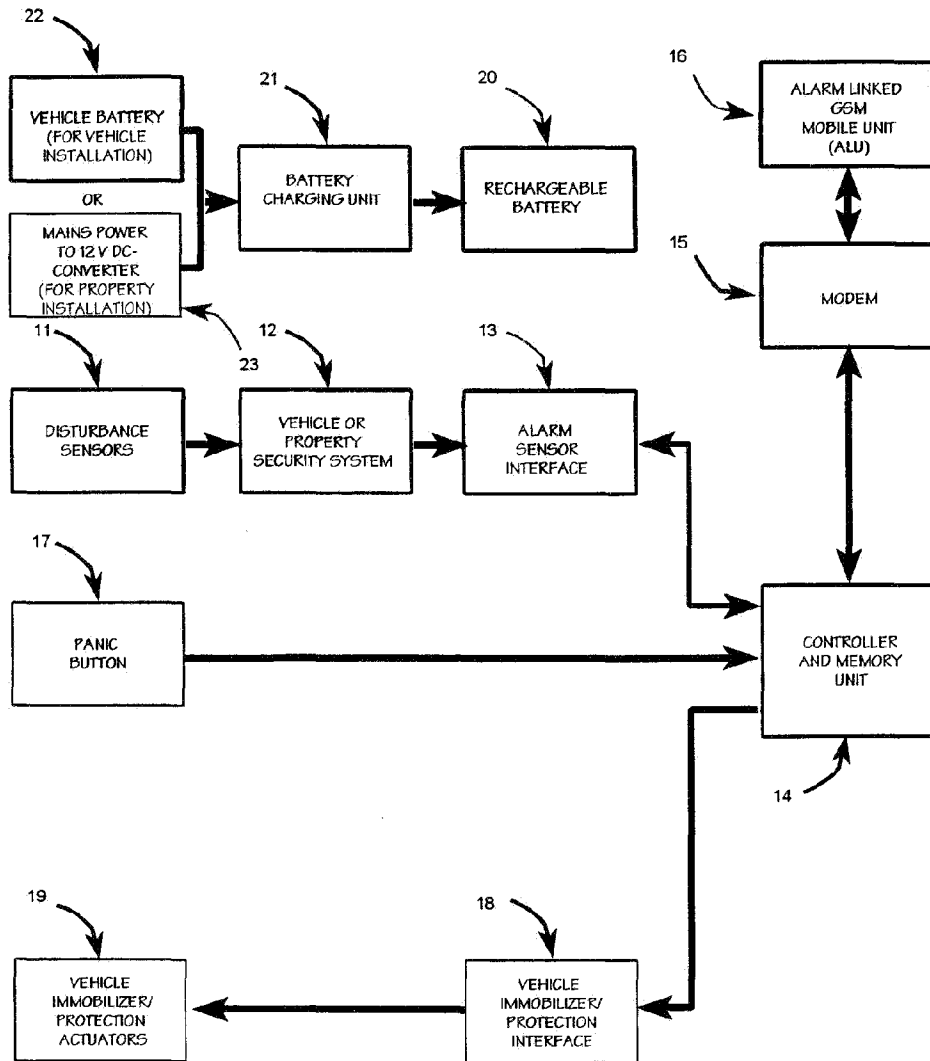


FIGURE 2

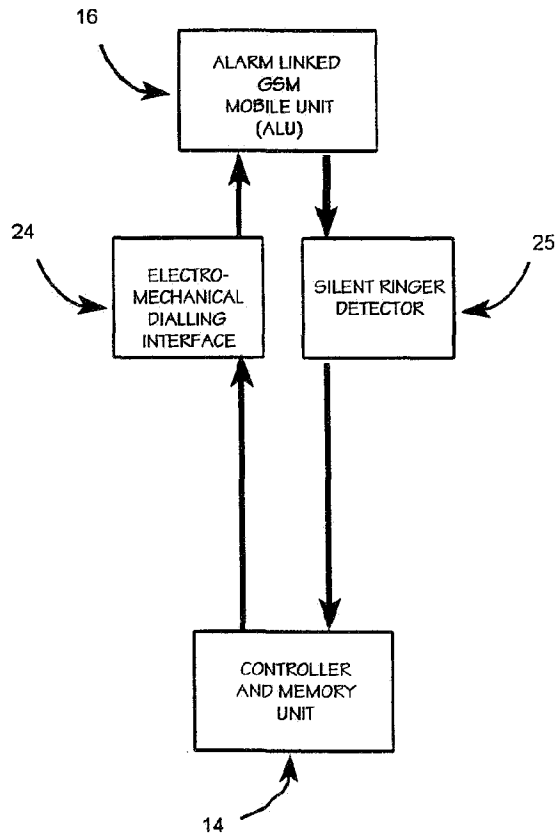


FIGURE 3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/ZA 99/00092

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B60R25/04 B60R25/10				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 B60R				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category ²	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	EP 0 748 727 A (SEGURMAP SA) 18 December 1996 (1996-12-18) column 2, line 43 -column 4, line 6 column 7, line 29 -column 8, line 17; figures ---	1,4		
A	WO 98 01769 A (LANDI GIULIANO) 15 January 1998 (1998-01-15) page 4, line 4 -page 5, line 10; claims 1,2; figures ---	1,4		
A	WO 96 38996 A (BUYTAERT STEVEN HERWIG CYRIEL ;MAES MARC JOSEF MARIA (BE); ORENS G) 5 December 1996 (1996-12-05) page 17, line 17 -page 19, line 15; figures --- -/--	1,4		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.				
¹ Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none; vertical-align: top;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family			
Date of the actual completion of the international search <p style="text-align: center;">1 February 2000</p>		Date of mailing of the international search report <p style="text-align: center;">09/02/2000</p>		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center;">Area Calama, A-A</p>		

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/ZA 99/00092

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 45822 A (LEO WILLIAM BLAIN ;MARTELLI DANIEL PETER (AU); DAIBER ROLF OTTO (A) 4 December 1997 (1997-12-04) claims 2,15 ---	1,5
A	WO 98 24664 A (WALKER RICHARD C) 11 June 1998 (1998-06-11) page 13, line 2 -page 15, line 5 page 21, line 16 -page 22, line 8 -----	1,5

1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

page 2 of 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ZA 99/00092

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. claims 1-3: alarm and immobiliser with a GSM cellular phone
2. claim 4: means for effecting outgoing calls
3. claim 5: means for effecting activation of a vehicle immobiliser

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/ZA 99/00092

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0748727 A	18-12-1996	ES 2110360 A	01-02-1998
WO 9801769 A	15-01-1998	IT RM960198 A	29-09-1997
WO 9638996 A	05-12-1996	BE 1009388 A	04-03-1997
		BE 1010053 A	02-12-1997
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		EP 0941182 A	15-09-1999

Form PCT/ISA/210 (patent family annex) (July 1992)

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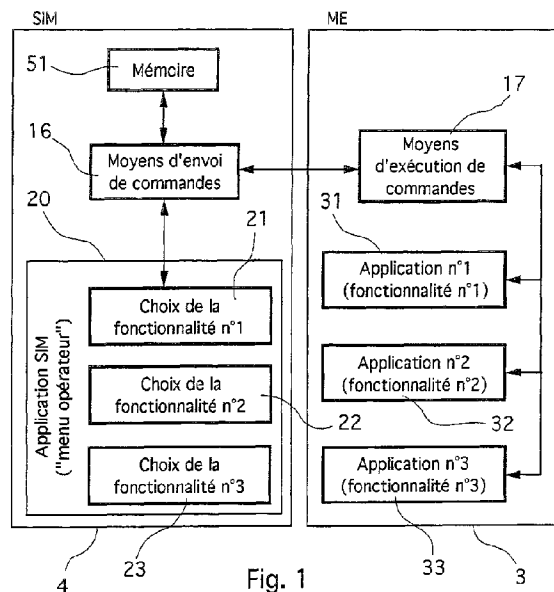
(30) Priorité: 22.10.1998 FR 9813455
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(54) Procédé de lancement d'une application par un terminal, sous commande d'un module d'identification d'abonné

(57) L'invention concerne un procédé de lancement par un terminal (3) d'au moins une partie d'une application de terminal (31 à 33), sous commande d'un module d'identification d'abonné (4) coopérant avec le terminal. Le module d'identification d'abonné et le terminal sont compris dans une station mobile comprise dans un système de radiocommunication.

Selon la présente invention, le procédé comprend les étapes suivantes : le module d'identification d'abonné (4) envoie au terminal (3) une commande de lancement par le terminal (3) d'au moins une partie d'une application de terminal (31 à 33) ; le terminal (3) exécute ladite commande de lancement, de façon à lancer ladite au moins une partie d'une application de terminal (31 à 33) et prendre la main.



EP 0 996 299 A1

Description

[0001] Le domaine de l'invention est celui des systèmes de radiocommunication avec les mobiles. Plus précisément, l'invention concerne le lancement d'une application (ou d'au moins une partie de celle-ci) par un terminal compris dans une station mobile.

[0002] Cette station mobile peut notamment, mais non exclusivement, être comprise dans un système de radiocommunication de type GSM (pour "Global System for Mobile communications" en anglais), DCS 1800 (pour "Digital Cellular System 1800 Mhz" en anglais), PCS 1900 (pour "Personal Communication System" en anglais), DECT (pour "Digital European Cordless Télécommunications") en anglais, ou encore UMTS (pour "Universal Mobile Télécommunication System" en anglais).

[0003] De façon classique, une station mobile comprend un terminal (ou ME, pour "Mobile Equipment" selon la terminologie GSM) coopérant avec un module d'identification d'abonné (ou SIM, pour "Subscriber Identity Module" selon la terminologie GSM, ou encore DAM, pour "DECT Authentication Module" selon la terminologie DECT). On notera que, selon les systèmes, la station mobile est parfois aussi appelée radiotéléphone mobile ou téléphone portable.

[0004] Par ailleurs, la présente invention s'applique à tout type de station mobile, et notamment que celle-ci émette et/ou reçoive de la voix et/ou des données. Dans le cas d'une émission/réception de données, le terminal peut être relié à un micro-ordinateur (portable de préférence), qui traite les données émises/reçues.

[0005] De façon connue, le terminal peut généralement exécuter une pluralité d'applications, dites "applications de terminal" dans la suite de la description. Par exemple, le terminal peut exécuter des applications de services (discutées plus en détail ci-dessous), des applications d'édition de messages (telles que par exemple les éditeurs SMS), etc.

[0006] Les applications de services, lorsqu'elles sont exécutées, permettent au terminal de bénéficier du(des) service(s) offert(s) par un serveur de services après qu'une communication a été établie entre le terminal et le serveur de services. Il s'agit notamment des navigateurs (ou "browser" en anglais), permettant au terminal de naviguer au sein d'un réseau informatique de type Internet, après qu'une communication entre le terminal et une plate-forme d'accès a été établie, ou encore des applications de paiement et/ou de réservation et/ou de consultation, permettant au terminal de bénéficier d'au moins un service de paiement et/ou de réservation et/ou de consultation offert par un serveur de services, après qu'une communication entre le terminal et le serveur de services a été établie.

[0007] Actuellement, la décision d'effectuer le lancement d'une application (ou d'au moins une partie de celle-ci) est toujours prise dans le terminal, soit par le terminal lui-même, "en automatique", soit par l'utilisateur,

soit la forme d'un choix (ou proposition) de fonctionnalité. Ce choix est généralement offert à l'utilisateur au sein d'une application principale de terminal, parfois aussi appelée "menu de terminal" ou "menu constructeur", qui permet à l'utilisateur de choisir une fonctionnalité parmi une pluralité de fonctionnalités offertes par le terminal. Le constructeur de terminaux souhaite bien sûr proposer un choix aussi étendu que possible de fonctionnalités dans son "menu constructeur", et conçoit son terminal dans ce but.

[0008] Par exemple, il est déjà possible aujourd'hui, avec certaines stations mobiles, d'accéder à un réseau informatique de type Internet. Pour cela, le terminal doit comprendre une touche spécifique ("touche d'accès Internet") permettant le lancement par le terminal d'un "navigateur" (qui est une application de terminal particulière). Au sein du "menu constructeur" d'un tel terminal, l'utilisateur est invité à choisir la fonctionnalité "accès Internet" en appuyant sur la "touche d'accès Internet". La procédure d'accès au réseau mondial Internet est la suivante : après que l'utilisateur a appuyé sur la "touche d'accès Internet", le terminal tente d'établir une communication avec une plateforme d'accès ; si cette communication est effectivement établie, le terminal lance le navigateur, de façon que le terminal puisse naviguer au sein du réseau Internet. En résumé, dans la station mobile, seul le terminal est impliqué puisque c'est lui qui est pourvu de la "touche d'accès Internet", qui tente d'établir la communication avec la plateforme d'accès, et qui lance le navigateur.

[0009] Il apparaît que le fait que la décision d'effectuer le lancement d'une application (ou d'au moins une partie de celle-ci) soit toujours prise dans le terminal présente plusieurs inconvénients.

[0010] Tout d'abord, ceci implique que l'utilisateur n'est pas entièrement libre dans le choix de son terminal, puisque c'est du terminal que dépend la possibilité de lancer telle ou telle application de terminal particulière (correspondant à l'offre de telle ou telle fonctionnalité).

[0011] Par exemple, dans le cas discuté ci-dessus de l'accès à un réseau informatique de type Internet, l'utilisateur doit impérativement choisir un terminal pourvu de la "touche d'accès Internet". En outre que, quel que soit l'opérateur auprès duquel il s'est abonné, l'utilisateur se voit contraint d'accéder au réseau informatique de type Internet selon des choix techniques effectués par le constructeur de son terminal. Notamment, l'utilisateur ne choisit pas le numéro de la plateforme d'accès, ni les informations utiles au navigateur après qu'il a été lancé, telles que par exemple des numéros de type IP (pour "Internet Protocol" en anglais), des clés secrètes d'authentification du navigateur et/ou de cryptage de données, des numéros de centre de service de messages courts (ou "SMS Center" en anglais), ...

[0012] En outre, ceci implique une limitation du nombre de fonctionnalités dont le choix est offert par l'"application opérateur" (ou "application SIM", ou encore

"menu opérateur"). On rappelle que le "menu opérateur" est stockée par le module d'identification d'abonné et exécuté par celui-ci. En effet, via le module d'identification d'abonné qu'ils distribuent et qui leur sont spécifiques, les différents opérateurs proposent à leurs abonnés des "menus opérateur" distincts. Chaque opérateur tente bien sûr de proposer un choix maximal de fonctionnalités au sein de son "menu opérateur". Cependant, le "menu opérateur" ne peut proposer que des fonctionnalités qui correspondent à des applications de terminal dont le lancement par le terminal peut être effectué sous commande du module d'identification d'abonné. Les autres fonctionnalités (qui correspondent à des applications de terminal dont le lancement par le terminal ne peut être effectué que sous commande du terminal lui-même) ne peuvent être proposées qu'au sein du "menu constructeur" (déjà discuté ci-dessus).

[0013] On notera qu'une même fonctionnalité (par exemple celle d'accès à Internet) peut être proposée par les deux menus "opérateur" et "constructeur".

[0014] L'invention a notamment pour objectif de pallier ces différents inconvénients de l'état de la technique.

[0015] Plus précisément, l'un des objectifs de la présente invention est de fournir un procédé permettant le lancement d'une application (ou d'au moins une partie de celle-ci) par un terminal, sous commande d'un module d'identification d'abonné.

[0016] L'invention a également pour objectif de proposer une ou plusieurs fonctionnalité(s) supplémentaire(s) au sein d'un "menu opérateur", à savoir une ou plusieurs fonctionnalités dont le lancement par le terminal peut être effectué sous commande du module d'identification d'abonné.

[0017] Un autre objectif de l'invention est de fournir un tel procédé permettant à un utilisateur d'accéder à un serveur de services à partir d'une station mobile quelconque (en ce sens que cette dernière n'est pas nécessairement pourvue d'une "touche d'accès Internet" telle que précitée). En effet, à la connaissance de l'inventeur, aucun des "menus opérateur" existants ne propose, parmi les choix possibles, la fonctionnalité "accès à un serveur de services" (tel que par exemple "accès Internet").

[0018] Un autre objectif de l'invention est de fournir un tel procédé permettant à l'utilisateur d'accéder à un serveur de services selon des choix techniques effectués par son opérateur (et non pas par le constructeur de son terminal).

[0019] Un objectif complémentaire de l'invention est de fournir un tel procédé qui soit simple à mettre en oeuvre et peu coûteux.

[0020] Ces différents objectifs, ainsi que d'autres qui apparaîtront par la suite, sont atteints selon l'invention à l'aide d'un procédé de lancement par le terminal d'au moins une partie d'une application de terminal, sous commande d'un module d'identification d'abonné coopérant avec ledit terminal, ledit module d'identification

d'abonné et ledit terminal étant compris dans une station mobile comprise dans un système de radiocommunication, ledit procédé comprenant les étapes suivantes :

- le module d'identification d'abonné envoie au terminal une commande de lancement par le terminal d'au moins une partie d'une application de terminal ;
- le terminal exécute ladite commande de lancement, de façon à lancer ladite au moins une partie d'une application de terminal et prendre la main.

[0021] Le principe général de l'invention consiste donc à amorcer à partir du module d'identification d'abonné (et non pas dans le terminal lui-même) la procédure de lancement par le terminal d'une application de terminal (ou d'une partie de celle-ci). Ceci n'avait jamais été envisagé auparavant car les préjugés de l'homme du métier l'ont toujours incité à penser que c'est le terminal qui doit amorcer un tel lancement, du fait que l'application de terminal se trouve sur le terminal et est exécutée par celui-ci.

[0022] Afin de permettre la mise en oeuvre du procédé selon la présente invention, le module d'identification d'abonné doit être capable de générer une commande d'un nouveau type, à savoir une "commande de lancement d'application", et le terminal doit être capable de la reconnaître et l'exécuter.

[0023] Après son lancement, l'exécution de l'application de terminal par le terminal est tout à fait classique et ne sera donc pas décrite ici plus en détail.

[0024] Dans un premier mode de réalisation particulier de l'invention, ledit procédé comprend les étapes suivantes :

- le module d'identification d'abonné envoie au terminal une commande spécifique de lancement par le terminal d'au moins une partie d'une application de terminal, ladite commande spécifique étant spécifique à ladite au moins une partie d'une application de terminal ;
- le terminal exécute ladite commande spécifique, de façon à lancer ladite au moins une partie d'une application de terminal et prendre la main.

[0025] Ainsi, dans ce premier mode de réalisation, on utilise une commande spécifique à l'application (ou à la partie d'application) à lancer.

[0026] Avantagusement, ladite commande spécifique appartient à un ensemble comprenant une pluralité de commandes spécifique distinctes, permettant chacune de lancer au moins une partie d'application de terminal distincte.

[0027] Préférentiellement, chaque commande spécifique est une nouvelle commande du jeu de commandes du "SIM Application Toolkit". On rappelle que les commandes de ce type incluent un mécanisme d'identification et/ou d'authentification réciproque entre le ter-

minal et le module d'identification d'abonné, et/ou une confirmation par l'utilisateur des commandes passées au terminal (de façon à éviter que le terminal exécute des commandes à l'insu de l'utilisateur). Pour plus de précisions concernant le "SIM Application Toolkit", on pourra se reporter à la norme "GSM 11.14 (Phase 2+)" de l'ETSI, qui est insérée ici par référence.

[0028] Dans un second mode de réalisation particulier de l'invention, ledit procédé comprend les étapes suivantes :

- le module d'identification d'abonné envoie au terminal une première commande générique de lancement par le terminal d'une seconde commande spécifique de lancement d'au moins une partie d'une application de terminal, ladite première commande générique étant paramétrée au moins avec un identifiant de ladite seconde commande spécifique, ladite seconde commande spécifique étant spécifique à ladite au moins une partie d'une application de terminal ;
- le terminal exécute ladite première commande générique, de façon à extraire ladite seconde commande spécifique, puis exécute ladite seconde commande spécifique, de façon à lancer ladite au moins une partie d'une application de terminal et prendre la main.

[0029] Ainsi, dans ce second mode de réalisation, on utilise une première commande générique, dans laquelle est "encapsulée" une seconde commande spécifique à l'application (ou à la partie d'application) à lancer.

[0030] Avantageusement, ladite seconde commande spécifique appartient à un ensemble comprenant une pluralité de secondes commandes spécifiques distinctes, permettant chacune de lancer au moins une partie d'application de terminal distincte.

[0031] Préférentiellement, ladite seconde commande spécifique est une commande "AT". En d'autres termes, il s'agit d'une nouvelle et astucieuse utilisation de commandes AT existantes ou à développer. Ainsi, on supprime ou on réduit le coût de développement de nouvelles commandes. On rappelle que les "commandes AT" (pour "ATtention command" en langue anglaise) sont prévues à l'origine pour permettre à un TE ("Terminal Equipment", par exemple un ordinateur) d'exiger d'un ME ("Mobile Equipment", ou terminal de radiocommunication) auquel il est relié d'exécuter certaines actions prédéterminées. Pour plus de précisions concernant ces "commandes AT", on pourra se reporter d'une part à la norme "GSM 07.07" de l'ETSI et d'autre part à la recommandation V25ter de l'ITU-T, qui sont insérées ici par référence. Il convient également de rappeler que certaines commandes AT ont été développées par différents constructeurs et ne sont pas normalisées (elles sont dites "propriétaires").

[0032] De façon préférentielle, ladite première commande générique est une nouvelle commande du jeu

de commandes du "SIM Application Toolkit".

[0033] Préférentiellement, ladite étape d'envoi au terminal par le module d'identification d'abonné de la commande de lancement est associée à un choix d'une fonctionnalité supplémentaire, ledit choix étant offert à un utilisateur lors de l'exécution par le module d'identification d'abonné d'une application opérateur, ladite étape d'envoi étant effectuée si l'utilisateur valide ledit choix de fonctionnalité associé. Ainsi, l'application opérateur (ou "menu opérateur") peut proposer une ou plusieurs nouvelles fonctionnalités.

[0034] Avantageusement, ladite application de terminal dont au moins une partie est lancée par le terminal appartient au groupe comprenant :

- les applications de services, dont l'exécution permet au terminal de bénéficier du(des) service(s) offert(s) par un serveur de services après qu'une communication a été établie entre ledit terminal et ledit serveur de services ;
- les applications d'édition de messages ;
- les applications d'édition d'agendas.

[0035] Cette liste est nullement exhaustive. Parmi les applications d'édition d'agendas, notamment pour les agendas d'abonné (ADN, pour "Abbreviated Dialling Numbers" en anglais, ou FDN, pour "Fixed Dialling Numbers") et les agendas d'opérateur (SDN, pour "Services Dialling Numbers").

[0036] On notera que dans le cas d'un accès à un serveur de services (avec lancement d'une application de services), la mise en oeuvre du procédé de l'invention n'impose nullement que le terminal soit pourvu d'une "touche d'accès à un serveur de services".

[0037] Parmi lesdites applications de services, on distingue avantageusement notamment :

- les navigateurs, permettant au terminal de naviguer au sein d'un réseau informatique de type Internet, après qu'une communication entre le terminal et une plate-forme d'accès a été établie ;
- les applications de paiement et/ou de réservation et/ou de consultation, permettant au terminal de bénéficier d'au moins un service de paiement et/ou de réservation et/ou de consultation offert par un serveur de services, après qu'une communication entre le terminal et le serveur de services a été établie.

[0038] Avantageusement, dans le cas où l'application de terminal est une application de services, ladite commande spécifique est paramétrée avec un jeu de paramètres comprenant :

- un identifiant d'un numéro de téléphone d'un serveur de services, et
- éventuellement, au moins un paramètre d'appel,

et l'étape d'exécution par le terminal de ladite comman-

de spécifique comprend les étapes suivantes :

- le terminal tente d'établir une communication avec ledit serveur de services, selon ledit jeu de paramètre(s) ;
- si ladite communication avec le serveur de services est effectivement établie, le terminal lance l'exécution de ladite au moins une partie de l'application de services, de façon que le terminal puisse bénéficier du(des) service(s) offert(s) par ledit serveur de services.

[0039] L'invention concerne également un module d'identification d'abonné, du type compris dans une station mobile d'un système de radiocommunication et coopérant avec un terminal, comprenant des moyens permettant la mise en oeuvre du procédé précité de lancement par ledit terminal d'au moins une partie d'une application de terminal, sous commande dudit module d'identification d'abonné.

[0040] L'invention concerne aussi un terminal, du type compris dans une station mobile d'un système de radiocommunication et coopérant avec un module d'identification d'abonné, comprenant des moyens permettant la mise en oeuvre du procédé précité de lancement par ledit terminal d'au moins une partie d'une application de terminal, sous commande dudit module d'identification d'abonné.

[0041] D'autres caractéristiques et avantages de l'invention apparaîtront à la lecture de la description suivante d'un mode de réalisation préférentiel de l'invention, donné à titre d'exemple indicatif et non limitatif, et des dessins annexés, dans lesquels :

- la figure 1 présente un schéma simplifié d'une station mobile permettant la mise en oeuvre du procédé selon l'invention ;
- la figure 2 présente un schéma synoptique global permettant d'expliquer une application particulière du procédé selon l'invention, dans le cas où l'application de terminal à lancer est une application de services nécessitant l'établissement d'une communication entre le terminal et un serveur de services ; et
- la figure 3 présente, de façon partielle, un exemple de contenu de la zone mémoire du module d'identification d'abonné apparaissant sur la figure 1, dans le cas de l'application particulière explicitée avec la figure 2.

[0042] L'invention concerne donc un procédé de lancement d'une application de terminal (ou d'au moins une partie de celle-ci) par un terminal 3 compris dans une station mobile 2 appartenant à un système de radiocommunication.

[0043] Dans un souci de simplification, on parle dans la suite de la description uniquement de "lancement d'une application de terminal". Il est clair cependant que

cette expression peut systématiquement être remplacée par "lancement d'une partie d'une application de terminal", tout en restant dans le cadre de l'invention.

[0044] Dans la suite de la description, on considère le cas particulier d'un système de radiocommunication de type GSM. Il est clair cependant que la présente invention n'est pas limitée à ce type de système de radiocommunication.

[0045] On rappelle qu'une station mobile 2 (ou MS, pour "Mobile Station", selon la terminologie GSM) comprend un terminal 3 (ou ME, pour "Mobile Equipment", selon la terminologie GSM) coopérant avec un module d'identification d'abonné 4 (ou SIM, pour "Subscriber Identity Module", selon la terminologie GSM). Pour plus de précisions sur le terminal 3 et le module d'identification d'abonné 4, on pourra se reporter aux normes "GSM 11.11 et GSM 11.14 (Phase 2+)" de l'ETSI, qui sont insérées ici par référence.

[0046] On suppose que le terminal 3 peut exécuter différentes applications de terminal, permettant chacune d'offrir une fonctionnalité distincte à l'utilisateur. Ce sont par exemple :

- application n°1 (fonctionnalité n°1) : une application de navigation (ou "navigateur") 31, permettant au terminal 3 de naviguer au sein d'un réseau informatique de type Internet, après qu'une communication entre le terminal et une plate-forme d'accès a été établie ;
- application n°2 (fonctionnalité n°2) : une application de paiement et/ou de réservation et/ou de consultation 32, permettant au terminal de bénéficier d'au moins un service de paiement et/ou de réservation et/ou de consultation offert par un serveur de services, après qu'une communication entre le terminal et le serveur de services a été établie ;
- application n°3 (fonctionnalité n°3) : une application d'édition de messages (par exemple un "éditeur SMS") 33, permettant au terminal d'afficher sur un écran du terminal des messages courts préalablement reçu d'un centre SMS.

[0047] Le cas des deux applications de services 31, 32 est décrit plus en détail par la suite, en relation avec les figures 2 et 3.

[0048] On suppose par ailleurs que le module d'identification d'abonné 4 peut exécuter un "menu opérateur" 20 (ou "application SIM"). En d'autres termes, on suppose que le terminal 3 et le module d'identification d'abonné 4 sont du type pouvant mettre en oeuvre le "SIM Application Toolkit", tel que décrit en détail dans la norme "GSM 11.14 (Phase 2+)" de l'ETSI (qui est insérée ici par référence). Le module d'identification d'abonné 4 est alors qualifié de "proactive SIM", selon la terminologie GSM. En résumé, le "SIM Application Toolkit" est un jeu de commandes et de procédures permettant au module d'identification d'abonné 4 de "prendre la main" et d'envoyer des commandes au terminal 3.

[0049] Dans le mode de réalisation particulier de l'invention présenté à titre d'exemple, le "menu opérateur" 20 propose à l'utilisateur différentes fonctionnalités (choix référencés 21 à 23) correspondant chacune à l'exécution par le terminal 3 d'une application de terminal distincte 31 à 33.

[0050] Plus précisément, la validation par l'utilisateur, au sein du "menu opérateur", de l'un des choix de fonctionnalité possibles 21 à 23 entraîne l'exécution des étapes suivantes :

- le module d'identification d'abonné 4 envoie au terminal 3 une commande de lancement par le terminal de l'application de terminal concernée (c'est-à-dire de celle des applications de terminal 31 à 33 qui correspond au choix validé) ;
- le terminal 3 exécute cette commande de lancement, de façon à lancer l'application de terminal concernée et prendre la main.

[0051] Par exemple, si l'utilisateur fait le choix de la fonctionnalité n°1 dans le "menu opérateur", ce choix se traduit par le lancement du navigateur 31. De même, le choix de la fonctionnalité n°2 se traduit par le lancement de l'application de paiement et/ou de réservation et/ou de consultation 32. Enfin, le choix de la fonctionnalité n°3 se traduit par le lancement de l'éditeur SMS 33.

[0052] Le module d'identification d'abonné 4 et le terminal 3 comprennent des moyens spécifiques permettant la mise en oeuvre de ces étapes. Ainsi, le module d'identification d'abonné 4 comprend des moyens 16 d'envoi au terminal 3 de commandes de lancement. Par ailleurs, le terminal 3 comprend des moyens 17 d'exécution des commandes de lancement précitées. Ces moyens d'envoi 16 et d'exécution 17 sont par exemple construits autour d'un microprocesseur.

[0053] On présente maintenant successivement deux variantes de réalisation du procédé selon l'invention, se différenciant par la nature de la commande de lancement envoyée par le module d'identification d'abonné 4 au terminal 3.

[0054] Selon la première variante de réalisation, la commande envoyée au terminal 3 par le module d'identification d'abonné 4 est spécifique à l'application à lancer.

[0055] En reprenant l'exemple précité, le module d'identification d'abonné 4 dispose de trois commandes spécifiques distinctes, permettant le lancement par le terminal des applications n°1, 2 et 3 respectivement (référencées 31 à 33). Ces trois commandes spécifiques, qui peuvent être de nouvelles commandes du jeu de commandes du "SIM Application Toolkit", s'écrivent par exemple :

"Run Application i (P)" avec 1_i_3 (il est clair cependant qu'il s'agit d'un exemple et que, d'une façon générale, i peut prendre d'autres valeurs, et P un jeu de paramètres optionnel, par exemple des paramètres

d'appel sous la forme (p_{1,i}, p_{2,i}, ...).

[0056] Selon la seconde variante de réalisation, la commande envoyée au terminal 3 par le module d'identification d'abonné 4 est une première commande générique, elle-même paramétrée avec une seconde commande spécifique à l'application à lancer. La première commande est générique en ce sens qu'elle permet de lancer, une par une, différentes secondes commandes, spécifiques chacune à une application à lancer distincte. Le terminal exécute d'abord la première commande générique, afin d'en extraire la seconde commande spécifique, puis exécute la seconde commande spécifique, de façon à lancer l'application de terminal et prendre la main.

[0057] En reprenant l'exemple précité, le module d'identification d'abonné 4 dispose d'une première commande générique pouvant être paramétrée avec l'une quelconque de trois secondes commandes spécifiques distinctes, permettant le lancement par le terminal des applications n°1, 2 et 3 respectivement (référencées 31 à 33).

[0058] La première commande générique, qui peut être une nouvelle commande du jeu de commandes du "SIM Application Toolkit", s'écrit par exemple :

"Run AT Command (C)", avec C une des trois secondes commandes AT spécifiques suivantes :

"Run Application i (P)", 1_i_3, avec P un jeu de paramètres optionnel, par exemple des paramètres d'appel sous la forme (p_{1,i}, p_{2,i}, ...).

[0059] On rappelle maintenant, en relation avec les figures 2 et 3, le principe général d'un accès à un serveur de services à partir d'une station mobile 2, avant de présenter une application particulière du procédé selon l'invention. Cette application particulière correspond au cas où l'application de terminal à lancer est une application de services nécessitant l'établissement d'une communication entre le terminal et un serveur de services.

[0060] Le schéma synoptique de la figure 1 présente la structure d'un système de radiocommunication 1 de type GSM. Une pluralité de stations mobiles 2 évoluent au sein d'un réseau de cellules géographiques (non représentées). Chaque cellule correspond à la couverture radio d'une station de base 5 (ou BTS, pour "Base Transceiver Station", selon la terminologie GSM). La station mobile 2 communique, via l'interface air 8, avec la station de base 5 de la cellule où elle se trouve. Les stations de base sont gérées par un contrôleur de stations de base 6 (ou BSC, pour "Base Station Controller", selon la terminologie GSM). Plusieurs contrôleur de stations de base 6 peuvent être pilotés par un central de commutation 7 (ou MSC, pour "Mobile Service Switching Center", selon la terminologie GSM), qui est l'élément maître d'un réseau GSM. Le central de commutation 7 est relié au réseau téléphonique commuté public 9 (RTCP). On notera que, par souci de simplification, un seul de chacun des types d'éléments 2, 5, 6 et 7 de la structure est représenté sur la figure 1.

[0061] D'une façon générale, et connue en soi, afin de pouvoir accéder à un serveur de services donné, le terminal doit pouvoir exécuter une application de services, spécifique à ce serveur de services donné et permettant au terminal de bénéficier du ou des services offerts par ce serveur de services donné. A titre d'exemple, sur la figure 1, on suppose qu'il existe :

- deux plateformes d'accès 11 (UP1), 12 (UP2), qui sont deux serveurs de services particuliers offrant chacun un service d'accès à un réseau informatique de type Internet 10 ;
- un serveur 13 de paiement et/ou de réservation et/ou de consultation.

[0062] On rappelle qu'une plate-forme d'accès permet à l'utilisateur de naviguer au sein du réseau informatique de type Internet, c'est-à-dire d'accéder à d'autres serveurs présents sur ce réseau informatique de type Internet. Ces autres serveurs, généralement appelés "serveurs Internet", supportent des "sites Web" et offrent chacun au moins un service de paiement (gestion d'un compte bancaire, transactions, ...) et/ou de réservation (billets de train, d'avion, de spectacles, ...) et/ou de consultation (météo, horaires, ...).

[0063] On rappelle par ailleurs qu'un serveur 13 de paiement et/ou de réservation et/ou de consultation présente une offre de services de même nature que les serveurs Internet précités, mais se distingue de ces derniers en ce qu'il est accessible directement et non pas via une plate-forme d'accès. En d'autres termes, le second type de serveur de services n'est pas un serveur Internet, et n'est donc pas accessible à travers le réseau informatique de type Internet.

[0064] Dans la présente description, par réseau informatique de type Internet, on entend non seulement le réseau mondial baptisé "Internet" (qui est un réseau interconnectant de très nombreuses machines et actuellement en très forte expansion), mais également tout type de réseau informatique et/ou de télécommunication mettant en oeuvre la technologie internet. On rappelle en effet que le réseau Internet (le réseau mondial), n'est pas le seul type de réseau de télécommunication mettant en oeuvre la technologie internet. Notamment, une organisation peut parfaitement déployer son propre réseau, généralement appelé "réseau Intranet", sur la base de la technologie internet, sans pour autant être connectée au réseau Internet (le réseau mondial).

[0065] Dans la suite de la description, à titre d'exemple illustratif et non limitatif, on présente en détail uniquement le cas d'un accès à une plate-forme d'accès 11, 12. Il est clair cependant que le mécanisme d'accès décrit ci-après s'applique également au cas d'un accès à n'importe quel type de serveur de services, et notamment à un serveur offrant un ou plusieurs services de paiement et/ou de réservation et/ou de consultation.

[0066] Afin d'accéder à une plate-forme d'accès, et à travers celle-ci, à un réseau informatique de type Inter-

net 10, l'application de services que le terminal 3 doit exécuter est un navigateur 31 ("browser"). On utilise par exemple le navigateur commercialisé par la société Unwired Planet, sous le nom de produit "UP.browser" (marque déposée). De façon classique, le navigateur 31 utilise un langage spécifique et permet au terminal 3 de naviguer au sein du réseau informatique de type Internet (c'est-à-dire de se connecter à des "sites Web" afin de pouvoir échanger avec eux tous types d'informations). Préalablement à cette "navigation", le terminal 3 doit avoir établi une communication avec une plateforme d'accès à ce réseau informatique de type Internet 10. On rappelle que dans l'exemple présenté, deux plateformes d'accès 11 (UP1), 12 (UP2) sont disponibles. Il s'agit par exemple de plateformes du type commercialisé par la société Unwired Planet, sous le nom de produit "UP.link" (marque déposée).

[0067] Le langage spécifique utilisé par le navigateur 31 est par exemple le langage "WAP/HDML" (pour "Wireless Application Protocol / Handled Device Markup Language" en anglais). Pour plus de précisions concernant ce langage, et plus généralement les concepts WAP et HDML (marque déposée), on pourra se reporter aux documents suivants, insérés ici par référence :

- concernant HDML (ces documents sont consultables sur l'URL "http://www.uplanet.com") :
 - * "HDML Specification" (spécification HDML), version 2.0, 11 avril 1997 ;
 - * "UP.Link (marque déposée) administration guide", version 3.0, avril 1998 ;
- concernant WAP (ces documents sont consultables sur l'URL "http://www.wapforum.org/") :
 - * "WAP Architecture Specification", WAP Forum, 30 avril 1998 ;
 - * Wireless Transport Layer Security Specification", WAP Forum, 30 avril 1998 ;
 - * WML Script Language Specification", WAP Forum, 9 avril 1998 ;
 - * WAP Security Smart Card", draft version 0.1 (1998-06).

[0068] D'une façon générale, l'application de services (exécutée par le terminal) peut être écrite dans un langage quelconque, tel que par exemple le langage JAVA (marque déposée).

[0069] Il est clair qu'un même serveur de services peut être accessible de différentes manières, correspondant chacune à un jeu de paramètre distinct. En effet, un même serveur de services peut posséder plusieurs numéros de téléphone, ou, sous un même numéro, accepter différents modes de transmission.

[0070] Selon la présente invention, le module d'identification d'abonné 3 envoie au terminal (directement ou en paramètre d'une commande générique) une com-

mande spécifique de lancement par le terminal du navigateur. Cette commande spécifique est paramétrée avec un jeu de paramètres comprenant un identifiant d'un numéro de téléphone d'une plate-forme d'accès et une pluralité de paramètres d'appel (définissant par exemple un mode de transmission prédéterminé). Lorsqu'il reçoit cette commande spécifique, le terminal tente d'établir une communication avec la plate-forme d'accès, selon le jeu de paramètres précité. Si la communication avec la plate-forme d'accès est effectivement établie, le terminal lance le navigateur, de façon que le terminal puisse naviguer au sein du réseau informatique de type Internet.

[0071] On présente maintenant successivement chacune des étapes de ce mode de réalisation particulier du procédé selon l'invention.

[0072] Etape 1 : par exemple lors de chacune (ou seulement certaines) de ses initialisations, le terminal 3 lit, dans une zone mémoire 51 du module d'identification d'abonné 4, une liste prédéterminée de jeux de paramètres, comprenant chacun un numéro de téléphone d'un serveur de services, un mode de transmission, et éventuellement d'autre(s) paramètre(s) d'appel. Un exemple de structure de la zone mémoire 51 est présenté en détail par la suite, en relation avec la figure 3.

[0073] Etape 2 : le module d'identification d'abonné 4 envoie au terminal 3 (directement ou en paramètre d'une commande générique) une commande spécifique, demandant au terminal 3 de lancer le navigateur. Cette commande spécifique est paramétrée avec un premier jeu de paramètres.

[0074] Etape 3 : lorsqu'il reçoit cette commande spécifique, le terminal tente d'établir une communication avec la plate-forme d'accès, selon les indications du premier jeu de paramètres. Il s'agit par exemple d'établir une communication avec la première plate-forme UP1, en mode numérique.

[0075] Etape 4 : si la communication est effectivement établie, le terminal 3 lance le navigateur, de façon à pouvoir naviguer au sein du réseau informatique de type Internet ;

[0076] Etape 5 : le serveur de services (UP1 dans l'exemple précité) authentifie le module d'identification d'abonné 4.

[0077] On présente maintenant, en relation avec la figure 3, un exemple de contenu de la zone mémoire 51 du module d'identification d'abonné 4.

[0078] Comme expliqué précédemment (cf étape 1), cette zone mémoire 51 stocke les éléments constitutifs des jeux de paramètres permettant de paramétrer la commande spécifique de lancement du navigateur (ou plus généralement d'une application de services). On rappelle que ces éléments constitutifs comprennent par exemple :

- la liste des numéros de serveurs de services (n1, n2, n3, ...). Dans le cas de plate-formes d'accès UP, ces numéros sont par exemple stockés dans un fi-

chier élémentaire EF_{UPLN} (pour "Elementary File_{UP Link Number}" en anglais) ;

- la liste des paramètres d'appels (p1, p2, p3, ...) (par exemple les modes de transmission (mode numérique, mode analogique, ...) correspondant aux divers numéros de serveurs de services. Ces paramètres d'appels sont par exemple stockés dans un fichier élémentaire EF_{CCP} (pour "Elementary File_{Capability Configuration Parameters}" en anglais) de la zone mémoire 51. De même que les numéros de plateforme, ces paramètres sont destinés à être lus au préalable par le terminal (lors de l'étape 1).

[0079] Optionnellement, on peut prévoir que la zone mémoire 51 du module d'identification d'abonné 4 (et non pas le terminal 3) stocke également des informations utiles au navigateur 31 après qu'il a été lancé. Il peut s'agir, par exemple :

- de numéros de type IP, stockés dans un fichier élémentaire EF_{IPN} (pour "Elementary File_{Internet Protocol Number}" en anglais) ;
- d'une clé secrète d'authentification du navigateur et/ou de cryptage de données sur le réseau informatique de type Internet, stockée dans un fichier élémentaire EF_K (pour "Elementary File_{Key}" en anglais). Cette clé secrète est utilisée lors de chaque session entre le navigateur et une des plateformes d'accès ;
- d'un identificateur de l'utilisateur auprès de chaque plateforme d'accès, stocké dans un fichier élémentaire EF_{dev_id} (pour "Elementary File_{device_Identifier}" en anglais) ;
- de numéros de centre de services de messages courts, stockés dans un fichier élémentaire EF_{SMS-P} (pour "Elementary File_{Short Message Service Parameters}" en anglais) ;
- etc.

Revendications

1. Procédé de lancement par un terminal (3) d'au moins une partie d'une application de terminal (31 à 33), sous commande d'un module d'identification d'abonné (4) coopérant avec ledit terminal, ledit module d'identification d'abonné et ledit terminal étant compris dans une station mobile (2) comprise dans un système de radiocommunication (1), caractérisé en ce que ledit procédé comprend les étapes suivantes :

- le module d'identification d'abonné envoie au terminal une commande de lancement par le terminal d'au moins une partie d'une application de terminal ;
- le terminal exécute ladite commande de lancement, de façon à lancer ladite au moins une

- partie d'une application de terminal et prendre la main.
2. Procédé selon la revendication 1, caractérisé en ce qu'il comprend les étapes suivantes :
- le module d'identification d'abonné (4) envoie au terminal (3) une commande spécifique de lancement par le terminal d'au moins une partie d'une application de terminal (31 à 33), ladite commande spécifique étant spécifique à ladite au moins une partie d'une application de terminal ;
 - le terminal exécute ladite commande spécifique, de façon à lancer ladite au moins une partie d'une application de terminal et prendre la main.
3. Procédé selon la revendication 2, caractérisé en ce que ladite commande spécifique appartient à un ensemble comprenant une pluralité de commandes spécifique distinctes, permettant chacune de lancer au moins une partie d'application de terminal distincte.
4. Procédé selon l'une quelconque des revendications 2 et 3, caractérisé en ce que chaque commande spécifique est une nouvelle commande du jeu de commandes du "SIM Application Toolkit".
5. Procédé selon la revendication 1, caractérisé en ce qu'il comprend les étapes suivantes :
- le module d'identification d'abonné (4) envoie au terminal (3) une première commande générique de lancement par le terminal d'une seconde commande spécifique de lancement d'au moins une partie d'une application de terminal (31 à 33), ladite première commande générique étant paramétrée au moins avec un identifiant de ladite seconde commande spécifique, ladite seconde commande spécifique étant spécifique à ladite au moins une partie d'une application de terminal ;
 - le terminal exécute ladite première commande générique, de façon à extraire ladite seconde commande spécifique, puis exécute ladite seconde commande spécifique, de façon à lancer ladite au moins une partie d'une application de terminal et prendre la main.
6. Procédé selon la revendication 5, caractérisé en ce que ladite seconde commande spécifique appartient à un ensemble comprenant une pluralité de secondes commandes spécifiques distinctes, permettant chacune de lancer au moins une partie d'application de terminal distincte.
7. Procédé selon l'une quelconque des revendications 5 et 6, caractérisé en ce que ladite seconde commande spécifique est une commande "AT".
8. Procédé selon l'une quelconque des revendications 5 à 7, caractérisé en ce que ladite première commande générique est une nouvelle commande du jeu de commandes du "SIM Application Toolkit".
9. Procédé selon l'une quelconque des revendications 1 à 8, caractérisé en ce que ladite étape d'envoi au terminal par le module d'identification d'abonné de la commande de lancement est associée à un choix (21 à 23) d'une fonctionnalité supplémentaire, ledit choix étant offert à un utilisateur lors de l'exécution par le module d'identification d'abonné (4) d'une application opérateur (20), ladite étape d'envoi étant effectuée si l'utilisateur valide ledit choix de fonctionnalité associé.
10. Procédé selon l'une quelconque des revendications 1 à 9, caractérisé en ce que ladite application de terminal (31 à 33) dont au moins une partie est lancée par le terminal (3) appartient au groupe comprenant :
- les applications de services (31, 32), dont l'exécution permet au terminal de bénéficier du(des) service(s) offert(s) par un serveur de services après qu'une communication a été établie entre ledit terminal et ledit serveur de services ;
 - les applications d'édition de messages (33) ;
 - les applications d'édition d'agendas.
11. Procédé selon la revendication 10, caractérisé en ce que parmi lesdites applications de services on distingue notamment :
- les navigateurs (31), permettant au terminal (3) de naviguer au sein d'un réseau informatique de type Internet (10), après qu'une communication entre le terminal et une plate-forme d'accès (11, 12) a été établie ;
 - les applications de paiement et/ou de réservation et/ou de consultation (32), permettant au terminal (3) de bénéficier d'au moins un service de paiement et/ou de réservation et/ou de consultation offert par un serveur de services (13), après qu'une communication entre le terminal et le serveur de services a été établie.
12. Procédé selon l'une quelconque des revendications 2 à 11, ladite application de terminal (20) étant une application de services, caractérisé en ce que ladite commande spécifique est paramétrée avec un jeu de paramètres comprenant :
- un identifiant d'un numéro de téléphone d'un

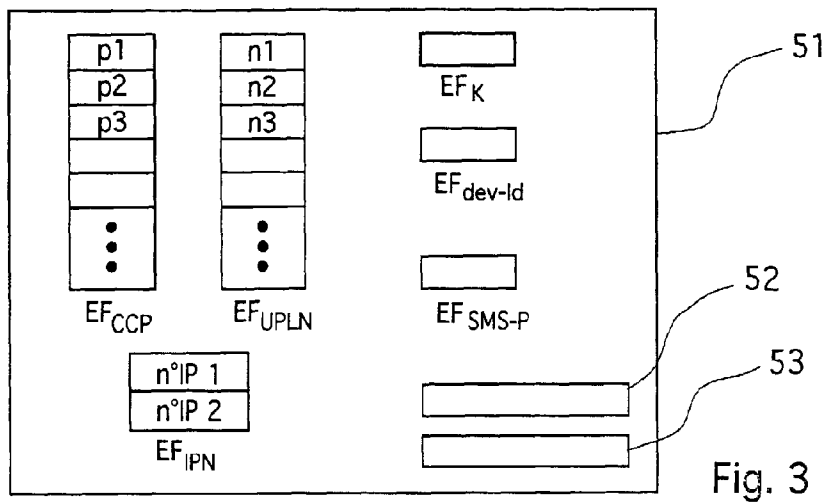
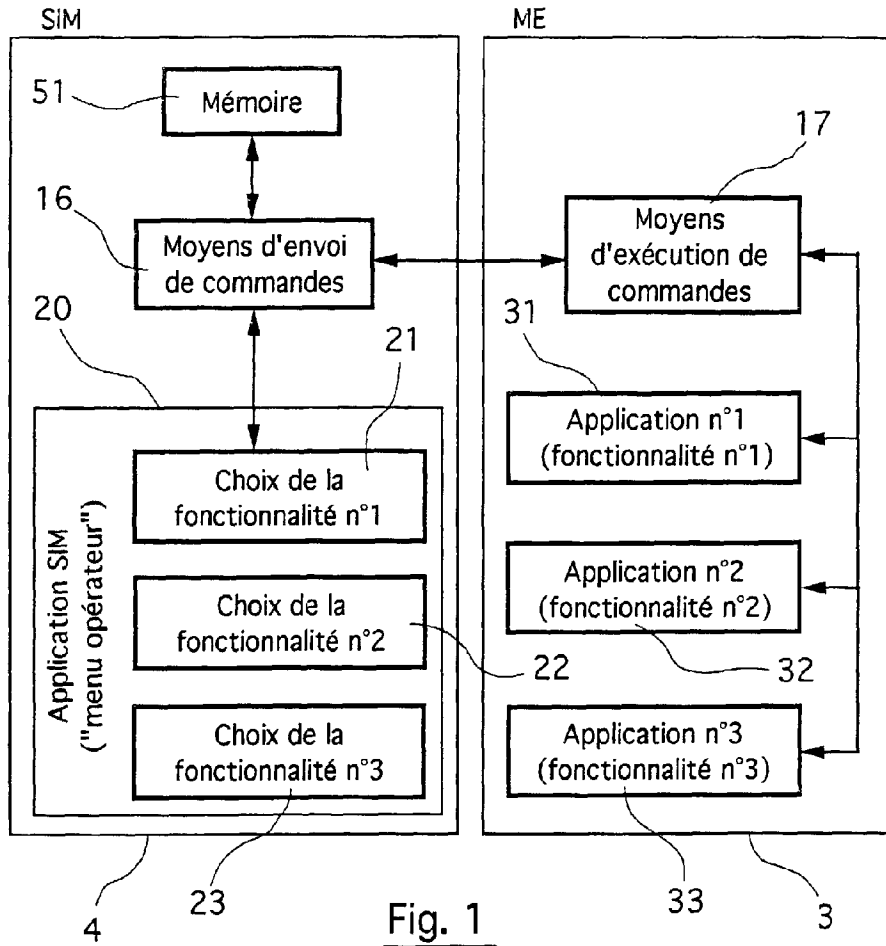
- serveur de services (11 à 13), et
- éventuellement, au moins un paramètre d'appel,

et en ce que l'étape d'exécution par le terminal (3) de ladite commande spécifique comprend les étapes suivantes :

- le terminal tente d'établir une communication avec ledit serveur de services (11 à 13), selon ledit jeu de paramètre(s) ;
- si ladite communication avec le serveur de services (11 à 13) est effectivement établie, le terminal (3) lance l'exécution de ladite au moins une partie de l'application de services (31, 32), de façon que le terminal puisse bénéficier du (des) service(s) offert(s) par ledit serveur de services.

13. Module d'identification d'abonné (4), du type compris dans une station mobile (2) d'un système de radiocommunication (1) et coopérant avec un terminal (3), caractérisé en ce qu'il comprend des moyens (16) permettant la mise en oeuvre du procédé, selon l'une quelconque des revendications 1 à 12, de lancement par ledit terminal d'au moins une partie d'une application de terminal (31 à 33), sous commande dudit module d'identification d'abonné (4).

14. Terminal (3), du type compris dans une station mobile (2) d'un système de radiocommunication (1) et coopérant avec un module d'identification d'abonné (4), caractérisé en ce qu'il comprend des moyens (17) permettant la mise en oeuvre du procédé, selon l'une quelconque des revendications 1 à 12, de lancement par ledit terminal (3) d'au moins une partie d'une application de terminal (31 à 33), sous commande dudit module d'identification d'abonné (4).



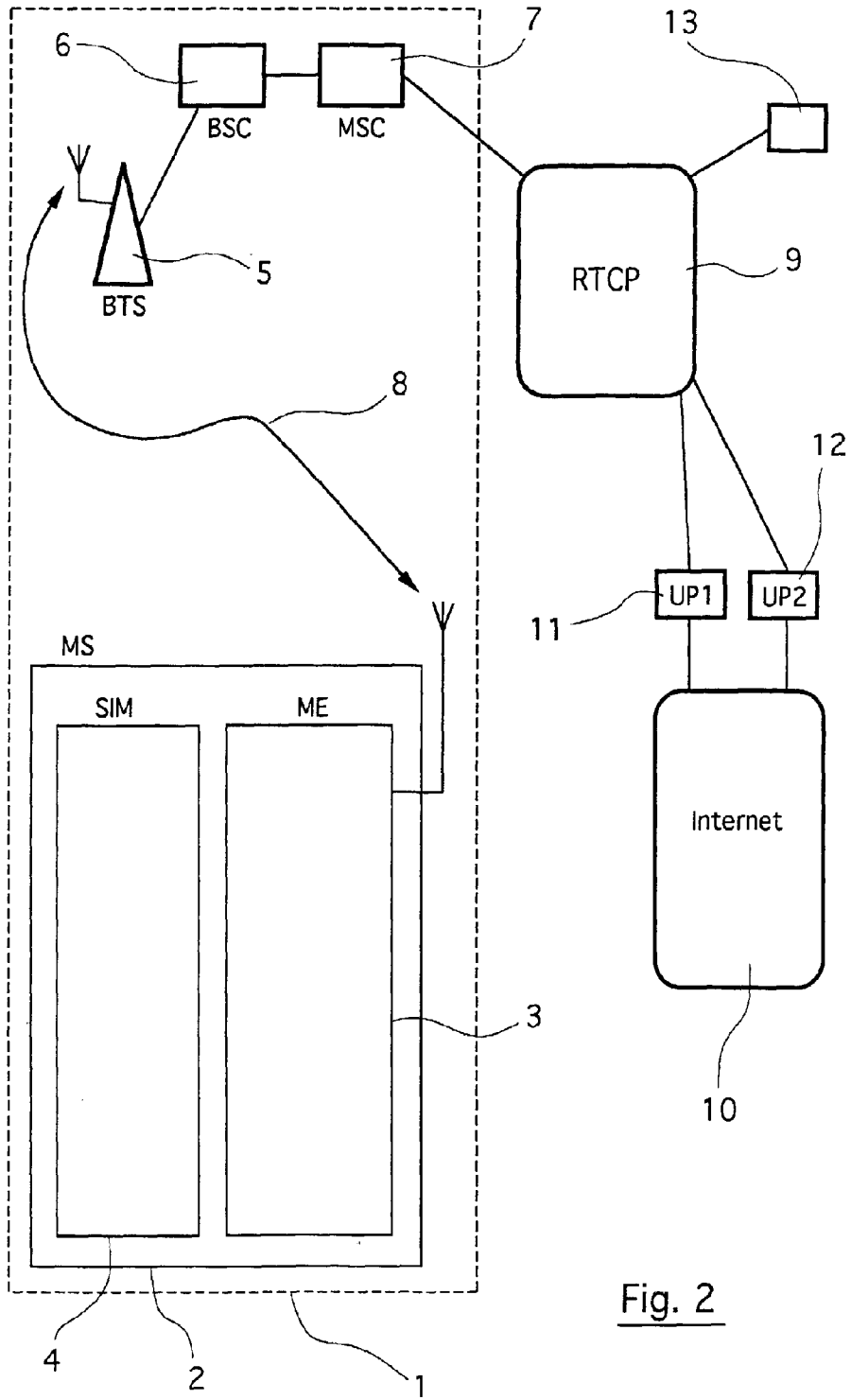


Fig. 2



Office européen
des brevets

RAPPORT DE RECHERCHE EUROPEENNE

Numéro de la demande
EP 99 46 0061

DOCUMENTS CONSIDERES COMME PERTINENTS			
Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication concernée	CLASSEMENT DE LA DEMANDE (Int.CI.7)
X	WO 96 25828 A (NOKIA MOBILE PHONES LTD ;TERHO MIKKO (FI); HEINONEN PETRI (FI); MA) 22 août 1996 (1996-08-22) * page 18, ligne 7-21 * * page 7, ligne 13 - page 16, ligne 11 *	1, 2, 5-7, 9, 10, 12-14	H04Q7/22
X	WO 98 32089 A (GRAEUPEL ARNOLD ;SIEMENS AG (DE)) 23 juillet 1998 (1998-07-23) * page 2, ligne 10 - page 5, ligne 28 *	1-6, 9, 10, 13, 14	
X	WO 98 42120 A (ROUX MICHEL ;KIRIK JEAN PAUL (FR); LEVY DAVID (FR); GEMPLUS CARD I) 24 septembre 1998 (1998-09-24) * page 6, ligne 8 - page 11, ligne 18 *	1-4, 9-11, 14	
A	EP 0 626 664 A (GEMPLUS CARD INT) 30 novembre 1994 (1994-11-30) * le document en entier *	1-14	
A	WO 97 04609 A (EII KONSULTER ;LUCAS RICHARD BRENT (SE)) 6 février 1997 (1997-02-06) * page 5, ligne 11 - page 13, ligne 11 *	1-14	DOMAINES TECHNIQUES RECHERCHES (Int.CI.7) H04Q
Le présent rapport a été établi pour toutes les revendications			
Lieu de la recherche LA HAYE		Date d'achèvement de la recherche 21 janvier 2000	Examineur Roberti, V
CATEGORIE DES DOCUMENTS CITES X : particulièrement pertinent à lui seul Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie A : arrière-plan technologique O : divulgation non-écrite P : document interculturel T : théorie ou principe à la base de l'invention E : document de brevet antérieur, mais publié à la date de dépôt ou après cette date D : cité dans la demande L : cité pour d'autres raisons & : membre de la même famille, document correspondant			

EPO FORM 1503 03 82 (P/91C262)

**ANNEXE AU RAPPORT DE RECHERCHE EUROPEENNE
RELATIF A LA DEMANDE DE BREVET EUROPEEN NO.**

EP 99 46 0061

La présente annexe indique les membres de la famille de brevets relatifs aux documents brevets cités dans le rapport de recherche européenne visé ci-dessus.

Lesdits membres sont contenus au fichier informatique de l'Office européen des brevets à la date du 21-01-2000. Les renseignements fournis sont donnés à titre indicatif et n'engagent pas la responsabilité de l'Office européen des brevets.

21-01-2000

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)	Date de publication
WO 9625828 A	22-08-1996	FI 950685 A	16-08-1996
		AU 696876 B	17-09-1998
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		EP 0873660 A	28-10-1998

EPO FORM P0460

Pour tout renseignement concernant cette annexe : voir Journal Officiel de l'Office européen des brevets, No 12/82

(12) DEMANDE INTERNATIONALE PUBLIÉE EN VERTU DU TRAITÉ DE COOPÉRATION
EN MATIÈRE DE BREVETS (PCT)

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Bureau international



(43) Date de la publication internationale
17 mai 2001 (17.05.2001)

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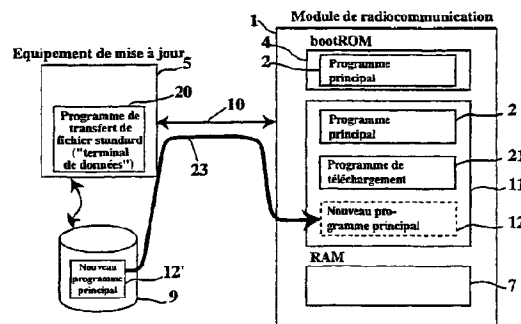
(10) Numéro de publication internationale
WO 01/35686 A1

- (51) Classification internationale des brevets⁷: H04Q 7/32, G06F 9/445
- (72) Inventeur; et
(75) Inventeur/Déposant (pour US seulement): DAMBRE, Antoine [FR/FR]; 51, avenue du Général Michel Bizot, F-75012 Paris (FR).
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PCT/FR00/03016
- (74) Mandataire: VIDON, Patrice; Le Nobel, 2, allée Antoine Becquerel, Boîte postale 90333, F-35703 Rennes Cedex 7 (FR).
- (22) Date de dépôt international:
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- (25) Langue de dépôt: français
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- (26) Langue de publication: français
- (30) Données relatives à la priorité:
99/14322 9 novembre 1999 (09.11.1999) FR
- (84) États désignés (régional): brevet ARIPO (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), brevet eurasien
- (71) Déposant (pour tous les États désignés sauf US): WAVE-COM [FR/FR]; 39, rue du Gouverneur Général Eboué, F-92130 Issy-les-Moulineaux (FR).

[Suite sur la page suivante]

(54) Title: METHOD FOR UPDATING A MAIN PROGRAMME EXECUTED BY A RADIO COMMUNICATION MODULE

(54) Titre: PROCEDE DE MISE A JOUR D'UN PROGRAMME PRINCIPAL EXECUTE PAR UN MODULE DE RADIOCOMMUNICATION



- 1...RADIO COMMUNICATION MODULE
2...MAIN PROGRAMME
21...DOWNLOADING PROGRAMME
12...NEW MAIN PROGRAMME
5...UPDATING EQUIPMENT
20...STANDARD FILE TRANSFER PROGRAMME (DATA TERMINAL)
12'...NEW MAIN PROGRAMME

(57) Abstract: The invention concerns a method for updating a main programme (2) executed by a radio communication module (1), and/or data associated with said main programme, said radio communication module communicating with an updating equipment (5). The invention is characterised in that it comprises the following successive steps: launching the execution, by the radio communication module, of a downloading programme (21) capable of communicating, in accordance with a standard communication protocol, with a standard file transfer programme (20), of the data terminal type, executed by the updating equipment; sending through the standard file transfer programme (20) to the downloading programme (21), in accordance with the standard communication protocol, a new main programme (12) and/or new data; storing through the downloading programme (21), in a non-volatile memory (11) of the radio communication module (1), the new main module (12) and/or the new data.

[Suite sur la page suivante]

WO 01/35686 A1



(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), brevet OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

En ce qui concerne les codes à deux lettres et autres abréviations, se référer aux "Notes explicatives relatives aux codes et abréviations" figurant au début de chaque numéro ordinaire de la Gazette du PCT.

Publiée:

— *Avec rapport de recherche internationale.*

(57) **Abrégé:** L'invention concerne un procédé de mise à jour d'un programme principal (2) exécuté par un module de radiocommunication (1), et/ou de données associées audit programme principal, ledit module de radiocommunication communiquant avec un équipement de mise à jour (5). Selon l'invention, le procédé comprend les étapes successives suivantes: lancement de l'exécution, par le module de radiocommunication, d'un programme de téléchargement (21) capable de communiquer, selon un protocole de communication standard, avec un programme de transfert de fichier standard (20), du type "terminal de données", exécuté par l'équipement de mise à jour; envoi par le programme de transfert de fichier standard (20) au programme de téléchargement (21), selon le protocole de communication standard, d'un nouveau programme principal (12) et/ou de nouvelles données; stockage par le programme de téléchargement (21), dans une mémoire non volatile (11) du module de radiocommunication (1), du nouveau programme principal (12) et/ou des nouvelles données.

Procédé de mise à jour d'un programme principal exécuté par un module de radiocommunication

5 Le domaine de l'invention est celui des systèmes de radiocommunication avec des mobiles.

L'invention s'applique notamment, mais non exclusivement, dans des systèmes de radiocommunication de type GSM 900 (pour "Global System for Mobile - 900 MHz"), DCS 1800 (pour "Digital Cellular System - 1800 MHz"), PCS 1900 (pour "Personal Communication System - 1900 MHz") ou UMTS (pour "Universal Mobile
10 Telecommunication System - 2 GHz").

Plus précisément, l'invention concerne un procédé de mise à jour d'un programme principal exécuté par un module de radiocommunication, et/ou de données associées à ce programme principal.

On rappelle tout d'abord ce que l'on entend par module de radiocommunication.

15 De façon classique, un abonné d'un système de radiocommunication, par exemple de type GSM, dispose d'une station mobile (parfois aussi appelée radiotéléphone mobile ou téléphone portable) comprenant un terminal de radiocommunication (ou ME, pour "Mobile Equipment" en anglais) coopérant avec une carte SIM (pour "Subscriber Identity Module" en anglais, ou module d'identification
20 d'abonné).

Dans son application première, qui est la plus classique, le module de radiocommunication (par exemple un "module GSM") est compris dans le terminal de radiocommunication et assure la fonction de communication sans fil, en pilotant divers éléments matériels (écran, clavier, haut-parleur, ...) du terminal de radiocommunication.

25 D'autres applications du module de radiocommunication sont également connues.

Il a notamment été proposé de l'intégrer dans des dispositifs autres que des terminaux de radiocommunication, mais nécessitant néanmoins une fonctionnalité de communication sans fil. A titre d'exemple, on peut citer des dispositifs de télémétrie
30 (relevés de compteur) ou encore des dispositifs lecteur de cartes bancaires.

Il a également été proposé de fournir le module de radiocommunication sous forme indépendante, avec notamment sa propre alimentation : il est alors qualifié de modem. Un tel modem, qui ne comprend aucun élément matériel (écran, clavier, haut-parleur, ...) d'interface homme/machine, est destiné à coopérer avec un équipement tiers (typiquement un micro-ordinateur), qui lui possède des éléments matériels d'interface homme/machine. Généralement, l'équipement tiers pilote le modem grâce à un jeu de commandes AT (pour "Attention command" en anglais).

Quelle que soit la forme d'application du module de radiocommunication (dans un terminal de radiocommunication, dans un dispositif autre, ou encore dans un modem), il est parfois nécessaire de procéder à une mise à jour du programme principal qu'il exécute, et/ou des données qui lui sont associées. Ces données définissent par exemple des mélodies, des répertoires, des items de menus dans différentes langues, etc.

On décrit maintenant, en relation avec la figure 1, la technique traditionnelle utilisée pour effectuer cette mise à jour. Dans un souci de simplification, on décrit une mise à jour portant uniquement sur le programme principal. Il est clair que les autres cas de mise à jour (données seulement, ou encore programme principal et données) se déduisent directement et aisément de ce qui suit. On suppose que le module de radiocommunication 1 est relié à un équipement de mise à jour 5 par un lien série 10 supportant un protocole propriétaire.

Classiquement, on distingue les étapes successives suivantes :

- un utilisateur effectue un redémarrage (ou "reset") du module de radiocommunication 1 tout en maintenant l'une des broches, dite de réamorçage (ou "pin boot"), à un niveau de tension prédéterminé (par exemple la masse), de façon que le module 1 redémarre en interne, non pas avec son programme principal 2 mais avec un programme de réamorçage (ou "boot") 3. Le programme principal 2 est mémorisé en mémoire flash ROM 11, et le programme de réamorçage 3 en mémoire boot ROM 4 ;
- le programme de réamorçage 3 communique selon le protocole propriétaire avec un programme de téléchargement côté équipement (ou "downloader equipment") 6, de façon à télécharger (13) dans la mémoire

3

RAM 7 du module de radiocommunication un programme de téléchargement côté module (ou "downloader module") 8. Le programme de téléchargement côté équipement 6 est un programme spécifique propriétaire exécuté par l'équipement de mise à jour 5. Le programme de téléchargement côté module 8 est préalablement stocké (8') dans une mémoire 9 associée à l'équipement de mise à jour 5 ;

- le programme de réamorçage 3 lance l'exécution du programme de téléchargement côté module 8 qui vient d'être chargé en mémoire RAM 7 ;
- le programme de téléchargement côté module 8 communique selon le protocole propriétaire avec le programme de téléchargement côté équipement 6, de façon à télécharger (14) dans la mémoire flash ROM 11 du module un nouveau programme principal 12. Le nouveau programme principal 12 est préalablement stocké (12') dans une mémoire 9 associée à l'équipement de mise à jour 5 ;
- l'utilisateur effectue un redémarrage du module de radiocommunication 1 tout en maintenant la broche de réamorçage à la tension d'alimentation, de façon que le module 1 redémarre en externe, non pas avec le précédent programme principal 2, en mémoire flash ROM 11, mais avec le nouveau programme principal 12, également en mémoire flash ROM 11.

Cette technique classique de mise à jour présente plusieurs inconvénients.

Notamment, le fait que le programme de téléchargement côté équipement soit un programme propriétaire, écrit spécifiquement pour un usage avec un protocole propriétaire, n'est pas sans poser des problèmes.

En effet, ceci implique une distribution à chacun des utilisateurs souhaitant effectuer la mise à jour, non seulement du nouveau programme principal et/ou des nouvelles données, mais également du programme de téléchargement côté équipement.

En outre, du fait de son caractère "spécifique propriétaire", un tel programme de téléchargement côté équipement n'est généralement exécutable que par un seul type d'équipement (par exemple les micro-ordinateurs sous système d'exploitation DOS). Or, il est fréquent que les divers utilisateurs n'utilisent pas tous le même type d'équipement.

Lors d'une mise à jour, on est donc actuellement obligé de développer autant de nouveaux programmes "spécifiques propriétaire" qu'il y a de types d'équipement distincts.

5 De même, le protocole propriétaire, sur la base duquel sont développés les programmes de téléchargement côté équipement et côté module, est généralement spécifique au support physique (liaison série, liaison infrarouge, liaison radio, ...) sur lequel il est mis en oeuvre. Lors d'une mise à jour, cela augmente donc encore le nombre de nouveaux programmes "spécifiques propriétaire" que l'on doit développer.

10 Un autre inconvénient de la technique actuelle de mise à jour est qu'elle nécessite un double téléchargement. En effet, il faut d'abord télécharger le programme de téléchargement côté module, puis le nouveau programme principal et/ou les nouvelles données.

15 Encore un autre inconvénient de la technique actuelle de mise à jour est qu'elle nécessite deux redémarrages du module de radiocommunication, l'un en interne (au début, en maintenant la broche de réamorçage par exemple à la masse) et l'autre en externe (à la fin, en maintenant la broche de réamorçage à la tension d'alimentation). A chaque fois, l'utilisateur est donc amené à manipuler la broche de réamorçage.

L'invention a notamment pour objectif de pallier ces différents inconvénients de l'état de la technique.

20 Plus précisément, l'un des objectifs de la présente invention est de fournir un procédé de mise à jour du programme principal (et/ou des données associées) exécuté par un module de radiocommunication, ce procédé permettant au module de radiocommunication de communiquer avec différents types d'équipements de mise à jour.

25 L'invention a également pour objectif de fournir un tel procédé qui puisse être mise en oeuvre avec plusieurs types de support physique entre le module de radiocommunication et l'équipement de mise à jour, sans pour autant nécessiter une quelconque modification, tant du côté module de radiocommunication que du côté équipement de mise à jour.

30 Un autre objectif de l'invention est de fournir un tel procédé qui ne nécessite aucune manipulation de la broche de réamorçage par l'utilisateur.

Un objectif complémentaire de l'invention est de fournir un tel procédé ne nécessitant pas un double téléchargement.

Ces différents objectifs, ainsi que d'autres qui apparaîtront par la suite, sont atteints selon l'invention à l'aide d'un procédé de mise à jour d'un programme principal exécuté par un module de radiocommunication, et/ou de données associées audit programme principal, ledit module de radiocommunication communiquant avec un équipement de mise à jour. Selon l'invention, ledit procédé comprend les étapes successives suivantes :

- 5 - lancement de l'exécution, par ledit module de radiocommunication, d'un programme de téléchargement capable de communiquer, selon un protocole de communication standard, avec un programme de transfert de fichier standard, du type "terminal de données", exécuté par ledit équipement de mise à jour ;
- 10 - envoi par ledit programme de transfert de fichier standard audit programme de téléchargement, selon ledit protocole de communication standard, d'un nouveau programme principal et/ou de nouvelles données ;
- 15 - stockage par ledit programme de téléchargement, dans une mémoire non volatile dudit module de radiocommunication, dudit nouveau programme principal et/ou desdites nouvelles données.

20 Le principe général de l'invention consiste donc à utiliser, du côté équipement de mise à jour, non pas un programme de téléchargement spécifique propriétaire, mais un programme (ou logiciel) de transfert de fichier standard, du type "terminal de données". Ce dernier utilise un protocole de communication standard (et non pas un protocole propriétaire).

25 En d'autres termes, on utilise de façon inhabituelle les programmes du type "terminal de données". En effet, normalement ils sont utilisés deux à deux pour faire du transfert de fichiers entre deux machines, éventuellement par modems interposés (si la nature du support physique entre machines exécutant ces programmes le nécessite). La configuration habituelle est donc la suivante : un premier logiciel "terminal de données", exécuté par une première machine, communique selon un protocole de communication standard (par exemple via une liaison série ou une liaison infrarouge) avec un second

30

logiciel "terminal de données", exécuté par une seconde machine. Au contraire, dans le cadre de la présente invention, il n'y a pas de seconde machine exécutant un second logiciel "terminal de données", mais un module de radiocommunication exécutant un programme de téléchargement. En outre, quel que soit le support physique de communication, la présente invention ne nécessite pas l'interposition de modems.

Il existe plusieurs types de logiciels "terminaux de données", tels que notamment, mais non exclusivement :

- le logiciel "Hyperterminal" (marque déposée), conçu pour un ordinateur de type "PC" possédant un système d'exploitation de type "Windows" (marque déposée) ;
- le logiciel "Minicom" (marque déposée), conçu pour un ordinateur de type "PC" possédant un système d'exploitation de type "Linux" (marque déposée) ;
- le logiciel "Norton Commander" (marque déposée), conçu pour un ordinateur de type "PC" possédant un système d'exploitation de type "DOS" (marque déposée) ;
- etc.

Tous ces logiciels "terminaux de données" peuvent communiquer selon un ou plusieurs protocoles de communication standard, tels que par exemple les protocoles "X-MODEM", "Y-MODEM", "Z-MODEM", "KERMIT", ...

L'utilisation d'un tel programme de transfert de fichier standard présente plusieurs avantages. Tout d'abord, ce programme standard est compatible avec tous types de machines pouvant être utilisées comme équipements de mise à jour. En outre, il existe déjà sur la plupart des machines (et notamment les micro-ordinateurs) pouvant être utilisés comme équipement de mise à jour. Il est conçu pour communiquer sur plusieurs types de supports physiques, à savoir généralement sur une liaison série ou une liaison infrarouge (IRDA). Enfin, il permet d'obtenir une meilleure fiabilité dans le déroulement de l'opération de mise à jour.

De façon avantageuse, ledit programme de téléchargement est stocké en permanence dans une mémoire non volatile dudit module de radiocommunication.

De cette façon, lors d'une mise à jour, seul le nouveau programme principal et/ou les nouvelles données sont téléchargées.

Préférentiellement, ladite étape de lancement de l'exécution, par le module de radiocommunication, du programme de téléchargement est effectuée lorsqu'au moins

5 une des conditions suivantes est vérifiée :

- un utilisateur a effectué une demande de mise à jour via une interface homme/machine associée, directement ou indirectement, audit module de radiocommunication ;
- un utilisateur a effectué une demande de mise à jour via une interface

10 homme/machine associée audit équipement de mise à jour ;

- lors d'une mise sous tension dudit module de radiocommunication, ledit programme principal est inutilisable ou inexistant.

Il est à noter qu'aucune de ces variantes ne nécessite de la part de l'utilisateur d'effectuer un redémarrage ("en interne") du module de radiocommunication, en

15 maintenant la broche de réamorçage à la masse. En effet, la demande de redémarrage est faite soit par l'utilisateur, grâce à une interface homme/machine (cas des première et seconde variantes), soit de façon automatique (cas de la troisième variante).

Dans un mode de réalisation particulier de l'invention, ledit procédé comprend en outre l'étape suivante : redémarrage dudit module de radiocommunication avec ledit

20 nouveau programme principal et/ou lesdites nouvelles données, après que ladite étape de stockage a été effectuée.

Un tel redémarrage, qui n'est pas systématique, est par exemple nécessaire afin de modifier la version exécutable du programme principal et/ou des données associées.

Avantageusement, ladite étape de redémarrage est lancée lorsqu'au moins une

25 des conditions suivantes est vérifiée :

- un utilisateur a effectué une demande de redémarrage via une interface homme/machine associée, directement ou indirectement, audit module de radiocommunication ;
- un utilisateur a effectué une demande de redémarrage via une interface

30 homme/machine associée audit équipement de mise à jour ;

- ledit programme de téléchargement comporte une commande de redémarrage spontané, exécutée lorsqu'il arrive en fin d'exécution ;
- ledit programme de transfert de fichier standard envoie une commande de redémarrage spontané audit module de radiocommunication, lorsqu'il détecte la fin de l'envoi dudit nouveau programme principal et/ou desdites nouvelles données.

Il est à noter qu'aucune de ces variantes ne nécessite de la part de l'utilisateur d'effectuer un redémarrage ("en externe") du module de radiocommunication, en maintenant la broche de réamorçage à la tension d'alimentation. En effet, la demande de redémarrage est faite soit par l'utilisateur, grâce à une interface homme/machine (cas des première et seconde variantes), soit de façon automatique, grâce à une commande de redémarrage spontané (cas des troisième et quatrième variantes).

De façon préférentielle, ledit module de radiocommunication est compris dans un dispositif appartenant au groupe comprenant :

- les terminaux de radiocommunication ;
- les dispositifs, autres que les terminaux de radiocommunication, nécessitant une fonctionnalité de communication sans fil ;
- les modems.

De façon avantageuse, ledit programme de téléchargement peut communiquer avec ledit programme de transfert de fichier standard, selon ledit protocole de communication standard, par l'intermédiaire d'au moins un support physique appartenant au groupe comprenant : les liens série, les liens infrarouges, les liens radio, ...

L'invention concerne également un module de radiocommunication, du type pouvant communiquer avec un équipement de mise à jour afin d'effectuer une mise à jour d'un programme principal exécuté par ledit module de radiocommunication, et/ou de données associées audit programme principal. Selon l'invention, ledit module de radiocommunication comprend des moyens d'exécution d'un programme de téléchargement capable de communiquer, selon un protocole de communication standard, avec un programme de transfert de fichier standard, du type "terminal de données", exécuté par ledit équipement de mise à jour, de façon que ledit programme de transfert de fichier standard envoie audit programme de téléchargement, selon ledit

protocole de communication standard, un nouveau programme principal et/ou de nouvelles données, et que ledit programme de téléchargement stocke dans une mémoire non volatile dudit module de radiocommunication ledit nouveau programme principal et/ou lesdites nouvelles données.

5 D'autres caractéristiques et avantages de l'invention apparaîtront à la lecture de la description suivante d'un mode de réalisation préférentiel de l'invention, donné à titre d'exemple indicatif et non limitatif, et des dessins annexés, dans lesquels :

- la figure 1 illustre la technique actuelle (art antérieur) de mise à jour ; et
- la figure 2 illustre un mode de réalisation particulier du procédé selon l'invention.

10

La technique actuelle, telle qu'illustrée sur la figure 1, a déjà été discutée de façon détaillée ci-dessus.

On présente maintenant, en relation avec la figure 2, un mode de réalisation particulier du procédé selon l'invention de mise à jour d'un programme principal exécuté par un module de radiocommunication, et/ou de données associées à ce programme principal.

15

Ceux des éléments de la figure 1 qui apparaissent également sur la figure 2 conservent les mêmes références numériques (à savoir : 1, 2, 4, 5, 7, 9, 10, 11, 12 et 12').

20

Dans un souci de simplification, on suppose que la mise à jour porte uniquement sur le programme principal. Il est clair que les autres cas de mise à jour (données seulement, ou encore programme principal et données) se déduisent directement et aisément de ce qui suit.

25

De façon classique, le programme principal 2 (courant) est stocké dans la mémoire flash ROM 11 du module de radiocommunication 1. L'objectif est de télécharger dans une mémoire non volatile du module (par exemple la mémoire flash ROM 11) le nouveau programme principal 12. Ce dernier est préalablement stocké (12') dans une mémoire 9 associée à l'équipement de mise à jour 5.

30

Selon l'invention, l'équipement de mise à jour 5 peut exécuter un programme de transfert de fichier standard 20, du type "terminal de données", permettant de communiquer selon un protocole de communication standard. Par exemple, si

l'équipement 5 est un micro-ordinateur de type "PC" sous système d'exploitation "DOS", le programme standard 20 peut être le programme "Hyperterminal", et le protocole standard le protocole "X-modem". Il est clair cependant que d'autres types de "terminaux de données" peuvent être utilisés tout en restant dans le cadre de la présente invention.

Par ailleurs, également selon l'invention, le module de radiocommunication 1 stocke en permanence, dans sa mémoire flash ROM 11, un programme de téléchargement 21. Lorsqu'il est exécuté, ce dernier est conçu et développé de façon à pouvoir communiquer, selon le protocole de communication standard, avec le programme de transfert de fichier standard 20.

De par sa conception, le protocole de communication standard peut être supporté alternativement par plusieurs types de supports physiques, à savoir typiquement une liaison série (RS 232) ou une liaison infrarouge (IRDA).

Dans le mode de réalisation particulier dont le fonctionnement est illustré sur la figure 2, ce procédé comprend les étapes suivantes :

- (a) lancement de l'exécution, par le module de radiocommunication, du programme de téléchargement 21 ;
- (b) envoi (23) par le programme de transfert de fichier standard 20 au programme de téléchargement 21, selon le protocole de communication standard, du nouveau programme principal 12 ;
- (c) stockage par le programme de téléchargement 21, dans la mémoire flash ROM 11 du module de radiocommunication 1, du nouveau programme principal 12 ;
- (d) redémarrage du module de radiocommunication 1 avec le nouveau programme principal 12.

L'étape (a) est par exemple effectuée lorsque l'utilisateur signale, grâce à une interface homme/machine (basée par exemple sur une commande AT), son intention de lancer une mise à jour. Par interface homme/machine, on entend par exemple la possibilité pour l'utilisateur de naviguer (grâce à une ou plusieurs touches d'un clavier) au sein d'un (sous-)menu de mise à jour (affiché à l'écran), et d'y effectuer un choix par

lequel il demande le lancement d'une mise à jour. Cette interface homme/machine peut être celle de l'équipement de mise à jour 5 ou celle du module de radiocommunication 1.

L'étape (a) peut également être effectuée si, lors d'une mise sous tension du module de radiocommunication, le programme principal 2 est inutilisable ou inexistant.

5 Dans ce cas, le redémarrage est automatique, afin d'éviter une situation de blocage, dans laquelle le module de radiocommunication 1 ne pourrait jamais redémarrer.

Ces deux possibilités de lancement de l'étape (a) peuvent éventuellement être cumulées au sein d'un même module de radiocommunication.

10 L'étape (d) est par exemple effectuée lorsque l'utilisateur demande, grâce à une interface homme/machine (basée par exemple sur une commande AT), un redémarrage du module 1. Par interface homme/machine, on entend par exemple la possibilité pour l'utilisateur d'appuyer sur une touche spécifique de redémarrage (ou touche de "reset"). Cette interface homme/machine peut être celle de l'équipement de mise à jour 5 ou celle du module de radiocommunication 1.

15 L'étape (d) peut également être effectuée de façon automatique, si le programme de téléchargement 21 comporte une commande de redémarrage spontané, exécutée lorsqu'il arrive en fin d'exécution, ou encore si le programme de transfert de fichier standard 20 envoie une commande de redémarrage spontané au module de radiocommunication, lorsqu'il détecte la fin de l'envoi du nouveau programme principal
20 12.

REVENDICATIONS

1. Procédé de mise à jour d'un programme principal (2) exécuté par un module de radiocommunication (1), et/ou de données associées audit programme principal, ledit module de radiocommunication communiquant avec un équipement de mise à jour (5),

5 caractérisé en ce que ledit procédé comprend les étapes successives suivantes :

- lancement de l'exécution, par ledit module de radiocommunication, d'un programme de téléchargement (21) capable de communiquer, selon un protocole de communication standard, avec un programme de transfert de fichier standard (20), du type "terminal de données", exécuté par ledit
- 10 équipement de mise à jour ;
- envoi par ledit programme de transfert de fichier standard (20) audit programme de téléchargement (21), selon ledit protocole de communication standard, d'un nouveau programme principal (12) et/ou de nouvelles données ;
- 15 - stockage par ledit programme de téléchargement (21), dans une mémoire non volatile (11) dudit module de radiocommunication (1), dudit nouveau programme principal (12) et/ou desdites nouvelles données.

2. Procédé selon la revendication 1, caractérisé en ce que ledit programme de téléchargement (21) est stocké en permanence dans une mémoire non volatile (11) dudit module de radiocommunication (1).

20

3. Procédé selon l'une quelconque des revendications 1 et 2, caractérisé en ce que ladite étape de lancement de l'exécution, par le module de radiocommunication (1), du programme de téléchargement (21) est effectuée lorsqu'au moins une des conditions suivantes est vérifiée :

25

- un utilisateur a effectué une demande de mise à jour via une interface homme/machine associée, directement ou indirectement, audit module de radiocommunication (1) ;
- un utilisateur a effectué une demande de mise à jour via une interface homme/machine associée audit équipement de mise à jour (5) ;
- 30 - lors d'une mise sous tension dudit module de radiocommunication (1), ledit programme principal est inutilisable ou inexistant.

4. Procédé selon l'une quelconque des revendications 1 à 3, caractérisé en ce qu'il comprend en outre l'étape suivante :

- redémarrage dudit module de radiocommunication (1) avec ledit nouveau programme principal (12) et/ou lesdites nouvelles données, après que ladite étape de stockage a été effectuée.

5. Procédé selon la revendication 4, caractérisé en ce que ladite étape de redémarrage est lancée lorsqu'au moins une des conditions suivantes est vérifiée :

- un utilisateur a effectué une demande de redémarrage via une interface homme/machine associée, directement ou indirectement, audit module de radiocommunication (1) ;
- un utilisateur a effectué une demande de redémarrage via une interface homme/machine associée audit équipement de mise à jour (5) ;
- ledit programme de téléchargement (21) comporte une commande de redémarrage spontané, exécutée lorsqu'il arrive en fin d'exécution ;
- ledit programme de transfert de fichier standard (20) envoie une commande de redémarrage spontané audit module de radiocommunication (1), lorsqu'il détecte la fin de l'envoi dudit nouveau programme principal (12) et/ou desdites nouvelles données.

6. Procédé selon l'une quelconque des revendications 1 à 5, caractérisé en ce que ledit module de radiocommunication (1) est compris dans un dispositif appartenant au groupe comprenant :

- les terminaux de radiocommunication ;
- les dispositifs, autres que les terminaux de radiocommunication, nécessitant une fonctionnalité de communication sans fil ;
- les modems.

7. Procédé selon l'une quelconque des revendications 1 à 6, caractérisé en ce que ledit programme de téléchargement (21) peut communiquer avec ledit programme de transfert de fichier standard (20), selon ledit protocole de communication standard, par l'intermédiaire d'au moins un support physique appartenant au groupe comprenant :

- les liens série ;
- les liens infrarouges ;

- les liens radio.

5 **8.** Module de radiocommunication (1), du type pouvant communiquer avec un équipement de mise à jour (5) afin d'effectuer une mise à jour d'un programme principal (2) exécuté par ledit module de radiocommunication, et/ou de données associées audit programme principal,

 caractérisé en ce qu'il comprend des moyens d'exécution d'un programme de téléchargement (21) capable de communiquer, selon un protocole de communication standard, avec un programme de transfert de fichier standard (20), du type "terminal de données", exécuté par ledit équipement de mise à jour (5),

10 de façon que ledit programme de transfert de fichier standard (20) envoie audit programme de téléchargement (21), selon ledit protocole de communication standard, un nouveau programme principal (12) et/ou de nouvelles données, et que ledit programme de téléchargement (21) stocke dans une mémoire non volatile (11) dudit module de radiocommunication (1) ledit nouveau programme principal et/ou lesdites nouvelles
15 données.

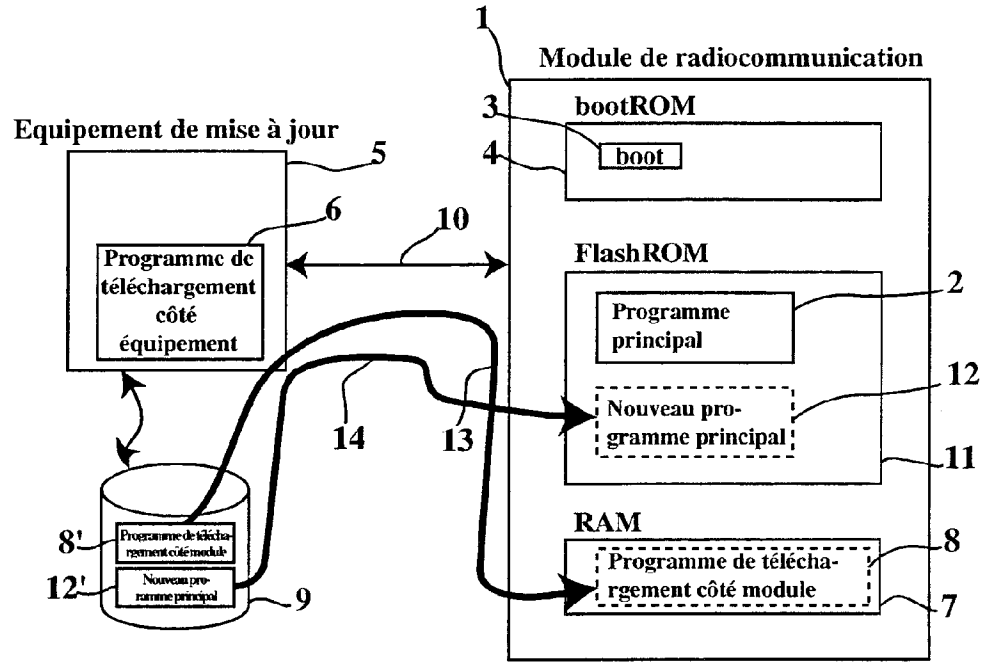


Fig.1

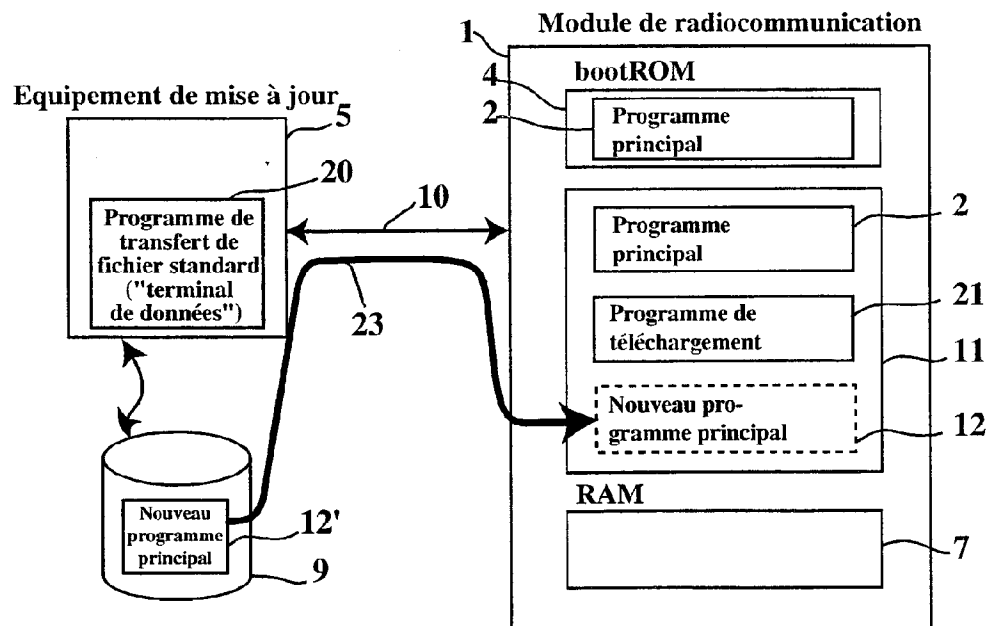


Fig.2

INTERNATIONAL SEARCH REPORT

International Application No

PCT/FR 00/03016

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04Q7/32 G06F9/445		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04Q G06F G07F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category ^o	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	EP 0 459 344 A (ALCATEL CIT) 4 December 1991 (1991-12-04) abstract column 4, line 56 -column 5, line 27 ---	1,8
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A	EP 0 632 629 A (MULTI-TECH SYSTEMS INC.) 4 January 1995 (1995-01-04) page 6, line 25 -page 7, line 1 ---	1,6,8
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
^o Special categories of cited documents :		
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed		
T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report	
11 January 2001	05/02/2001	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Danielidis, S	

INTERNATIONAL SEARCH REPORT

Intern: Application No
PCT/FR 00/03016

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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Intern: il Application No

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RAPPORT DE RECHERCHE INTERNATIONALE

Demande internationale No
PCT/FR 00/03016

A. CLASSEMENT DE L'OBJET DE LA DEMANDE CIB 7 H04Q/32 G06F9/445		
Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB		
B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE		
Documentation minimale consultée (système de classification suivi des symboles de classement) CIB 7 H04Q G06F G07F		
Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche		
Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si réalisable, termes de recherche utilisés)		
C. DOCUMENTS CONSIDERES COMME PERTINENTS		
Catégorie *	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
A	WO 97 16938 A (NOKIA TELECOMMUNICATIONS OY.) 9 mai 1997 (1997-05-09) page 11, ligne 29 -page 12, ligne 4 revendications 13-16 ---	1,2,7,8
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A	EP 0 632 629 A (MULTI-TECH SYSTEMS INC.) 4 janvier 1995 (1995-01-04) page 6, ligne 25 -page 7, ligne 1 ---	1,6,8
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<input checked="" type="checkbox"/> Voir la suite du cadre C pour la fin de la liste des documents <input checked="" type="checkbox"/> Les documents de familles de brevets sont indiqués en annexe		
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Date à laquelle la recherche internationale a été effectivement achevée	Date d'expédition du présent rapport de recherche internationale	
11 janvier 2001	05/02/2001	
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Office Européen des Brevets, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tél. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Danielidis, S

RAPPORT DE RECHERCHE INTERNATIONALE

Demar iternationale No
PCT/FR 00/03016

C.(suite) DOCUMENTS CONSIDERES COMME PERTINENTS		
Catégorie	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
A	WO 98 38820 A (TELEFONAKTIEBOLAGET LM ERICSSON) 3 septembre 1998 (1998-09-03) abrégé page 3, ligne 3 - ligne 30 page 6, ligne 1 - ligne 6 ---	1,5
A	GB 2 313 519 A (MOTOROLA GMBH) 26 novembre 1997 (1997-11-26) abrégé page 5, ligne 3 - ligne 25 ---	1,5
A	US 5 689 825 A (AVERBUCH ET AL.) 18 novembre 1997 (1997-11-18) abrégé; figure 2 colonne 3, ligne 13 - ligne 45 colonne 5, ligne 29 - ligne 55 ---	1,5
A	US 5 901 320 A (TAKAHASHI ET AL.) 4 mai 1999 (1999-05-04) abrégé; figures 6-8 colonne 5, ligne 57 -colonne 6, ligne 25 -----	1

RAPPORT DE RECHERCHE INTERNATIONALE

Renseignements relatifs aux membres de familles de brevets

Demar internationale No

PCT/FR 00/03016

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)	Date de publication
WO 9716938 A	09-05-1997	FI 955188 A	24-06-1997
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Espacenet

Bibliographic data: WO0135686 (A1) — 2001-05-17

METHOD FOR UPDATING A MAIN PROGRAMME EXECUTED BY A RADIO COMMUNICATION MODULE

Inventor(s): DAMBRE ANTOINE [FR] ± (DAMBRE, ANTOINE)

Applicant(s): WAVECOM [FR]; DAMBRE ANTOINE [FR] ± (WAVECOM, ; DAMBRE, ANTOINE)

Classification: - **international:** G06F9/445; H04W8/24; (IPC1-7): G06F9/445; H04Q7/32
- **cooperative:** G06F8/65; H04L67/34; H04W8/245

Application number: WO2000FR03016 20001027

Priority number (s): FR19990014322 19991109

Also published as: FR2800963 (A1) FR2800963 (B1) EP1228654 (A1) CN1421109 (A) CN100391279 (C) more

Abstract of WO0135686 (A1)

The invention concerns a method for updating a main programme (2) executed by a radio communication module (1), and/or data associated with said main programme, said radio communication module communicating with an updating equipment (5). The invention is characterised in that it comprises the following successive steps: launching the execution, by the radio communication module, of a downloading programme (21) capable of communicating, in accordance with a standard communication protocol, with a standard file transfer programme (20), of the data terminal type, executed by the updating equipment; sending through the standard file transfer programme (20) to the downloading programme (21), in accordance with the standard communication protocol, a new main programme (12) and/or new data; storing through the downloading programme (21), in a non-volatile memory (11) of the radio communication module (1), the new main module (12) and/or the new data.

Electronic Patent Application Fee Transmittal

Application Number:	14175171
Filing Date:	07-Feb-2014
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Filer:	Jonathan Lovely
Attorney Docket Number:	3781/1017

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
Total in USD (\$)				90

Electronic Acknowledgement Receipt

EFS ID:	19671595
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	15:58:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$90
RAM confirmation Number	2401
Deposit Account	194972
Authorized User	

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Art Unit/Group No.: 2682

Filing Date: February 7, 2014

Examiner: Nam V. Nguyen

Conf. No.: 6320

For: PROGRAMMABLE COMMUNICATOR

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**TRANSMITTAL OF SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
BEFORE MAILING DATE OF EITHER A FINAL ACTION
OR NOTICE OF ALLOWANCE (37 C.F.R. § 1.97(c))**

**TIME OF TRANSMITTAL OF ACCOMPANYING
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

1. The supplemental information disclosure statement transmitted herewith is being filed *after* three months of the filing date of this national application or the date of entry of the national stage as set forth in Section 1.491 in an international application or after the mailing date of the first Office Action on the merits, whichever event occurred last but *before* the mailing date of either

- (1) a final action under § 1.113 or
- (2) a notice of allowance under § 1.311

whichever occurs first.

FEE

2. Accompanying this transmittal is the fee for submission of an information disclosure statement under section 1.97(c). (\$90.00, at the small entity rate)

FEE PAYMENT

3. Applicant elects the option to pay the fee set forth in 37 C.F.R. § 1.17(p) for submission of an information disclosure statement under § 1.97(c) \$90.00.

Fee due \$90.00

METHOD OF PAYMENT OF FEE

4. Authorization is hereby made to charge the amount of \$90.00 to Deposit Account No. 19-4972.
- Charge any additional fees required by this paper or credit any overpayment to Deposit Account No. 19-4972.

DATE: July 24, 2014

/Jonathan C. Lovely, #60,821/

Jonathan C. Lovely
Registration No. 60,821
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125 Summer Street
Boston, MA 02110-1618
UNITED STATES

03781/01017 2142919.1

Electronic Acknowledgement Receipt

EFS ID:	19672636
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	16:15:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	19673922
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	16:30:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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Total Files Size (in bytes):			831686068		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	19674434
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	16:46:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	19674764
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	16:55:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.: 14/175,171
 Filed: 02/07/2014
 For: Programmable Communicator

Group No.: 2682
 Examiner: Nguyen, Nam V.

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT TRANSMITTAL

- Transmitted herewith is an amendment for this application.

STATUS

- Applicant is a small entity. A statement was already filed.

EXTENSION OF TERM

- The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

FEE FOR CLAIMS

- The fee for claims (37 C.F.R. 1.16(b)-(d)) has been calculated as shown below:

	(Col. 1)	(Col. 2)	(Col. 3)	SMALL ENTITY		
	CLAIMS	HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDIT. FEE	
	REMAINING AFTER AMENDMENT					
TOTAL	30	– 30	= 0	x \$ 40.00	= \$	0.00
INDEP.	1	– 3	= 0	x \$ 210.00	= \$	0.00
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM				+ \$ 0.00	= \$	0.00
				TOTAL ADDIT. FEE	\$	0.00

No additional fee for claims is required.

FEE DEFICIENCY

5. If an additional extension and/or fee is required, charge Account No. 19-4972.

If an additional fee for claims is required, charge Account No. 19-4972.

Date: July 24, 2014

/Jonathan C. Lovely, #60,821/

Jonathan C. Lovely

Registration No. 60,821

SUNSTEIN KANN MURPHY & TIMBERS LLP

125 Summer Street

Boston, MA 02110-1618

617-443-9292

Customer No. 02101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Wesby-van Swaay	Att'y Docket:	3781/1017
Appln. No.:	14/175,171	Filing Date:	February 7, 2014
Customer No.:	02101	Conf. No.:	6320
Examiner:	Nguyen, Nam V.	Art Unit:	2682
Invention:	PROGRAMMABLE COMMUNICATOR		

FILED BY USPTO ELECTRONIC FILING SYSTEM

Mail Stop AMENDMENT
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir:

Applicant respectfully submits this Amendment in response to the Office Action dated April 24, 2014 and requests that the following amendments and remarks be considered.

Amendments to the Specification begin on page 2 of this paper.

Listing of the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 9 of this paper.

Amendments to the Specification

Please replace the paragraph beginning on page 1, line 5 of the originally filed application with the following amended paragraph.

This patent application is a continuation of and claims priority from all priority dates of U.S. patent application serial number 13/934,763, filed July 3, 2013, now U.S. Patent No. 8,648,717, and entitled “**Programmable Communicator**” (attorney docket number 3781/1014). U.S. patent application serial number 13/934,763 is a continuation of and claims priority to U.S. patent application serial number 13/801,773, filed March 13, 2013, now U.S. Patent No. 8,542,111, and entitled “**Programmable Communicator**” (attorney docket number 3781/1010), which is a continuation of and claims priority to U.S. patent application serial number 13/328,095, filed December 16, 2011, now U.S. Patent No. 8,633,802, and entitled “**Programmable Communicator**” (attorney docket number 3781/1007), which is a continuation of and claims priority to U.S. patent application serial number 12/538,603, filed August 10, 2009, now U.S. Patent No. 8,094,010, and entitled “**Programmable Communicator**” (attorney docket number 3781/1006), which is a continuation of and claims priority to U.S. patent application serial number 11/329,212, filed January 10, 2006, now U.S. Patent No. 7,583,197, and entitled “**Programmable Communicator**” (attorney docket number 3781/1002), which is a continuation of and claims priority to U.S. Patent Application 10/296,571, filed January 21, 2003, and entitled “**Programmable Communicator**,” which, in turn, is a National Phase filing of and claims priority to PCT/EP01/05738 filed on May 18, 2001, which further claims priority from Finland Application 20001239, filed May 23, 2000. The disclosures of each of these applications are incorporated herein by reference in their entirety.

LISTING OF THE CLAIMS

1. (Currently Amended) A programmable communicator device comprising:

a programmable interface for establishing a wireless communication link with at least one monitored technical device, wherein the programmable interface is programmable by programming instructions received in wireless packet switched data messages; and

a processing module for authenticating one or more wireless transmissions sent from a programming transmitter and received by the programmable communicator device by determining if at least one transmission contains a coded number;

wherein the programmable communicator device is configured to use a memory to store at least one telephone number or IP address included within at least one of the transmissions as one or more stored telephone numbers or IP addresses if the processing module authenticates the at least one of the transmissions including the at least one telephone number or IP address and the coded number by determining that the at least one of the transmissions includes the coded number, the one or more stored telephone numbers or IP addresses being numbers to which the programmable communicator device is configured to and permitted to send outgoing wireless transmissions;

wherein the programmable communicator device is configured to use an identity module for storing a unique identifier that is unique to the programmable communicator device; and

~~wherein the programmable communicator device is embedded within and/or integrated with the monitored technical device; and~~

wherein the one or more wireless transmissions from the programming transmitter comprises a General Packet Radio Service (GPRS), or other wireless packet switched data message; and

wherein the programmable communicator device is configured to process data received through the programmable interface from the at least one monitored technical device in response to programming instructions received in an incoming wireless packet switched data message; and

wherein the programmable communicator is configured to send the processed data by General Packet Radio Service (GPRS), or other wireless packet switched data message; and

wherein the programmable communicator is configured to (1) communicate with a remote data monitoring device and/or (2) send data to and receive data from an Internet web page.

2. (Currently Amended) A programmable communicator device according to claim 1, wherein ~~the programmable communicator device comprises the identity module~~ the programmable communicator device is a cellular telephone.

3. (Currently Amended) A programmable communicator device according to claim [[1]] 2, wherein the cellular telephone is further configured to send and/or receive wireless transmissions compliant with Bluetooth wireless air interface standards.

4. (Currently Amended) A programmable communicator device according to claim [[1]] 2, wherein the cellular telephone is further configured to request that an at least one monitored technical device send data, via the wireless communication link with through the programmable interface, for processing by the cellular telephone programmable communicator device.

5. (Currently Amended) A programmable communicator device according to claim [[1]] 2, wherein the cellular telephone is further configured to display the processed data and/or transmit the processed data to an at least one monitoring device and/or to the Internet web page.

6. (Currently Amended) A programmable communicator device according to claim 5, wherein the processing module is configured to cause the processed data to be transmitted to the at least one monitoring device and/or to the Internet web page.

7. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to determine whether the processed
received data indicates a change in status of the at least one monitored technical device
that crosses a threshold parameter, or that otherwise indicates an alarm condition.

8. (Currently Amended) A programmable communicator device according to claim 7,
wherein the cellular telephone is further configured to send an at least one transmission to
an at least one monitoring device and/or to the Internet web page for alerting an at least
one monitoring device of said change in status or other alarm condition.

9. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to request that an at least one
monitored technical device send data, via the wireless communication link with through
the programmable interface, for receipt by the cellular telephone programmable
communicator device.

10. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to transmit the received data to an
at least one monitoring device and/or to the Internet web page either periodically or in
response to a change in status of at least one monitored technical device or in response to
a data request initiated by the monitoring device and/or a data request initiated via the
Internet web page.

11. (Currently Amended) A programmable communicator device according to claim 10,
wherein the processing module is configured to cause the received data to be transmitted
to the at least one monitoring device and/or to the Internet web page.

12-13. (Cancelled)

14. (Currently Amended) A programmable communicator device according to claim [[1]]

2 wherein the monitored technical device is a sensor device.

15. (Original) A programmable communicator device according to claim 14 wherein the sensor device is attached to or integrated with an article of clothing, the article of clothing including at least one selected from the group consisting of a jacket, a ski jacket, and a life vest

16. (Currently Amended) A programmable communicator device according to claim 14, wherein the monitored technical device is further configured to be integrated with at least one sensor device to form a smart clothes device.

17. (Currently Amended) A programmable communicator device according to claim ~~[[1]]~~ 2 wherein the monitored technical device is a health monitoring system.

18. (Currently Amended) A programmable communicator device according to claim 17 wherein the ~~cellular telephone programmable communicator device~~ is configured to receive data from the health monitoring system via the wireless communication link with ~~through~~ the programmable interface, wherein the data represents ~~representing~~ at least one of body temperature, blood pressure, periodic or continuous electrocardiogram heart rhythm, blood glucose concentration, blood electrolyte concentration, kidney function, liver function, and labor contractions.

19-22. (Cancelled)

23. (Currently Amended) A programmable communicator device according to claim ~~[[1]]~~ 2 wherein the monitored technical device is at least one of a pressure sensor sensitive ~~means~~, a heat sensor sensitive ~~means~~, a mechanical displacement sensor ~~means~~, a speed sensor, and a water sensor sensitive ~~means~~.

24-26. (Cancelled)

27. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to process data from sensors on a
bicycle.

28. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to be reprogrammed with
communications applications received over a wireless connection.

29. (Currently Amended) A programmable communicator device according to claim [[1]]
2, wherein the cellular telephone is further configured to communicate with one or more
technical devices via Bluetooth packet switched messages or other wireless packet
switched messages.

30. (New) A programmable communicator device according to claim 2, wherein the
cellular telephone comprises a location processing module configured to determine an at
least one location of the cellular telephone, and wherein the cellular telephone is
configured to cause the received data to be transmitted to the at least one monitoring
device and or to the Internet web page.

31. (New) A cellular telephone according to claim 30 wherein the location processing
module comprises a Global Positioning System (GPS) module.

32. (New) A programmable communicator device according to claim 1, wherein the
programmable communicator device comprises the identity module.

33. (New) A programmable communicator device according to claim 2, wherein cellular
telephone comprises a movement sensor.

34. (New) A programmable communicator device according to claim 2, wherein the
cellular telephone comprises a proximity detection sensor.

35. (New) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to process proximity detection data.

36. (New) A programmable communicator device according to claim 2, wherein the cellular telephone is further configured to communicate with a network of technical devices

37. (New) A programmable communicator device according to claim 2, wherein the cellular telephone comprises at least one sensor.

38. (New) A programmable communicator device according to claim 2, wherein the cellular telephone is configured to communicate with at least one of a home network and a home or domestic appliance.

39. (New) A programmable communicator device according to claim 2, wherein the cellular telephone is also configured to communicate with one or more monitored technical devices using a wired connection.

REMARKS

Applicants would like to thank the examiner for the review of the present application and prior art. Applicants request reconsideration of the pending claims in view of the following remarks. Applicants have amended claims 1-11, 14, 16-18, 23, and 27-29, cancelled claims 12-13, 19-22, and 24-26, and added new claims 30-39. Accordingly, claims 1-11, 14-18, 23, and 27-39 are currently under consideration in this application. No new matter has been added.

Claim Amendments and New Claims

As mentioned above, Applicants have amended claims 1-11, 14, 16-18, 23, and 27-29, and added new claims 30-39 herewith. The claim amendments and new claims are presented to more fully protect the inventions disclosed in the application.

Additionally, Applicants would like to note that, with the addition of these claims, the application still contains no more than four independent claims, no more than thirty total claims, and no multiple dependent claims. Therefore, Applicants do not believe that this amendment will result in termination of the special status under Track 1 Prioritized Examination.

Objections to the Specification

The office action objects to the disclosure, suggesting that under the cross references to related application the status of U.S. application no. 13/934,763 should be updated. As discussed above, Applicants have amended this paragraph herewith to include the patent number (U.S. Patent No. 8,648,717) for U.S. application no. 13/934,763. Therefore, Applicants believe that these objections are now moot.

Double Patenting

The office action rejects claims 1-29 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-134 of U.S. Patent No. 7,583,197, claims 1-197 of U.S. Patent No. 8,094,010, claims 1-31 of U.S. Patent No. 8,633,802, claims 1-30 of U.S. Patent No. 8,542,111, claims 1-30 of U.S. Patent No.

Appl. No. 14/175,171
Amendment Dated July 24, 2014
Response to Office Action dated April 24, 2014

8,648,717, and claims 1-30 of co-pending application no. 14/169,603. To expedite prosecution, Applicant submits, herewith, terminal disclaimers with respect to each of the above patents and pending application. Accordingly, Applicants believe that the double patenting rejections made within the office action are now moot.

It is believed that the application is in condition for allowance and Applicant respectfully requests that a notice of allowance be issued. Applicant does not believe any extension of time is required. However, if an extension of time is required, please charge the associated fee and any additional fees required by this paper or credit any overpayment to deposit account number 19-4972. Applicant also requests that the examiner contact applicant's attorney, Jonathan Lovely, if it will assist in processing this application through issuance.

DATE: July 24, 2014

Respectfully submitted,
/Jonathan C. Lovely, #60,821/
Jonathan C. Lovely
Registration No. 60,821
Attorney for Applicant
Sunstein Kann Murphy & Timbers LLP
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(617) 443-9292
03781/01017 2141072.1

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)

3781/1017

In re Application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Filed: February 7, 2014

For: Programmable Communicator

The applicant, M2M Solutions LLC, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent No. 7,583,197 as the term of said prior patent is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

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expires for failure to pay a maintenance fee;

is held unenforceable;

is found invalid by a court of competent jurisdiction;

is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;

has all claims canceled by a reexamination certificate;

is reissued; or

is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. The undersigned is an attorney or agent of record. Reg. No. 60,821

/Jonathan C. Lovely, #60,821/

Signature

July 24, 2014

Date

Jonathan C. Lovely

Typed or printed name

Attorney of Record

Title

(617) 443-9292

Telephone Number

Terminal disclaimer fee under 37 CFR 1.20(d) included.

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Docket Number (Optional)

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In re Application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Filed: February 7, 2014

For: Programmable Communicator

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Filed: February 7, 2014

For: Programmable Communicator

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In re Application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Filed: February 7, 2014

For: Programmable Communicator

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Docket Number (Optional)

3781/1017

In re Application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Filed: February 7, 2014

For: Programmable Communicator

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Docket Number (Optional)

3781/1017

In re Application of: Eveline Wesby-van Swaay

Application No.: 14/175,171

Filed: February 7, 2014

For: Programmable Communicator

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Signature

July 24, 2014

Date

Jonathan C. Lovely

Typed or printed name

Attorney of Record

Title

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Electronic Patent Application Fee Transmittal

Application Number:	14175171
Filing Date:	07-Feb-2014
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Filer:	Jonathan Lovely
Attorney Docket Number:	3781/1017

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	6	160	960
Total in USD (\$)				960

Electronic Acknowledgement Receipt

EFS ID:	19669537
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	24-JUL-2014
Filing Date:	07-FEB-2014
Time Stamp:	17:26:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$960
RAM confirmation Number	4037
Deposit Account	194972
Authorized User	

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Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	klw3781_1017_Amendment.pdf	175646 6d5a78d05a153aba8983b6ef91632cc0bf4d8e23	no	12
Warnings:					
Information:					
2	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer1.pdf	241777 f309f3b8913710f1cfba86763daa33c96cfef72c	no	1
Warnings:					
Information:					
3	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer2.pdf	241784 1a871f88dcc0e887348bc7795d993bc5be09c1d2	no	1
Warnings:					
Information:					
4	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer3.pdf	241782 a551bec384abf5eaf03f8a9a2d7e9a35ecb86dac	no	1
Warnings:					
Information:					
5	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer4.pdf	241784 2ec413854ad66acd86eccdd57512a8f718a350a22	no	1
Warnings:					
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6	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer5.pdf	241781 12532cc5bcc381730ecfe2e09854988872c9c10c	no	1
Warnings:					
Information:					
7	Statutory disclaimers per MPEP 1490.	klw3781_1017_TermDisclaimer6.pdf	150786 f4dd07f4c67e2b8a5ccf82a3de33793a6d6d09b8	no	1
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	29901 bae203c282e0a281401d2c7e08a90b3b91e2f039	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	1565241
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/175,171	Filing Date 02/07/2014	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	07/24/2014	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total (37 CFR 1.16(i))	* 30	Minus	** 29	= 1	X \$40 = 40
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X \$210 = 0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	40

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
 /TAMMY L. ACREE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Table with 4 columns: APPLICATION NUMBER (14/175,171), FILING OR 371(C) DATE (02/07/2014), FIRST NAMED APPLICANT (Eveline Wesby-van Swaay), ATTY. DOCKET NO./TITLE (3781/1017)

CONFIRMATION NO. 6320

PUBLICATION NOTICE

2101
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618



Title:Programmable Communicator

Publication No.US-2014-0155037-A1
Publication Date:06/05/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/175,171	02/07/2014	Eveline Wesby-van Swaay	3781/1017	6320
2101	7590	04/24/2014	EXAMINER	
Sunstein Kann Murphy & Timbers LLP 125 SUMMER STREET BOSTON, MA 02110-1618			NGUYEN, NAM V	
			ART UNIT	PAPER NUMBER
			2682	
			NOTIFICATION DATE	DELIVERY MODE
			04/24/2014	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptomail@sunsteinlaw.com

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

The application of Van Swaay for a "programmable communicator" filed February 7, 2014 has been examined.

This application claims foreign priority based on the application 20001239 filed May 23, 2000 in Finland. Receipt is acknowledged of papers submitted under 35 U.S.C 119(a) - (d), which papers have been placed of record in the file.

This application is a CON of 13/934,763 filed July 3, 2013 which is now US PAT No. 8,64,717, which CON of 13/801,773 filed March 13, 2013 which is now US PAT No. 8,542,111, which is a CON of 13/328,095 filed December 16, 2011, which is a CON of 12,538,603 filed August 10, 2009 which is now US PAT No. 8,094,010, which is a CON of 11/329,212 filed January 10, 2006 which is now US PAT No. 7,583,197, which is a CON of 10/296,571 filed January 21, 2003 which is abandoned, which is a 371 of PCT/EP01/05738 filed May 18,2001.

Claims 1-29 are pending.

Art Unit: 2682

Specification

The disclosure is objected to because of the following informalities: Under cross references to related applications CON status needs to be updated. Application serial number 13/934,763 filed July 3, 2013 which is now US PAT No. 8,648,717.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with

Art Unit: 2682

this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

1. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-134 of U.S. Patent No. 7,583,197.

Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing module, and a memory module. The different is that the independent Claim 1 of the application recites wherein the one or more SMS wireless transmissions from the programming transmitter; wherein the programmable communicator is configured to send the processed data by GPRS or other wireless packet switched data message which would be obvious to one skilled in the art to

Art Unit: 2682

use for wireless transmissions in the independent claims 1, 29, 40, 68, 79 and 107 of the U.S.

Patent No. 7,583,197.

The following claims are patentably similar from each other:

Application	Patent No. 7,583,197
1	1, 29, 40, 68, 79 and 107

2. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-197 of U.S. Patent No. 8,094,010.

Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing module, and a memory module. The different is that the independent Claim 1 of the application use alternative languages for the similar limitations as the independent claims 1, 52, 104 and 151 of the U.S. Patent No. 8,094,010.

The following claims are patentably similar from each other:

Application	Patent No. 8,094,010
1	1, 52, 104 and 151

Art Unit: 2682

3. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 8,633,802. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing module, and a memory module. The different is that the independent Claim 1 of the application use alternative languages for the similar limitations as the independent claim 1 of the U.S. Patent No. 8,633,802.

The following claims are patentably similar from each other:

Application	U.S. Patent No. 8,633,802
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1	1
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4. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 8,542,111. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing

Art Unit: 2682

module, and a memory module. The different is that the independent Claim 1 of the application use alternative languages for the similar limitations as the independent claim 1 of the U.S. Patent No. 8,542,111.

The following claims are patentably similar from each other:

Application	U.S. Patent No. 8,542,111
1	1

5. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 8,648,717. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing module, and a memory module. The different is that the independent Claim 1 of the application use alternative languages for the similar limitations as the independent claim 1 of the U.S. Patent No. 8,648,717.

The following claims are patentably similar from each other:

Application	U.S. Patent No. 8,648,717
1	1

Art Unit: 2682

6. Claims 1-29 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application No. 14/169,603. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Referring to independent Claim 1 of the copending application, the programmable communicator device includes a wireless communications circuit, a programmable interface, a processing module, and a memory module. The different is that the independent Claim 1 of the application use alternative languages for the similar limitations as the independent claim 1 of the copending Application No. 14/169,603.

The following claims are patentably similar from each other:

Application	The copending Application No. 14/169,603
1	1

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam V. Nguyen whose telephone number is 571-272-3061. The examiner can normally be reached on Mon-Fri, 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Bugg can be reached on 571- 272-2998. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/NAM V NGUYEN/
Primary Examiner, Art Unit 2682

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: ~~Not Yet Assigned~~ Nam Nguyen
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	AA	US 4,465,904	Aug. 14, 1984	Gottsegen et al.	179/5 R
	AB	US 4,658,096	Apr. 14, 1987	West, Jr. et al.	379/59
	AC	US 4,855,713	Aug. 8, 1989	Brunius	340/506
	AD	US 4,908,853	Mar. 13, 1990	Matsumoto	379/355
	AE	US 4,951,029	Aug. 21, 1990	Severson	340/506
	AF	US 5,012,234	Apr. 30, 1991	Dulaney et al.	340/825.44
	AG	US 5,276,729 A	Jan. 4, 1994	Higuchi et al.	379/58
	AH	US 5,293,418 A	Mar. 8, 1994	Fukawa	379/58
	AI	US 5,348,008 A	Sep. 20, 1994	Bornn et al.	128/642
	AJ	US 5,381,138 A	Jan. 10, 1995	Stair et al.	340/825.44
	AK	US 5,396,264 A	Mar. 7, 1995	Falcone et al.	345/146
	AL	US 5,544,661 A	Aug. 13, 1996	Davis et al.	128/700
	AM	US 5,548,271 A	Aug. 20, 1996	Tsuchiyama et al.	340/311.1
	AN	US 5,581,599 A	Dec. 3, 1996	Tsuji et al.	379/63
	AO	US 5,581,803 A	Dec. 3, 1996	Grube et al.	455/54.1
	AP	US 5,623,533 A	Apr. 22, 1997	Kikuchi et al.	379/58
	AQ	US 5,689,442 A	Nov. 18, 1997	Swanson et al.	364/550
	AR	US 5,689,563 A	Nov. 18, 1997	Brown et al.	380/23
	AS	US 5,742,233 A	Apr. 21, 1998	Hoffman et al.	340/573
	AT	US 5,742,666 A	Apr. 21, 1998	Alpert	379/58
	AU	US 5,745,049 A	Apr. 28, 1998	Akiyama et al.	340/870.17
	AV	US 5,752,976 A	May 19, 1998	Duffin et al.	607/32
	AW	US 5,771,455 A	Jun. 23, 1998	Kennedy, III et al.	455/456
	AX	US 5,774,804 A	Jun. 30, 1998	Williams	455/419
	AY	US 5,802,460 A	Sep. 1, 1998	Parvulescu et al.	455/92
	AZ	US 5,831,545 A	Nov. 3, 1998	Murray et al.	340/825.49
	BA	US 5,878,339 A	Mar. 2, 1999	Zicker et al.	455/419
	BB	US 5,884,161 A	Mar. 16, 1999	Hegeman	455/414
	BC	US 5,903,634 A	May 11, 1999	Wakabayashi et al.	379/127
	BD	US 5,940,752 A	Aug. 17, 1999	Henrick	455/419

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	BE	US 5,946,636 A	Aug. 31, 1999	Uyeno et al.	455/566
	BF	US 5,948,064 A	Sep. 7, 1999	Bertram et al.	709/225
	BG	US 5,960,366 A	Sep. 28, 1999	Duwaer	455/556
	BH	US 5,974,312 A	Oct. 26, 1999	Hayes, Jr. et al.	455/419
	BI	US 5,995,603 A	Nov. 30, 1999	Anderson	379/142
	BJ	US 5,997,476 A	Dec. 7, 1999	Brown	600/300
	BK	US 5,999,990 A	Dec. 7, 1999	Sharrit et al.	710/8
	BL	US 6,026,293 A	Feb. 15, 2000	Osborn	455/411
	BM	US 6,031,828 A	Feb. 29, 2000	Koro et al.	370/336
	BN	US 6,038,491 A	Mar. 14, 2000	McGarry et al.	700/231
	BO	US 6,041,229 A	Mar. 21, 2000	Turner	455/420
	BP	US 6,072,396 A	Jun. 6, 2000	Gaukel	340/573.4
	BQ	US 6,075,451 A	Jun. 13, 2000	Lebowitz et al.	340/825.06
	BR	US 6,078,948 A	Jun. 20, 2000	Podgorny et al.	709/204
	BS	US 6,108,521 A	Aug. 22, 2000	Foladore et al.	455/31.3
	BT	US 6,125,273 A	Sep. 26, 2000	Yamagishi	455/411
	BU	US 6,144,859 A	Nov. 7, 2000	LaDue	455/511
	BV	US 6,148,197 A	Nov. 14, 2000	Bridges et al.	455/432
	BW	US 6,157,318 A	Dec. 5, 2000	Minata	340/825.44
	BX	US 6,172,616 B1	Jan. 9, 2001	Johnson et al.	340/870.12
	BY	US 6,198,390 B1	Mar. 6, 2001	Schlager et al.	340/540
	BZ	US 6,208,039 B1	Mar. 27, 2001	Mendelsohn et al.	307/52
	CA	US 6,208,839 B1	Mar. 27, 2001	Davani	455/31.3
	CB	US 6,208,854 B1	Mar. 27, 2001	Roberts et al.	455/417
	CC	US 6,215,994 B1	Apr. 10, 2001	Schmidt et al.	455/419
	CD	US 6,230,002 B1	May 8, 2001	Flodén et al.	455/411
	CE	US 6,275,143 B1	Aug. 14, 2001	Stobbe	340/10.34
	CF	US 6,288,641 B1	Sep. 11, 2001	Casais	340/539
	CG	US 6,289,084 B1	Sep. 11, 2001	Bushnell	379/67.1
	CH	US 6,295,449 B1	Sep. 25, 2001	Westerlage et al.	455/422

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	CI	US 6,308,083 B2	Oct. 23, 2001	King	455/556
	CJ	US 6,314,270 B1	Nov. 6, 2001	Uchida	455/67.1
	CK	US 6,377,161 B1	Apr. 23, 2002	Gromelski et al.	340/7.45
	CL	US 6,411,198 B1	Jun. 25, 2002	Hirai et al.	340/7.6
	CM	US 6,424,623 B1	Jul. 23, 2002	Borgstahl et al.	370/230
	CN	US 6,442,432 B2	Aug. 27, 2002	Lee	607/59
	CO	US 6,487,478 B1	Nov. 26, 2002	Azzaro et al.	701/24
	CP	US 6,496,777 B2	Dec. 17, 2002	Tennison et al.	701/213
	CQ	US 6,519,242 B1	Feb. 11, 2003	Emery et al.	370/338
	CR	US 6,553,418 B1	Apr. 22, 2003	Collins et al.	709/224
	CS	US 6,567,671 B2	May 20, 2003	Amin	455/550
	CT	US 6,573,825 B1	Jun. 3, 2003	Okano	340/7.51
	CU	US 6,577,881 B1	Jun. 10, 2003	Ehara	455/563
	CV	US 6,606,508 B2	Aug. 12, 2003	Becker et al.	455/567
	CW	US 6,611,755 B1	Aug. 26, 2003	Coffee et al.	701/213
	CX	US 6,633,784 B1	Oct. 14, 2003	Lovelace, II et al.	700/65
	CY	US 6,658,586 B1	Dec. 2, 2003	Levi	714/4
	CZ	US 6,759,956 B2	Jul. 6, 2004	Menard et al.	340/539.19
	DA	US 6,832,102 B2	Dec. 14, 2004	I'Anson	455/556.1
	DB	US 6,833,787 B1	Dec. 21, 2004	Levi	340/539.13
	DC	US 6,873,842 B2	Mar. 29, 2005	Elayda et al.	455/418
	DD	US 6,900,737 B1	May 31, 2005	Ardalan et al	340/870.02
	DE	US 6,922,547 B2	Jul. 26, 2005	O'Neill et al.	455/17
	DF	US 6,970,917 B1	Nov. 29, 2005	Kushwaha et al.	709/217
	DG	US 6,985,742 B1	Jan. 10, 2006	Giniger et al.	455/456.1
	DH	US 6,988,989 B2	Jan. 24, 2006	Weiner et al.	600/300
	DI	US 7,027,808 B2	Apr. 11, 2006	Wesby	455/419
	DJ	US 7,084,771 B2	Aug. 1 2006	Gonzalez	340/573.1
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	DM	US 7,583,197 B2	Sep. 1, 2009	Wesby Van Swaay	340/573.4
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	DP	US 8,542,111 B2	Sep. 24, 2013	Wesby-van Swaay	340/539.12
	DQ	US 8,633,802 B2	Jan. 21, 2014	Wesby-van Swaay	340/7.29
	DR	US 8,648,717 B2	Feb. 11, 2014	Wesby-van Swaay	340/539.12

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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	EH	EP	0 772 336 A2	May 7, 1997	Straeuli et al.	H04M 9/00
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	FM	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Network architecture (GSM 03.02, version 5.0.0), TS/SMG-030302Q, 20 pages (March, 1996)</i>
	FN	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11, version 5.3.0), TS/SMG-091111QR1, 113 pages (July, 1996)</i>
	FO	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 5.1.0), TS/SMG-091114Q, 54 pages (August, 1996)</i>
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Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	FR	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface</i> (GSM 11.11, version 7.2.0, Release 1998), SMG version only, not for publication, 133 pages (March, 1999)
	FS	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)</i> (GSM 07.05, version 7.0.0, Release 1998), Available SMG only, 66 pages (March, 1999)
	FT	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface,</i> (GSM 11.11, version 7.4.0, Release 1998), 134 pages (December, 1999)
	FU	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the SIM application toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface</i> (GSM 11.14, version 6.2.0, Release 1997), 82 pages (November, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	FW	Novatel Wireless	<i>Novatel CDPD (Cellular Digital Packet Data) Software, 42 pages (1999)</i>
	FX	Phonetics, Inc.	<i>Sensaphone 2000 User's Manual, Version 3.0, 118 pages (January, 1998)</i>
	FY	Phonetics, Inc.	<i>Sensaphone 1104, Sensaphone 1108 Potential Disasters, Science/Health/Labs archived website page (http://www.sensaphone.com/pages/Health Page.html), 2 pages (December, 1998)</i>
	FZ	Siemens	<i>Siemens Private Communication Systems, Technical Description of the Siemens A1, Edition 5, 53 pages (January, 1998)</i>
	GA	Siemens	<i>Siemens GSM Module M1 User Guide, 76 pages (1996)</i>
	GB	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 4, 198 pages (December, 1998)</i>
	GC	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 5, 209 pages (March, 1999)</i>
	GD	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 7, 221 pages (October, 1999)</i>
	GE	Sierra Wireless	<i>Dart 200 CDPD Modem, For CDPD Versions 1.0 and 1.1, User's Guide, 206 pages (January, 1998)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	GG	Sine Systems, Inc.	<i>Remote Facilities Controller, Model RFC-1/B, Relay Panel, Model RP-8, Installation and Operation</i> , 97 pages (1999)
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	GI	Telital	<i>GSM Datablock Product Specification</i> , Revision 2, 30 pages (November, 1997)
	GJ	Telital	Technologies archived website page (http://www.telital.com/technologE.html), 2 pages (April, 2000)
	GK	Telital Automotive	<i>Telital Automotive GM360, Technical Specification</i> , 36 pages (February, 1999)
	GL	Telital Automotive	<i>Telefono GSM Datablock II con funzioni Voce/Dati/Fax/SMS</i> , 91 pages (February, 1999)
	GM	Telular Corporation	<i>Annual Report</i> , 48 pages (1998)
	GN	WAVECOM	<i>Wavecom GSM Modem, Wavecom WM01-G900, Version 7.3, Reference WCOM/GSM/WMO1-G900/modATcmd</i> , 67 pages (December, 1997)
	GO	WAVECOM	<i>WISMO Wireless Standard Module, WM1B-G1900 PCS Module Specifications driven by AT commands</i> , Version 1.2, Reference WCOM/PCS/8001 45 pages (September, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	GQ	WAVECOM	<i>WISMO Wireless Standard Module, WM2C-G900/G1800 EGSM/DCS DUAL BAND Module Specifications</i> , Verion 0.7, Reference:WCOM/GSM/WM2C_07, 51 pages (September, 1999)
	GR	Azzaro et al.	Provisional Application – 60/162,249, dated October 28, 1999 (21 pages)
	GS	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Terminals; Characteristics of the USIM Application</i> (3G TS 31.102, version 3.0.), 104 pages (January, 2000)
	GT	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Terminals; AT command set for 3GPP User Equipment (UE)</i> (3G TS 27.007, version 3.4.0, Release 1999), 154 pages (March, 2000)
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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	GX	Bult et al.	<i>Low Power Systems for Wireless Microsensors</i> , UCLA Electrical Engineering Department, Los Angeles, CA and Rockwell Science Center, Thousand Oaks, CA, 5 pages (1996)
	GY	Carman et al / NAI Labs	<i>A Communications Security Architecture and Cryptographic Mechanisms for Distributed Sensor Networks</i> , DARPA/ITO Sensor IT Workshop, 24 pages (October, 1999)
	GZ	Chandrakasan et al.	<i>Design Considerations for Distributed Microsensor Systems</i> , Department of EECS, Massachusetts Institute of Technology, Cambridge, MA, IEEE 1999, Custom Intergrated Circuits Conference, 8 Pages (1999)
	HA	Godfrey	<i>A Comparison of Security Protocols in a Wireless Network Environment</i> , A thesis presented to the University of Waterloo, Ontario, Canada, 87 pages (1995)
	HB	Hodes et al.	<i>Composable ad hoc location-based services for heterogeneous mobile clients</i> , Wireless Networks 5, pp. 411-427 (1999)
	HC	Istepanian et al.	<i>Design of mobile telemedicine systems using GSM and IS-54 cellular telephone standards</i> , Journal of Telemedicine and Telecare, Vol. 4, Supplement 1, pp. 80-82 (1999)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	HD	Istepanian	<i>Modelling of GSM-based Mobile Telemedical System</i> , Proceedings of the 20 th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Vol. 20, No. 3, pp. 1166-1169 (1998)
	HE	Kahn et al.	<i>Next Century Challenges: Mobile Networking for "Smart Dust"</i> , Department of Electrical Engineering and Computer Science, 8 pages (1999)
	HF	Miles	<i>System Monitoring, Messaging and Notification</i> , Proceedings of SAGE-AU, 15 pages (June, 1999)
	HG	Pavlopoulos et al.	<i>A Novel Emergency Telemedicine System Based on Wireless Communication Technology - "Ambulance"</i> , IEEE Transactions on Information in Biomedicine, Vol. 2, No.4, pp. 261-267 (1998)
	HH	Prasad et al.	<i>Security Architecture for Wireless LANs: Corporate & Public Environment</i> , IEEE VTC, pp. 283-287 (2000)
	HI	Redl et al.	<i>GSM and Personal Communications Handbook</i> , ISBN 0-89006-957-3, 80 pages (1998)
	HJ	Schlumberger	<i>Schlumberger Java SIMs and Over-the-Air Server Allow Sunday to Evolve Phones Into Multi-Service Terminals</i> , 3 pages (July, 1999)
	HK	Steiner et al.	<i>Kerberos: An Authentication Service for Open Network Systems</i> , Project Athena, Massachusetts Institute of Technology, 15 pages (1988)
	HL	Taylor et al.	<i>Internetwork Mobility: The CDPD Approach</i> , 334 pages (June, 1996)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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 Serial No: 14/175,171 Art Unit/Group No.: 2642
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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

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	HM	Wu et al.	<i>A Mobile System for Real-Time Patient- Monitoring with Integrated Physiological Signal Processing</i> , Proceedings of the First Joint BMES/EMBS Conference Serving Humanity, Advancing Technology, Atlanta, GA (October, 1999)
	HN	U.S.D.C. for the District of Delaware	Defendant's Initial Invalidity Contentions, including Appendix A-Z, AA and DD, 1046 pages (served on March 8, 2013)
	HO	U.S.D.C. for the District of Delaware	Defendant's Kowatec's Initial Invalidity Contentions, 3 pages (served April 15, 2013)
	HP	U.S.D.C. for the District of Delaware	Appendices DD-EE for Defendant's Kowatec's Initial Invalidity Contentions, 126 pages (served on April 15, 2013)
	HQ	U.S.D.C. for the District of Delaware	Defendant's Answering Brief, 39 pages (served on June 21, 2013)
	HR		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Defendants' First Supplemental Invalidity Contentions</i> , served July 5, 2013 (9 pages)
	HS		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Appendices A-Z and AA: Defendants' First Supplemental Invalidity Contentions</i> , served July 5, 2013 (1084 pages)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

OTHER DOCUMENTS			
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	HT		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Defendants' Sur-Reply Brief on Claim Construction</i> , served July 26, 2013 (19 pages)
	HU		M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Memorandum Opinion</i> , served on November 12, 2013 (20 pages)
	HV	Jonathan C. Lovely, Esq. Sunstein Kann Murphy & Timbers LLP	Continuation Application – Serial No. 14/159,849, as filed January 21, 2014 (36 pages)
	HW	Jonathan C. Lovely, Esq. Sunstein Kann Murphy & Timbers LLP	Track One Continuation Application – Serial No. 14/169,603, as filed January 31, 2014 (40 pages)

Examiner Signature: _____ /Nam Nguyen/
Date Considered: _____ 04/20/2014
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation <i>if not</i> in conformance and not considered. Include copy of this form with next communication to applicant.

Section 4. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted

This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application Serial No. 13/934,763, filed July 3, 2013.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 13/801,773, filed March 13, 2013.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 13/328,095, filed December 16, 2011.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 12/538,603, filed August 10, 2009.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 11/329,212, filed January 10, 2006.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 10/296,571, filed, January 21, 2003.

The following references were submitted to, and/or cited by, the Office in the prior application(s) and, therefore, are not required to be provided in this application:

Reference Nos.: AA - HU

Section 6. Copies of Listed Information Items Accompanying This Statement

Legible copies of all items listed in Forms PTO/SB/08A and 08B (substitute for Form PTO-1449) accompany this information statement.

Exception(s) to above:

U.S. patent citations are not included pursuant to the United States Patent and Trademark Office's September 21, 2004 waiver of the copy requirement in 37 CFR 1.98 for cited pending U.S. patent citations when the patent citations are available in the USPTO's IFW system.

Items in prior application, from which an earlier filing date is claimed for this application, as identified in Section 4.

Cumulative patents or publications identified in Section 5.

Section 8. Translation(s) of Non-English Language Documents

Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

Reference **EA** is believed to be the English abstract of Reference **DZ**;
Reference **EE** is believed to be the English abstract of Reference **ED**;
Reference **EG** is believed to be the English abstract of Reference **EF**;
Reference **EI** is believed to be the English abstract of Reference **EH**;
Reference **EL** is believed to be the English abstract of Reference **EK**;
Reference **EN** is believed to be the English abstract of Reference **EM**;
Reference **EX** is believed to be the English abstract of Reference **EW**;
Reference **EZ** is believed to be the English abstract of Reference **EY**;
Reference **FB** is believed to be the English abstract of Reference **FA**;
Reference **FG** is believed to be the English abstract of Reference **FF**;
Reference **FI** is believed to be the English abstract of Reference **FH**; and
Reference **FK** is believed to be the English abstract of Reference **FJ**.

Section 10. Identification of Person Making This Information Disclosure Statement

The person making this certification is the practitioner of record.

Dated: March 18, 2014

/Jonathan C. Lovely, #60,821/
SIGNATURE OF PRACTITIONER

Reg. No. 60,821

Jonathan C. Lovely
(type or print name of practitioner)

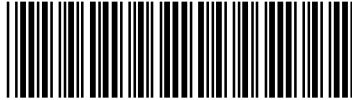
Tel. No.: (617) 443-9292

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125 Summer Street, 11th Floor
Firm/Street Address

Customer No.: 002101

Boston, MA 02110-1618
City/State/Zip Code

03781/01017 2063831.1

Index of Claims 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	04/20/2014							
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BIB DATA SHEET

CONFIRMATION NO. 6320

SERIAL NUMBER 14/175,171	FILING or 371(c) DATE 02/07/2014	CLASS 340	GROUP ART UNIT 2682	ATTORNEY DOCKET NO. 3781/1017	
APPLICANTS M2M Solutions LLC, Stratford-upon-Avon, UNITED KINGDOM, Assignee (with 37 CFR 1.172 Interest); INVENTORS Eveline Wesby-van Swaay, Stratford-upon-Avon, UNITED KINGDOM; ** CONTINUING DATA ***** Yes /NN/ This application is a CON of 13/934,763 07/03/2013 PAT 8648717 which is a CON of 13/801,773 03/13/2013 PAT 8542111 which is a CON of 13/328,095 12/16/2011 PAT 8633802 which is a CON of 12/538,603 08/10/2009 PAT 8094010 which is a CON of 11/329,212 01/10/2006 PAT 7583197 which is a CON of 10/296,571 01/21/2003 ABN which is a 371 of PCT/EP01/05738 05/18/2001 /NN/ ** FOREIGN APPLICATIONS ***** Yes /NN/ FINLAND 20001239 05/23/2000 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 02/24/2014					
Foreign Priority claimed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 35 USC 119(a-d) conditions met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Verified and Acknowledged <u>/NAM V NGUYEN/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance NN Initials	STATE OR COUNTRY UNITED KINGDOM	SHEETS DRAWINGS 3	TOTAL CLAIMS 29	INDEPENDENT CLAIMS 1
ADDRESS Sunstein Kann Murphy & Timbers LLP 125 SUMMER STREET BOSTON, MA 02110-1618 UNITED STATES					
TITLE Programmable Communicator					
FILING FEE RECEIVED 1090	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		

EAST Search History

EAST Search History (Prior Art)

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S55	5	event adj2 identifier and source adj2 identifier and (program\$4 adj2 block)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/12/02 10:36
S56	5	event adj2 identifier and source adj2 identifier and (program\$4 adj2 block\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/12/02 10:37
S57	75	event adj2 identifier and (program\$4 adj2 block\$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/12/02 10:38
S58	36	("20020013802" "20020088926" "20030008684" "20030129944" "20030135533" "20030149741" "20030161327" "20030174731" "20030177275" "20030178273" "20030233485" "20040142682" "20040174855" "20040199613" "20040266480" "20050057370" "20050060704" "20060005132" "20060181406" "20070180436" "20080112313" "4843606" "5245608" "5774461" "5892769" "6195760" "6266781" "6295447" "6366826" "6411991" "6437692" "6522628" "6611834" "7020501" "7069027" "7076211").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2012/12/02 10:42
S59	171	identifier and (program\$4 adj2 block\$4) and toy\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/12/02 10:47

S60	3	S59 and (source adj2 identifier)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2012/12/02 10:48
S61	2	"7583197".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/08/08 10:57
S62	4	"8094010"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/08/08 11:37
S63	2	"8094010".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/19 10:54
S64	1	"8542111"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/19 10:55
S65	17886	transmit\$4 same telephone adj2 number and identification	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/19 11:24
S66	1824	transmit\$4 same telephone adj2 number same identification adj2 number	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/19 11:24
S67	14	S66 and (permit\$4 adj2 caller)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/19 11:25
S68	3	"8648717"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2014/03/07 20:10

			DERWENT; IBM_TDB			
S69	3	permit\$4 adj2 caller adj2 list	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:08
S70	1444	permit\$4 adj2 caller\$2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:08
S71	67	S70 and (store\$4 adj2 telephone adj2 number)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:08
S72	0	S70 and (store\$4 adj2 teleh04m 3/00hone adj2 number)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:11
S73	876599	h04m 3/00	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:12
S74	9	h04m adj2 3/00	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/03/07 21:12

4/ 20/ 2014 5:27:07 PM

C:\Users\nnguyen2\Documents\EAST\Workspaces\13934763-programmable communicator dev.wsp

Search Notes 	Application/Control No. 14175171	Applicant(s)/Patent Under Reexamination WESBY-VAN SWAAY, EVELINE
	Examiner NAM V NGUYEN	Art Unit 2682

CPC- SEARCHED		
Symbol	Date	Examiner
H04M 3/00	4/20/14	NN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner
H04Q 7/200; H04Q 1/30; G08B 1/08	4/20/14	

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
340	7.29; 7.33; 7.52; 529.12; 573.4; 693.5	4/20/14	NN
455	456; 456.2; 418; 419; 425	4/20/14	NN
379	142; 373; 375;	4/20/14	NN

SEARCH NOTES		
Search Notes	Date	Examiner
Search EAST: USPAT; US-PUB; EPO; JPO; and Derwent.	4/20/14	NN
Search TERMS; authorized list caller in cellular phone with monitoring device; sensor; monitoring central station with address/ code/number/IP address; code; or phone number. stored valid caller;	4/20/14	NN
updated search from CON APPLICATIONS.	4/20/14	NN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/N.V.N./ Primary Examiner.Art Unit 2682
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.:	14/175,171	Art Unit/Group No.:	2642
Filing Date:	February 7, 2014	Examiner:	Not Yet Assigned
		Conf. No.:	6320

For: PROGRAMMABLE COMMUNICATOR

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

List of Sections Forming Part of This Information Disclosure Statement

The following sections are being submitted for this Information Disclosure Statement:

1. Preliminary Statements
2. Forms PTO/SB/08A and 08B (substitute for Form PTO-1449)
3. Statement as to Information Not Found in Patents or Publications
4. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted
5. Cumulative Patents or Publications
6. Copies of Listed Information Items Accompanying This Statement
7. Concise Explanation of Non-English Language Listed Information Items
 - 7A. EPO Search Report
 - 7B. English Language Version of EPO Search Report
8. Translation(s) of Non-English Language Documents
9. Concise Explanation of English Language Listed Information Items (Optional)
10. Identification of Person(s) Making This Information Disclosure Statement

Section 1. Preliminary Statements

Applicants submit herewith patents, publications or other information, of which they are aware that they believe may be material to the examination of this application, and in respect of which, there may be a duty to disclose.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 C.F.R. § 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability, or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. *Notice of January 9, 1992, 1135 O.G. 13-25, at 25.*

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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 Conf. No.: 6320
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U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	AA	US 4,465,904	Aug. 14, 1984	Gottsegen et al.	179/5 R
	AB	US 4,658,096	Apr. 14, 1987	West, Jr. et al.	379/59
	AC	US 4,855,713	Aug. 8, 1989	Brunius	340/506
	AD	US 4,908,853	Mar. 13, 1990	Matsumoto	379/355
	AE	US 4,951,029	Aug. 21, 1990	Severson	340/506
	AF	US 5,012,234	Apr. 30, 1991	Dulaney et al.	340/825.44
	AG	US 5,276,729 A	Jan. 4, 1994	Higuchi et al.	379/58
	AH	US 5,293,418 A	Mar. 8, 1994	Fukawa	379/58
	AI	US 5,348,008 A	Sep. 20, 1994	Bornn et al.	128/642
	AJ	US 5,381,138 A	Jan. 10, 1995	Stair et al.	340/825.44
	AK	US 5,396,264 A	Mar. 7, 1995	Falcone et al.	345/146
	AL	US 5,544,661 A	Aug. 13, 1996	Davis et al.	128/700
	AM	US 5,548,271 A	Aug. 20, 1996	Tsuchiyama et al.	340/311.1
	AN	US 5,581,599 A	Dec. 3, 1996	Tsuji et al.	379/63
	AO	US 5,581,803 A	Dec. 3, 1996	Grube et al.	455/54.1
	AP	US 5,623,533 A	Apr. 22, 1997	Kikuchi et al.	379/58
	AQ	US 5,689,442 A	Nov. 18, 1997	Swanson et al.	364/550
	AR	US 5,689,563 A	Nov. 18, 1997	Brown et al.	380/23
	AS	US 5,742,233 A	Apr. 21, 1998	Hoffman et al.	340/573
	AT	US 5,742,666 A	Apr. 21, 1998	Alpert	379/58
	AU	US 5,745,049 A	Apr. 28, 1998	Akiyama et al.	340/870.17
	AV	US 5,752,976 A	May 19, 1998	Duffin et al.	607/32
	AW	US 5,771,455 A	Jun. 23, 1998	Kennedy, III et al.	455/456
	AX	US 5,774,804 A	Jun. 30, 1998	Williams	455/419
	AY	US 5,802,460 A	Sep. 1, 1998	Parvulescu et al.	455/92
	AZ	US 5,831,545 A	Nov. 3, 1998	Murray et al.	340/825.49
	BA	US 5,878,339 A	Mar. 2, 1999	Zicker et al.	455/419
	BB	US 5,884,161 A	Mar. 16, 1999	Hegeman	455/414
	BC	US 5,903,634 A	May 11, 1999	Wakabayashi et al.	379/127
	BD	US 5,940,752 A	Aug. 17, 1999	Henrick	455/419

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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 Conf. No.: 6320
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U.S. PATENT DOCUMENTS					
Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	BE	US 5,946,636 A	Aug. 31, 1999	Uyeno et al.	455/566
	BF	US 5,948,064 A	Sep. 7, 1999	Bertram et al.	709/225
	BG	US 5,960,366 A	Sep. 28, 1999	Duwaer	455/556
	BH	US 5,974,312 A	Oct. 26, 1999	Hayes, Jr. et al.	455/419
	BI	US 5,995,603 A	Nov. 30, 1999	Anderson	379/142
	BJ	US 5,997,476 A	Dec. 7, 1999	Brown	600/300
	BK	US 5,999,990 A	Dec. 7, 1999	Sharrit et al.	710/8
	BL	US 6,026,293 A	Feb. 15, 2000	Osborn	455/411
	BM	US 6,031,828 A	Feb. 29, 2000	Koro et al.	370/336
	BN	US 6,038,491 A	Mar. 14, 2000	McGarry et al.	700/231
	BO	US 6,041,229 A	Mar. 21, 2000	Turner	455/420
	BP	US 6,072,396 A	Jun. 6, 2000	Gaukel	340/573.4
	BQ	US 6,075,451 A	Jun. 13, 2000	Lebowitz et al.	340/825.06
	BR	US 6,078,948 A	Jun. 20, 2000	Podgorny et al.	709/204
	BS	US 6,108,521 A	Aug. 22, 2000	Foladore et al.	455/31.3
	BT	US 6,125,273 A	Sep. 26, 2000	Yamagishi	455/411
	BU	US 6,144,859 A	Nov. 7, 2000	LaDue	455/511
	BV	US 6,148,197 A	Nov. 14, 2000	Bridges et al.	455/432
	BW	US 6,157,318 A	Dec. 5, 2000	Minata	340/825.44
	BX	US 6,172,616 B1	Jan. 9, 2001	Johnson et al.	340/870.12
	BY	US 6,198,390 B1	Mar. 6, 2001	Schlager et al.	340/540
	BZ	US 6,208,039 B1	Mar. 27, 2001	Mendelsohn et al.	307/52
	CA	US 6,208,839 B1	Mar. 27, 2001	Davani	455/31.3
	CB	US 6,208,854 B1	Mar. 27, 2001	Roberts et al.	455/417
	CC	US 6,215,994 B1	Apr. 10, 2001	Schmidt et al.	455/419
	CD	US 6,230,002 B1	May 8, 2001	Flodén et al.	455/411
	CE	US 6,275,143 B1	Aug. 14, 2001	Stobbe	340/10.34
	CF	US 6,288,641 B1	Sep. 11, 2001	Casais	340/539
	CG	US 6,289,084 B1	Sep. 11, 2001	Bushnell	379/67.1
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Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	CI	US 6,308,083 B2	Oct. 23, 2001	King	455/556
	CJ	US 6,314,270 B1	Nov. 6, 2001	Uchida	455/67.1
	CK	US 6,377,161 B1	Apr. 23, 2002	Gromelski et al.	340/7.45
	CL	US 6,411,198 B1	Jun. 25, 2002	Hirai et al.	340/7.6
	CM	US 6,424,623 B1	Jul. 23, 2002	Borgstahl et al.	370/230
	CN	US 6,442,432 B2	Aug. 27, 2002	Lee	607/59
	CO	US 6,487,478 B1	Nov. 26, 2002	Azzaro et al.	701/24
	CP	US 6,496,777 B2	Dec. 17, 2002	Tennison et al.	701/213
	CQ	US 6,519,242 B1	Feb. 11, 2003	Emery et al.	370/338
	CR	US 6,553,418 B1	Apr. 22, 2003	Collins et al.	709/224
	CS	US 6,567,671 B2	May 20, 2003	Amin	455/550
	CT	US 6,573,825 B1	Jun. 3, 2003	Okano	340/7.51
	CU	US 6,577,881 B1	Jun. 10, 2003	Ehara	455/563
	CV	US 6,606,508 B2	Aug. 12, 2003	Becker et al.	455/567
	CW	US 6,611,755 B1	Aug. 26, 2003	Coffee et al.	701/213
	CX	US 6,633,784 B1	Oct. 14, 2003	Lovelace, II et al.	700/65
	CY	US 6,658,586 B1	Dec. 2, 2003	Levi	714/4
	CZ	US 6,759,956 B2	Jul. 6, 2004	Menard et al.	340/539.19
	DA	US 6,832,102 B2	Dec. 14, 2004	I'Anson	455/556.1
	DB	US 6,833,787 B1	Dec. 21, 2004	Levi	340/539.13
	DC	US 6,873,842 B2	Mar. 29, 2005	Elayda et al.	455/418
	DD	US 6,900,737 B1	May 31, 2005	Ardalan et al	340/870.02
	DE	US 6,922,547 B2	Jul. 26, 2005	O'Neill et al.	455/17
	DF	US 6,970,917 B1	Nov. 29, 2005	Kushwaha et al.	709/217
	DG	US 6,985,742 B1	Jan. 10, 2006	Giniger et al.	455/456.1
	DH	US 6,988,989 B2	Jan. 24, 2006	Weiner et al.	600/300
	DI	US 7,027,808 B2	Apr. 11, 2006	Wesby	455/419
	DJ	US 7,084,771 B2	Aug. 1 2006	Gonzalez	340/573.1
	DK	US 7,254,601 B2	Aug. 7, 2007	Baller et al.	709/200
	DL	US 7,558,564 B2	Jul. 7, 2009	Wesby	455/419

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Examiner Initials	Reference Number	Document Number	Issue Date	Inventor	Class/Subclass
	DM	US 7,583,197 B2	Sep. 1, 2009	Wesby Van Swaay	340/573.4
	DN	US 7,599,681 B2	Oct. 6, 2009	Link, II et al.	455/411
	DO	US 8,094,010 B2	Jan. 10, 2012	Wesby-van Swaay	340/539.12
	DP	US 8,542,111 B2	Sep. 24, 2013	Wesby-van Swaay	340/539.12
	DQ	US 8,633,802 B2	Jan. 21, 2014	Wesby-van Swaay	340/7.29
	DR	US 8,648,717 B2	Feb. 11, 2014	Wesby-van Swaay	340/539.12

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Examiner Initials	Reference Number	Document Number	Publication Date	Inventor	Class/Subclass
	DS	US 2001/0001234 A1	May 17, 2001	Addy et al.	340/531
	DT	US 2002/0046353 A1	Apr. 18, 2002	Kishimoto	713/202
	DU	US 2002/0080938 A1	Jun. 27, 2002	Alexander, III et al.	379/106.01
	DV	US 2002/0198997 A1	Dec. 26, 2002	Linthicum et al.	709/227
	DW	US 2003/0176952 A1	Sep. 18, 2003	Collins et al.	700/286
	DX	US 2010/0035580 A1	Feb. 11, 2010	Wesby - Van Swaay	455/411
	DY	US 2012/0088474 A1	Apr. 12, 2012	Wesby-van Swaay	455/411

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Examiner Initials	Reference Number	Country Code	Document Number	Publication Date	Patentee or Applicant	Class/Subclass
	DZ	EP	0 432 746 A2	Jun. 19, 1991	Siemens Nixdorf Inf. Syst.	H04M 1/57
	EA	EP	0 432 746 A2 [English Abstract]	Jun. 19, 1991	Siemens Nixdorf Inf. Syst.	H04M 1/57

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	EB	EP	0 524 652 A2	Jan. 27, 1993	Ransome Industries Ltd.	H04M 1/274
	EC	WO	95/05609 A2	Feb. 23, 1995	Real Time Data	G01R 27/14
	ED	JP	07-087211 A	Mar. 31, 1995	Fuji Facom Corp.	H04M 11/00
	EE	JP	07-087211 A [English Abstract]	Mar. 31, 1995	Fuji Facom Corp.	H04M 11/00
	EF	JP	09-64950 A	Mar. 7, 1997	Hitachi Ltd.	H04M 1/02
	EG	JP	09-64950 A [English Abstract]	Mar. 7, 1997	Hitachi Ltd.	H04M 1/02
	EH	EP	0 772 336 A2	May 7, 1997	Straeuli et al.	H04M 9/00
	EI	EP	0 772 336 A2 [English Abstract]	May 7, 1997	Straeuli et al.	H04M 9/00
	EJ	WO	97/23104 A1	Jun. 26, 1997	Ericsson Inc.	H04Q 7/22
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	EM	DE	197 07 681 C1	May 7, 1998	Erbel et al.	H04M 1/00
	EN	DE	197 07 681 C1 [English Abstract]	May 7, 1998	Erbel et al.	H04M 1/00

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	EO	WO	98/51059 A2	Nov. 12, 1998	Easy-Phone GmbH	H04M 1/72
	EP	WO	98/56197 A1	Dec. 10, 1998	Telia AB	H04Q 7/22
	EQ	CA	2 293 393 A1 (with English Abstract)	Dec. 23, 1998	Swisscom AG	H04Q 007/32
	ER	WO	99/13629 A1	Mar. 18, 1999	Wesby et al.	H04M 1/72
	ES	WO	99/34339 A2	Jul. 8, 1999	Ameritech Corp.	G08B
	ET	WO	99/49680 A1	Sep. 30, 1999	Bellsouth Intellectual Property Corp.	H04Q 7/22
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	FB	JP	2000-135384 A [English Abstract]	May 16, 2000	Fujitsu Ltd.	A63H 3/33
	FC	WO	00/56016 A1	Sep. 21, 2000	Siemens AG Österreich	H04L 12/28
	FD	WO	00/70889 A1	Nov. 23, 2000	Medtronic Physio- Control Manufacturing Corp.	H04Q 7/08
	FE	WO	01/03414 A1	Jan. 11, 2001	Musco Corp.	H04M 11/00
	FF	JP	2001-177668 A	Jun. 29, 2001	Toshiba Corp.	H04M 11/00
	FG	JP	2001-177668 A [English Abstract]	Jun. 29, 2001	Toshiba Corp.	H04M 11/00
	FH	JP	2001-249860 A	Sep. 14, 2001	Kenwood Corp.	G06F 13/00
	FI	JP	2001-249860 A [English Abstract]	Sep. 14, 2001	Kenwood Corp.	G06F 13/00
	FJ	JP	2002-077438 A	Mar. 15, 2002	Sony Corp.	H04M 11/00
	FK	JP	2002-077438 A [English Abstract]	Mar. 15, 2002	Sony Corp.	H04M 11/00

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

FOREIGN PATENT DOCUMENTS						
Examiner Initials	Reference Number	Country Code	Document Number	Publication Date	Patentee or Applicant	Class/ Subclass
	FL	EP	1 013 055 B1	Apr. 27, 2005	Wesby et al.	H04M 1/72

OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	FM	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Network architecture (GSM 03.02, version 5.0.0), TS/SMG-030302Q, 20 pages (March, 1996)</i>
	FN	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11, version 5.3.0), TS/SMG-091111QR1, 113 pages (July, 1996)</i>
	FO	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.14, version 5.1.0), TS/SMG-091114Q, 54 pages (August, 1996)</i>
	FP	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface,, GSM 11.14, version 5.4.0), TS/SMG-091114Q, 56 pages (July, 1997)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
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 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
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 Invention: PROGRAMMABLE COMMUNICATOR

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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	FQ	ETSI European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); AT command set for GSM Mobile Equipment (ME)</i> (GSM 07.07, version 5.5.0), RE/SMG-040707QR3, 97 pages (February, 1998)
	FR	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface</i> (GSM 11.11, version 7.2.0, Release 1998), SMG version only, not for publication, 133 pages (March, 1999)
	FS	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)</i> (GSM 07.05, version 7.0.0, Release 1998), Available SMG only, 66 pages (March, 1999)
	FT	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface,</i> (GSM 11.11, version 7.4.0, Release 1998), 134 pages (December, 1999)
	FU	European Telecommunications Standards Institute (ETSI)	<i>Digital cellular telecommunications system (Phase 2+); Specification of the SIM application toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface</i> (GSM 11.14, version 6.2.0, Release 1997), 82 pages (November, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
 Serial No: 14/175,171 Art Unit/Group No.: 2642
 Filing Date: February 7, 2014 Examiner Name: Not Yet Assigned
 Conf. No.: 6320
 Invention: PROGRAMMABLE COMMUNICATOR

**LIST OF PATENTS AND PUBLICATIONS FOR
 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	FV	GEMPLUS	<i>Gemplus' start SIM card for advanced GSM services, Microprocessor Cards, GemXplore98 Product Sheet, 2 pages (May, 1999)</i>
	FW	Novatel Wireless	<i>Novatel CDPD (Cellular Digital Packet Data) Software, 42 pages (1999)</i>
	FX	Phonetics, Inc.	<i>Sensaphone 2000 User's Manual, Version 3.0, 118 pages (January, 1998)</i>
	FY	Phonetics, Inc.	<i>Sensaphone 1104, Sensaphone 1108 Potential Disasters, Science/Health/Labs archived website page (http://www.sensaphone.com/pages/Health Page.html), 2 pages (December, 1998)</i>
	FZ	Siemens	<i>Siemens Private Communication Systems, Technical Description of the Siemens A1, Edition 5, 53 pages (January, 1998)</i>
	GA	Siemens	<i>Siemens GSM Module M1 User Guide, 76 pages (1996)</i>
	GB	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 4, 198 pages (December, 1998)</i>
	GC	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 5, 209 pages (March, 1999)</i>
	GD	Siemens	<i>Cellular Engine Siemens M20 / M20 Terminal, Technical Description, Version 7, 221 pages (October, 1999)</i>
	GE	Sierra Wireless	<i>Dart 200 CDPD Modem, For CDPD Versions 1.0 and 1.1, User's Guide, 206 pages (January, 1998)</i>

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	GF	Sine Systems, Inc.	<i>Model RFC-1/B, Remote Facilities Controller, archived website page</i> (http://www.sinesys.com/html/rfcl.html), 4 Pages (February, 1998)
	GG	Sine Systems, Inc.	<i>Remote Facilities Controller, Model RFC-1/B, Relay Panel, Model RP-8, Installation and Operation</i> , 97 pages (1999)
	GH	Sine Systems, Inc.	<i>Model RFC-1/B Remote Facilities Controller: Dial-up/Automated Transmitter Control System</i> , Press Release, 2 pages (July, 1999)
	GI	Telital	<i>GSM Datablock Product Specification</i> , Revision 2, 30 pages (November, 1997)
	GJ	Telital	Technologies archived website page (http://www.telital.com/technologE.html), 2 pages (April, 2000)
	GK	Telital Automotive	<i>Telital Automotive GM360, Technical Specification</i> , 36 pages (February, 1999)
	GL	Telital Automotive	<i>Telefono GSM Datablock II con funzioni Voce/Dati/Fax/SMS</i> , 91 pages (February, 1999)
	GM	Telular Corporation	<i>Annual Report</i> , 48 pages (1998)
	GN	WAVECOM	<i>Wavecom GSM Modem, Wavecom WM01-G900, Version 7.3, Reference WCOM/GSM/WMO1-G900/modATcmd</i> , 67 pages (December, 1997)
	GO	WAVECOM	<i>WISMO Wireless Standard Module, WM1B-G1900 PCS Module Specifications driven by AT commands</i> , Version 1.2, Reference WCOM/PCS/8001 45 pages (September, 1998)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	GP	WAVECOM	<i>WM02 Modem Series GSM 900 /1800 /1900 User Manual</i> , 23 pages (April, 1999)
	GQ	WAVECOM	<i>WISMO Wireless Standard Module, WM2C-G900/G1800 EGSM/DCS DUAL BAND Module Specifications</i> , Verion 0.7, Reference:WCOM/GSM/WM2C_07, 51 pages (September, 1999)
	GR	Azzaro et al.	Provisional Application – 60/162,249, dated October 28, 1999 (21 pages)
	GS	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Terminals; Characteristics of the USIM Application</i> (3G TS 31.102, version 3.0.), 104 pages (January, 2000)
	GT	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Terminals; AT command set for 3GPP User Equipment (UE)</i> (3G TS 27.007, version 3.4.0, Release 1999), 154 pages (March, 2000)
	GU	3GPP (3 rd Generation Partnership Project)	<i>3rd Generation Partnership Project; Technical Specification Group Terminals; USIM Application Toolkit (USAT)</i> (3G TS 31.111, version 3.0.0, Release 1999), 138 pages (April, 2000)
	GV	Akselsen et al.	<i>Telemedicine and ISD</i> , IEEE Communications Magazine, pp. 46-51 (January, 1993)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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OTHER DOCUMENTS			
Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	GW	Bettstetter et al.	<i>GSM Phase 2+ General Packet Radio Service GPRS: Architecture, Protocols, and Air Interface</i> , IEEE Communications Surveys, http://www.comsoc.org/pubs/surveys , Vol. 2, No.3, pp. 2-14 (1999)
	GX	Bult et al.	<i>Low Power Systems for Wireless Microsensors</i> , UCLA Electrical Engineering Department, Los Angeles, CA and Rockwell Science Center, Thousand Oaks, CA, 5 pages (1996)
	GY	Carman et al / NAI Labs	<i>A Communications Security Architecture and Cryptographic Mechanisms for Distributed Sensor Networks</i> , DARPA/ITO Sensor IT Workshop, 24 pages (October, 1999)
	GZ	Chandrakasan et al.	<i>Design Considerations for Distributed Microsensor Systems</i> , Department of EECS, Massachusetts Institute of Technology, Cambridge, MA, IEEE 1999, Custom Intergrated Circuits Conference, 8 Pages (1999)
	HA	Godfrey	<i>A Comparison of Security Protocols in a Wireless Network Environment</i> , A thesis presented to the University of Waterloo, Ontario, Canada, 87 pages (1995)
	HB	Hodes et al.	<i>Composable ad hoc location-based services for heterogeneous mobile clients</i> , Wireless Networks 5, pp. 411-427 (1999)
	HC	Istepanian et al.	<i>Design of mobile telemedicine systems using GSM and IS-54 cellular telephone standards</i> , Journal of Telemedicine and Telecare, Vol. 4, Supplement 1, pp. 80-82 (1999)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

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	HD	Istepanian	<i>Modelling of GSM-based Mobile Telemedical System</i> , Proceedings of the 20 th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Vol. 20, No. 3, pp. 1166-1169 (1998)
	HE	Kahn et al.	<i>Next Century Challenges: Mobile Networking for "Smart Dust"</i> , Department of Electrical Engineering and Computer Science, 8 pages (1999)
	HF	Miles	<i>System Monitoring, Messaging and Notification</i> , Proceedings of SAGE-AU, 15 pages (June, 1999)
	HG	Pavlopoulos et al.	<i>A Novel Emergency Telemedicine System Based on Wireless Communication Technology - "Ambulance"</i> , IEEE Transactions on Information in Biomedicine, Vol. 2, No.4, pp. 261-267 (1998)
	HH	Prasad et al.	<i>Security Architecture for Wireless LANs: Corporate & Public Environment</i> , IEEE VTC, pp. 283-287 (2000)
	HI	Redl et al.	<i>GSM and Personal Communications Handbook</i> , ISBN 0-89006-957-3, 80 pages (1998)
	HJ	Schlumberger	<i>Schlumberger Java SIMs and Over-the-Air Server Allow Sunday to Evolve Phones Into Multi-Service Terminals</i> , 3 pages (July, 1999)
	HK	Steiner et al.	<i>Kerberos: An Authentication Service for Open Network Systems</i> , Project Athena, Massachusetts Institute of Technology, 15 pages (1988)
	HL	Taylor et al.	<i>Internetwork Mobility: The CDPD Approach</i> , 334 pages (June, 1996)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
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 APPLICANT'S INFORMATION DISCLOSURE STATEMENT**

OTHER DOCUMENTS			
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	HM	Wu et al.	<i>A Mobile System for Real-Time Patient- Monitoring with Integrated Physiological Signal Processing</i> , Proceedings of the First Joint BMES/EMBS Conference Serving Humanity, Advancing Technology, Atlanta, GA (October, 1999)
	HN	U.S.D.C. for the District of Delaware	Defendant's Initial Invalidity Contentions, including Appendix A-Z, AA and DD, 1046 pages (served on March 8, 2013)
	HO	U.S.D.C. for the District of Delaware	Defendant's Kowatec's Initial Invalidity Contentions, 3 pages (served April 15, 2013)
	HP	U.S.D.C. for the District of Delaware	Appendices DD-EE for Defendant's Kowatec's Initial Invalidity Contentions, 126 pages (served on April 15, 2013)
	HQ	U.S.D.C. for the District of Delaware	Defendant's Answering Brief, 39 pages (served on June 21, 2013)
	HR		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Defendants' First Supplemental Invalidity Contentions</i> , served July 5, 2013 (9 pages)
	HS		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Appendices A-Z and AA: Defendants' First Supplemental Invalidity Contentions</i> , served July 5, 2013 (1084 pages)

Section 2. Forms PTO/SB/08A and 08B (formerly Form PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Eveline Wesby-van Swaay Attorney Docket: 3781/1017
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Examiner Initials	Reference Number	Author	Title of Article, Title of Journal, Volume Number, Page Numbers, Date
	HT		M2M Solutions LLC et al. v. SimCom Wireless Solutions Co., Ltd. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Defendants' Sur-Reply Brief on Claim Construction</i> , served July 26, 2013 (19 pages)
	HU		M2M Solutions LLC v. Sierra Wireless America, Inc. and Sierra Wireless, Inc. et al., U.S.D.C. for the District of Delaware – Civil Action No. 12-030-RGA, <i>Memorandum Opinion</i> , served on November 12, 2013 (20 pages)
	HV	Jonathan C. Lovely, Esq. Sunstein Kann Murphy & Timbers LLP	Continuation Application – Serial No. 14/159,849, as filed January 21, 2014 (36 pages)
	HW	Jonathan C. Lovely, Esq. Sunstein Kann Murphy & Timbers LLP	Track One Continuation Application – Serial No. 14/169,603, as filed January 31, 2014 (40 pages)

Examiner Signature: _____ Date Considered: _____ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation <i>if not</i> in conformance and not considered. Include copy of this form with next communication to applicant.
--

Section 4. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted

This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application Serial No. 13/934,763, filed July 3, 2013.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 13/801,773, filed March 13, 2013.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 13/328,095, filed December 16, 2011.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 12/538,603, filed August 10, 2009.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 11/329,212, filed January 10, 2006.

[X] This application also relies, under 35 U.S.C. section 120, on the earlier filing date of prior application Serial No. 10/296,571, filed, January 21, 2003.

The following references were submitted to, and/or cited by, the Office in the prior application(s) and, therefore, are not required to be provided in this application:

Reference Nos.: AA - HU

Section 6. Copies of Listed Information Items Accompanying This Statement

Legible copies of all items listed in Forms PTO/SB/08A and 08B (substitute for Form PTO-1449) accompany this information statement.

Exception(s) to above:

U.S. patent citations are not included pursuant to the United States Patent and Trademark Office's September 21, 2004 waiver of the copy requirement in 37 CFR 1.98 for cited pending U.S. patent citations when the patent citations are available in the USPTO's IFW system.

Items in prior application, from which an earlier filing date is claimed for this application, as identified in Section 4.

Cumulative patents or publications identified in Section 5.

Section 8. Translation(s) of Non-English Language Documents

Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

Reference **EA** is believed to be the English abstract of Reference **DZ**;
Reference **EE** is believed to be the English abstract of Reference **ED**;
Reference **EG** is believed to be the English abstract of Reference **EF**;
Reference **EI** is believed to be the English abstract of Reference **EH**;
Reference **EL** is believed to be the English abstract of Reference **EK**;
Reference **EN** is believed to be the English abstract of Reference **EM**;
Reference **EX** is believed to be the English abstract of Reference **EW**;
Reference **EZ** is believed to be the English abstract of Reference **EY**;
Reference **FB** is believed to be the English abstract of Reference **FA**;
Reference **FG** is believed to be the English abstract of Reference **FF**;
Reference **FI** is believed to be the English abstract of Reference **FH**; and
Reference **FK** is believed to be the English abstract of Reference **FJ**.

Section 10. Identification of Person Making This Information Disclosure Statement

The person making this certification is the practitioner of record.

Dated: March 18, 2014

/Jonathan C. Lovely, #60,821/

SIGNATURE OF PRACTITIONER

Reg. No. 60,821

Jonathan C. Lovely

(type or print name of practitioner)

Tel. No.: (617) 443-9292

Sunstein Kann Murphy & Timbers LLP
125 Summer Street, 11th Floor

Firm/Street Address

Customer No.: 002101

Boston, MA 02110-1618

City/State/Zip Code

03781/01017 2063831.1

Electronic Acknowledgement Receipt

EFS ID:	18509255
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	18-MAR-2014
Filing Date:	07-FEB-2014
Time Stamp:	15:17:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Information_Disclosure_State ment.pdf	219767 <small>6d5bb20e5c5f026a9d0b811ea1d91f09467 e54d6</small>	yes	23

Multipart Description/PDF files in .zip description			
	Document Description	Start	End
	Transmittal Letter	1	1
	Information Disclosure Statement (IDS) Form (SB08)	2	23

Warnings:

Information:

2	Other Reference-Patent/App/Search documents	Ref_HV.pdf	2227759 c8b8f5128b4c6449f9c0a593c6ec4a898eb449cd	no	36
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Warnings:

Information:

3	Other Reference-Patent/App/Search documents	Ref_HW.pdf	2556204 a69a98c64b7650e4d833b41598308d31e127ee7d	no	40
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Warnings:

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Total Files Size (in bytes):		5003730
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Eveline Wesby-van Swaay

Application No.:	14/175,171	Art Unit/Group No.:	2642
Filing Date:	February 7, 2014	Examiner:	Not Yet Assigned
		Conf. No.:	6320

For: PROGRAMMABLE COMMUNICATOR

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT
WITHIN THREE MONTHS OF FILING OR
BEFORE MAILING OF FIRST OFFICE ACTION (37 C.F.R. § 1.97(b))**

**IDENTIFICATION OF TIME OF FILING THE ACCOMPANYING
INFORMATION DISCLOSURE STATEMENT**

The information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office Action on the merits, whichever event occurs last. 37 C.F.R. § 1.97(b).

DATE: March 18, 2014

/Jonathan C. Lovely, #60,821/

Jonathan C. Lovely
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03781/01017 2057088.1



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Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON MA 02110-1618

OFFICE OF PETITIONS

Doc Code: TRACK1.GRANT

Decision Granting Request for Prioritized Examination (Track I or After RCE)	Application No.: 14/175,171
<p>1. THE REQUEST FILED <u>February 7, 2014</u> IS GRANTED.</p> <p>The above-identified application has met the requirements for prioritized examination</p> <p>A. <input checked="" type="checkbox"/> for an original nonprovisional application (Track I).</p> <p>B. <input type="checkbox"/> for an application undergoing continued examination (RCE).</p> <p>2. The above-identified application will undergo prioritized examination. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:</p> <p>A. filing a <u>petition for extension of time</u> to extend the time period for filing a reply;</p> <p>B. filing an <u>amendment to amend the application to contain more than four independent claims, more than thirty total claims</u>, or a multiple dependent claim;</p> <p>C. filing a <u>request for continued examination</u>;</p> <p>D. filing a notice of appeal;</p> <p>E. filing a request for suspension of action;</p> <p>F. mailing of a notice of allowance;</p> <p>G. mailing of a final Office action;</p> <p>H. completion of examination as defined in 37 CFR 41.102; or</p> <p>I. abandonment of the application.</p> <p>Telephone inquiries with regard to this decision should be directed to Brian W. Brown at 571-272-5338.</p> <p>/Brian W. Brown/ [Signature]</p> <p>Petitions Examiner, Office of Petitions (Title)</p>	



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 14/175,171, 02/07/2014, 2642, 1090, 3781/1017, 29, 1

CONFIRMATION NO. 6320

2101
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

FILING RECEIPT



Date Mailed: 02/27/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Inventor(s)

Eveline Wesby-van Swaay, Stratford-upon-Avon, UNITED KINGDOM;

Applicant(s)

M2M Solutions LLC, Stratford-upon-Avon, UNITED KINGDOM

Assignment For Published Patent Application

M2M Solutions LLC, Stratford-upon-Avon, UNITED KINGDOM

Power of Attorney: The patent practitioners associated with Customer Number 02101

Domestic Priority data as claimed by applicant

This application is a CON of 13/934,763 07/03/2013 PAT 8648717
which is a CON of 13/801,773 03/13/2013 PAT 8542111
which is a CON of 13/328,095 12/16/2011 PAT 8633802
which is a CON of 12/538,603 08/10/2009 PAT 8094010
which is a CON of 11/329,212 01/10/2006 PAT 7583197
which is a CON of 10/296,571 01/21/2003 ABN
which is a 371 of PCT/EP01/05738 05/18/2001

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

FINLAND 20001239 05/23/2000 No Access Code Provided

Permission to Access - A proper Authorization to Permit Access to Application by Participating Offices (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 02/24/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/175,171**

Projected Publication Date: 06/05/2014

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Programmable Communicator

Preliminary Class

455

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
14/175,171

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	29 minus 20 = *	9
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 = *	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	70
N/A	300
N/A	360
x 40 =	360
x 210 =	0.00
	0.00
TOTAL	1090

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/175,171	02/07/2014	Eveline Wesby-van Swaay	3781/1017

CONFIRMATION NO. 6320

POA ACCEPTANCE LETTER

2101
Sunstein Kann Murphy & Timbers LLP
125 SUMMER STREET
BOSTON, MA 02110-1618



Date Mailed: 02/27/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 02/07/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/tnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
 UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Eveline Wesby-van Swaay	Nonprovisional Application Number (if known):	
Title of Invention:	Programmable Communicator		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, examination fee, and any required excess claims and application size fees are filed with the request or have been already been paid.
2. The application contains or is amended to contain no more than four independent claims and no more than thirty total claims, and no multiple dependent claims.
3. The applicable box is checked below:

I. Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

- i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
 ---OR---
 (b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
- ii. The executed inventor's oath or declaration is filed with the application. (37 CFR 1.63 and 1.64)

II. Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

- i. A request for continued examination has been filed with, or prior to, this form.
- ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
- iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
- iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
- v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Jonathan C. Lovely, #60,821/	Date February 7, 2014
Name (Print/Typed) Jonathan C. Lovely	Practitioner Registration Number 60821

Note: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.*

*Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

(For Application filed on or after September 16, 2012)

Title of Invention: Programmable Communicator

This declaration is directed to:

- The attached application, or
- United States application or PCT international application number _____ filed on _____ as amended on _____ (if applicable).

The application was made or was authorized to be made by me.

I have reviewed and understand the contents of the above-identified application.

I believe myself to be the original inventor or an original joint inventor of a claimed invention in the application.

I acknowledge the duty to disclose to the US Patent and Trademark Office all information known to me to be material to patentability.

I hereby acknowledge that any willful false statement made in this Declaration is punishable under 18 U.S.C. § 1001, by fine or imprisonment of not more than five years, or both.

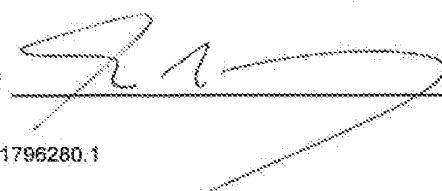
WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Eveline Wesby-van Swaay

Date: 13 March 2013

Signature: 

03781/01010 1796280.1

GENERAL POWER OF ATTORNEY

I/we hereby appoint the practitioners associated with the Customer Number: **02101**

with the firm: **SUNSTEIN KANN MURPHY & TIMBERS LLP**
125 Summer Street
Boston, MA 02110-1618
United States

As attorneys to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications where the assignee is named as an applicant or where the applications are assigned to the undersigned according to the USPTO assignment records or assignment documents, in which case the details will be listed on an attached form in accordance with 37 CFR 3.73(c).

Address all correspondence to: **Customer Number: 02101**

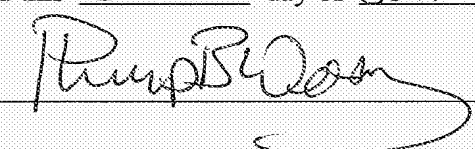
Direct all telephone calls to: **617-443-9292**
Facsimiles to: **617-443-0004**

(a) Full name and registered address of Assignee

M2M Solutions LLC
I/We, Assignee
(a) Camden House, School Lane, Tiddington, Stratford-upon-Avon CV37 7AJ United Kingdom
Address

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

(b) Signature of Assignee

Dated this 25th day of January 2014
(b) 

(c) Signatory's name

By (c) PHILIP B. WESBY

(d) Signatory's Title

(d) Title: C.E.O.

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	Programmable Communicator			
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay			
Filer:	Jonathan Lovely			
Attorney Docket Number:	3781/1017			
Filed as Small Entity				
Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Request for Prioritized Examination	2817	1	2000	2000
Pages:				
Claims:				
Claims in excess of 20	2202	9	40	360
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				3160

Electronic Acknowledgement Receipt

EFS ID:	18144055
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	07-FEB-2014
Filing Date:	
Time Stamp:	14:08:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$3160
RAM confirmation Number	397
Deposit Account	194972
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	klw3781_1017_ADS.pdf	1561993 0beab7be050de0ac1b560db4fd73eead423bc4d5	no	7

Warnings:

Information:

2		klw3781_1017_ConApplication.pdf	129743 7d8ee05f1fe0680ef6fe755c6a8ad99fccbd54cc	yes	27
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	21
Claims	22	26
Abstract	27	27

Warnings:

Information:

3	Drawings-only black and white line drawings	klw3781_1017_Formals.pdf	112391 1b8cd6d9344d5767a749a7e1b32b318ec5599130	no	3
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Warnings:

Information:

4	TrackOne Request	klw3781_1017_PrioritizedExam.pdf	152959 1b3e9877d09088fe849dc321cd3f141c2a75c8f5	no	2
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Warnings:

Information:

5	Oath or Declaration filed	klw3781_1017_Declaration.pdf	261067 c6c15060fe43dfed2ac06023a93e1548b281e2b	no	1
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Warnings:

Information:

6	Power of Attorney	3781_GenPOA.pdf	4110253 0f38617d9603796d05a26f17fa8eba48d2e8e6d0	no	1
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Warnings:

Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	41644	no	2
			2e2d17b6985655b28efc50f7409c475b316f3aab		

Warnings:

Information:

Total Files Size (in bytes):	6370050
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Acknowledgement Receipt

EFS ID:	18144055
Application Number:	14175171
International Application Number:	
Confirmation Number:	6320
Title of Invention:	Programmable Communicator
First Named Inventor/Applicant Name:	Eveline Wesby-van Swaay
Customer Number:	2101
Filer:	Jonathan Lovely
Filer Authorized By:	
Attorney Docket Number:	3781/1017
Receipt Date:	07-FEB-2014
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Time Stamp:	14:08:51
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Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	klw3781_1017_ADS.pdf	1561993 0beab7be050de0ac1b560db4fd73eead423bc4d5	no	7

Warnings:

Information:

2		klw3781_1017_ConApplication.pdf	129743 7d8ee05f1fe0680ef6fe755c6a8ad99fccbd54cc	yes	27
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	21
Claims	22	26
Abstract	27	27

Warnings:

Information:

3	Drawings-only black and white line drawings	klw3781_1017_Formals.pdf	112391 1b8cd6d9344d5767a749a7e1b32b318ec5599130	no	3
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Warnings:

Information:

4	TrackOne Request	klw3781_1017_PrioritizedExam.pdf	152959 1b3e9877d09088fe849dc321cd3f141c2a75c8f5	no	2
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Warnings:

Information:

5	Oath or Declaration filed	klw3781_1017_Declaration.pdf	261067 c6c15060fe43dfed2ac06023a93e1548b281e2b	no	1
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Warnings:

Information:

6	Power of Attorney	3781_GenPOA.pdf	4110253 0f38617d9603796d05a26f17fa8eba48d2e8e6d0	no	1
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Warnings:

Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	41644	no	2
			2e2d17b6985655b28efc50f7409c475b316f3aab		
Warnings:					
Information:					
Total Files Size (in bytes):				6370050	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	3781/1017
		Application Number	
Title of Invention	Programmable Communicator		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Secrecy Order 37 CFR 5.2

<input type="checkbox"/>	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor 1 Remove				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Eveline		Wesby-van Swaay	
Residence Information (Select One) <input type="radio"/> US Residency <input checked="" type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	Stratford-upon-Avon	Country of Residence i	GB	
Mailing Address of Inventor:				
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Address 2	Tiddington			
City	Stratford-upon-Avon	State/Province		
Postal Code	CB37 7AJ	Country i	GB	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
<input type="checkbox"/> An Address is being provided for the correspondence information of this application.			
Customer Number	02101		
Email Address	usptomail@sunsteinlaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	Programmable Communicator		
Attorney Docket Number	3781/1017	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	3	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	3781/1017
		Application Number	
Title of Invention	Programmable Communicator		

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

Request Early Publication (Fee required at time of Request 37 CFR 1.219)

Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number	02101		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
	Continuation of	13/934763	2013-07-03		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/934763	Continuation of	13/801773	2013-03-13	8542111	2013-09-24

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	3781/1017		
		Application Number			
Title of Invention	Programmable Communicator				
Prior Application Status	Patented			<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/801773	Continuation of	13/328095	2011-12-16	8633802	2014-01-21
Prior Application Status	Patented			<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/328095	Continuation of	12/538603	2009-08-10	8094010	2012-01-10
Prior Application Status	Patented			<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12/538603	Continuation of	11/329212	2006-01-10	7583197	2009-09-01
Prior Application Status	Abandoned			<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
11/329212	Continuation of	10/296571	2003-01-21		
Prior Application Status	Expired			<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
10/296571	a 371 of international	PCT/EP01/05738	2001-05-18		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					<input type="button" value="Add"/>

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

<input type="button" value="Remove"/>			
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^l (if applicable)
20001239	FI	2000-05-23	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3781/1017
	Application Number	
Title of Invention	Programmable Communicator	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

<p>This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.</p> <p><input type="checkbox"/> NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.</p>
--

Authorization to Permit Access:

<p><input checked="" type="checkbox"/> Authorization to Permit Access to the Instant Application by the Participating Offices</p>
<p>If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.</p> <p>In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.</p> <p>In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.</p>

Applicant Information:

<p>Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.</p>
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3781/1017
	Application Number	
Title of Invention	Programmable Communicator	

Applicant 1		<input type="button" value="Remove"/>	
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>			
<input type="button" value="Clear"/>			
<input checked="" type="radio"/> Assignee	<input type="radio"/> Legal Representative under 35 U.S.C. 117	<input type="radio"/> Joint Inventor	
<input type="radio"/> Person to whom the inventor is obligated to assign.		<input type="radio"/> Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>			
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>			
Organization Name	M2M Solutions LLC		
Mailing Address Information:			
Address 1	Camden House, School Lane		
Address 2	Tiddington		
City	Stratford-upon-Avon	State/Province	
Country ⁱ	GB	Postal Code	CV37 7AJ
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Assignee Information including Non-Applicant Assignee Information:

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Assignee 1	
<p>Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.</p>	
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If the Assignee or Non-Applicant Assignee is an Organization check here. <input type="checkbox"/>	

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	3781/1017
		Application Number	
Title of Invention	Programmable Communicator		

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1				
Address 2				
City		State/Province		
Country i		Postal Code		
Phone Number		Fax Number		
Email Address				

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications					
Signature	/Jonathan C. Lovely, #60,821/			Date (YYYY-MM-DD)	2014-02-07
First Name	Jonathan	Last Name	Lovely	Registration Number	60821
Additional Signature may be generated within this form by selecting the Add button.					<input type="button" value="Add"/>

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Attorney Docket: 3781/1017

Programmable Communicator**Priority**

5 This patent application is a continuation of and claims priority from all priority dates of U.S. patent application serial number 13/934,763, filed July 3, 2013, and entitled “**Programmable Communicator**” (attorney docket number 3781/1014). U.S. patent application serial number 13/934,763 is a continuation of and claims priority to U.S. patent application serial number 13/801,773, filed March 13, 2013, now U.S. Patent No. 8,542,111, and entitled “**Programmable Communicator**” (attorney docket number 3781/1010), which is a continuation of and claims priority to U.S. patent application serial number 13/328,095, filed December 16, 2011, now U.S. Patent No. 8,633,802, and entitled “**Programmable Communicator**” (attorney docket number 3781/1007), which is a continuation of and claims priority to U.S. patent application serial number 12/538,603, filed August 10, 2009, now U.S. Patent No. 8,094,010, and entitled “**Programmable Communicator**” (attorney docket number 3781/1006), which is a continuation of and claims priority to U.S. patent application serial number 11/329,212, filed January 10, 2006, now U.S. Patent No. 7,583,197, and entitled “**Programmable Communicator**” (attorney docket number 3781/1002), which is a continuation of and claims priority to U.S. Patent Application 10/296,571, filed January 21, 2003, and entitled “**Programmable Communicator**,” which, in turn, is a National Phase filing of and claims priority to PCT/EP01/05738 filed on May 18, 2001, which further claims priority from Finland Application 20001239, filed May 23, 2000. The disclosures of each of these applications are incorporated herein by reference in their entirety.

25

This patent application is also related to U.S. patent application serial number 14/159,849, filed January 21, 2014, and entitled “**Programmable Communicator**” (attorney docket number 3781/1015), and U.S. patent application serial number 14/169,603, filed January 31, 2014, and entitled “**Programmable Communicator**” (attorney docket number 3781/1016).

30

Background of the Invention

The invention relates to a programmable wireless communications apparatus. More particularly, it relates to a programmable wireless communications apparatus, which can provide an improved means of communication between children and their parents, between
5 elderly persons and caring relatives, and between mentally less-able individuals and supervising adults. In addition, the invention provides a solution for smart clothes applications, which may comprise a telecommunications means within the lining of a jacket or other article of clothing, as well as a solution for user-programmable data tags which convey information from remotely located devices such as vending machines. The invention
10 relates to and significantly improves upon a previously filed patent application claiming Finnish priority of Sep. 9, 1997 entitled a Portable Hotlink Communicator published as international patent application PCT/GB98/02715.

In this previously filed application, is taught the invention of using a mobile phone
15 comprising a programmable identity module such as a SIM card, in the context of the GSM telecommunications standard, to program the number of any mobile or fixed telephone to which the Hotlink communicator, comprising a similar type of programmable identity module, is to be linked. Existing and known methods of communication between the mobile phone and Hotlink communicator for the purpose of programming comprise the obvious
20 choice of data calls such as the Short Message Service in the GSM telecommunications standard. Alternatively a PDA type communicator might call up a web page to instruct a network element to program the programmable identity module of the Hotlink with the number of any fixed or mobile telephone to which the Hotlink communicator is to be linked.

25 This use of a separate mobile phone to program the number to which the Hotlink may call is particularly useful and convenient should a parent wish to change the number if the parent must leave shortly and want that the Hotlink is connected immediately to the mobile phone or fixed line of another parent or supervising neighbour.

30 The current invention builds upon the teaching of this earlier application and extends the concept significantly that it has more general and suitable application to both the child

Hotlink communicator and also to the field of programmable wireless data communication tags for the purpose of providing information about the status of a vending machine or other piece of technical equipment such as a home appliance or a device to monitor whether a door is open or closed.

5

In addition to this, the current invention relates directly to programmable wireless data communication tags, which comprise the means to be interfaced directly with other technical equipment such that each tag can be programmed remotely by any means to be linked to any fixed or mobile telephone to enable data to be sent to or from the device and to allow a person to make a voice call connection to the linked telephone.

10

Today parents are concerned whether to provide a young child with a mobile phone or not. The concern relates to the cost of the mobile phone should it be lost or stolen and also to the cost of the use of the mobile phone. Clearly there is a need to provide a means to limit the cost of calling and also to provide a means to prevent the child dialling overseas numbers for extensive periods of time.

15

In the context of mobile phone operators, there exists a need to provide a simple and effective communication device, which can provide the means for family tariffing such that subscriptions for children can be related to the subscriptions of their parents' mobile phones. An improved child Hotlink communicator, which restricts the usage of the mobile phone and thereby does not generate high charges through uncontrolled calling, is clearly a solution to the family tariffing challenge.

20

Parents are often concerned about the whereabouts of their children and new positioning technologies are being developed for locating mobile phones. These solutions include self-positioning solutions and remote positioning solutions. One example of a self-positioning solution includes the satellite-based Global Positioning System technology in which the mobile phone comprising a GPS signal processing circuit is able to determine the coordinates of its own position by processing signals received from satellites and communicate these coordinates to a location centre associated with the network. One example of a remote

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positioning solution is the method taught in U.S. Pat. No. 5,051,741 claiming priority of Mar. 27, 1990 in which the mobile phone is paged and caused to transmit a response which is processed by communication stations such as time-of-arrival measurement units associated with the network of master stations or base stations.

5

This remote positioning method has the advantage that the position of the mobile phone can be determined by making use of existing signalling between the mobile phone and the network without requiring any changes to the mobile phone, which would increase its cost.

The generic network-based, remote-positioning architecture method of U.S. Pat. No. 10 5,051,741 may make use of time of arrival methods or phase difference calculations to increase the resolution of the area or sector within which the mobile phone is located.

While the location of the mobile phone itself is a good indication of the present location of the person carrying the mobile phone, an improvement would be a means to lock the mobile 15 phone to the child, such that use of the mobile phone positioning technologies would then determine the position of the child.

In addition to these concerns about the failures of existing mobile communications technology to provide an improved and more secure method of instant communication 20 between a parent and a young child, and the means to determine the position of the child, there is additional concern that the battery of the communicator may drain its power without the parent knowing, or may be removed, which would prevent the communicator from receiving calls or dialling to the programmed fixed or mobile number to which the communicator is linked.

25

In addition to these specific communication problem needs, there is a growing yet unsubstantiated concern about the potentially harmful effect of electromagnetic radiation from mobile phones upon the developing brains of young children. Within this context, there is an opportunity to design a communication device for children, which positions the 30 radiating electromagnetic field of a communication device away from the close proximity of the brain. In this regard, parents who maintain the belief that mobile telephones present a

health risk due to the radiating antenna may rest secure in the knowledge that this risk can be significantly reduced.

5 In a separate context, there exists a growing need for a mobile telephone solution, which is cost effective to manufacture, but which is versatile such that it can form the basis for a smart clothes tag or communications application platform. In this context the requirement is for an embedded mobile phone platform comprising no keypad or display, which may be sewn into the lining of a jacket, or other article of clothing, having only the call button protruding and a simple pin connection to recharge the battery. The problem with prior art solutions is that
10 unless the smart clothes tag can be user-programmable to call any fixed or mobile number by making use of an acceptable method such as via an SMS data call or via a BlueTooth radio transmission from a mobile phone or intelligent PDA, the solution is impractical to implement.

15 In security applications where emergency service personnel carry hand-held primary communications devices such as conventional mobile phones, a back-up communications device such as a smart clothes embedded tag can be of great value in the instance that the primary communications device is lost or broken.

20 In sports areas such as on lakes where there may be people using canoes, a smart clothes communications tag embedded in a life vest may serve to alert a central control point that a person is in difficulty and also to alert other persons in the area to go to their rescue.

In an additional application area, skiers in difficulty would benefit from a smart clothes user-
25 programmable communications tag attached to their clothing, which is pre-programmed to be linked with a fixed or mobile telephone and need only have its protruding button pressed to make communication with a central alarm point.

In an additional application area there exists the need for a user-programmable remote
30 wireless communications data tag, which can be used to relay information about the status of a remote piece of technical equipment such as a vending machine. Home networks could be

simplified by making use of the existing mobile network infrastructure to relay data about the status of a home appliance or to indicate whether a door is open or closed. Packet switched technologies such as GPRS may be used as the radio access technology to communicate the status of the technical equipment.

5

In an additional application area there exists the need for a versatile communications platform, which can be combined with remote health monitoring technology to assist doctors with remote diagnosis of patients.

10 In an additional application there is the need for a versatile communications which is able to work effectively when the network is temporarily overloaded such that it has the means to store a sound message as a sound byte or convert it using voice recognition software such that it can be forwarded as soon as the network capacity becomes less loaded.

15 Further to these limitations of existing technologies, and so far as is known, no portable communication apparatus is presently available which serves to offer an improved programmable communicator which is directed towards the specific needs of this problem area as outlined.

Objects of the Invention

20 Accordingly, it is an object of the present invention to provide an improved programmable communications apparatus, which can be remotely programmed by any mobile phone or IP device such that it can be linked to any particular fixed or mobile phone or IP device.

25 It is a further object of the present invention to provide a programmable communications apparatus, which may be programmed at close range using infrared light or a BlueTooth radio connection, or via a terminal-to-terminal network based data call such as the GSM SMS short message service or via a GPRS packet data communication.

30 It is a further object of the present invention to provide a programmable communications apparatus, which may be programmed by a mobile or fixed device which is able to call up an

Internet web page and which comprises the means to instruct the network to reprogram the communications apparatus with the mobile or fixed number to which the programmable communications device is to be linked.

5 It is a further object of the present invention to provide a programmable communications apparatus, which may be programmed via the Internet such that the network communicates with a device in the vicinity of the programmable communications apparatus which itself causes the said apparatus to be programmed using any means such as wireless communication, infrared light or a BlueTooth radio link.

10

It is a further object of the present invention to provide a plurality of programmable communications apparatuses, which may be simultaneously programmed by a mobile or fixed device which is able to call up an Internet web page and select one or more apparatuses of the said plurality and cause each of the selected number of apparatuses to be linked to the
15 identical mobile or fixed telephone.

20

It is a further object of the present invention to provide a programmable communications apparatus, which comprises a processing means to process coded transmissions and permit only transmissions comprising a coded number, which determines the authenticity of the
20 message, to be allowed to program the number to which the said apparatus be linked.

25

It is a further object of the present invention to provide a programmable communications apparatus, which comprises a wrist strap, or an attachment such as in the case of the smart clothes application, and a first alarm means which can be programmed such that it can cause
25 a message to be sent to the fixed or mobile number to which the said apparatus is linked in the case that the wrist strap be broken or undone or in the case that the said attachment be broken or displaced from an initial position of equilibrium.

30

It is a further object of the present invention to provide a programmable communications apparatus, which may have a separate pressure sensitive means or displaceable means which becomes activated in the pressed position or displaced position respectively such that it is

able to generate an alarm or data message when pressure is removed or when the displacement returns to the non-displaced position. Such a feature serves, by way of example, to replace the need for the wrist strap feature of the previous object such that when the wrist worn communicator is removed from the wrist the pressure sensitive means or
5 displaceable means can provide the required alarm message.

It is a further object of the present invention to provide a programmable communications apparatus, which comprises a heat sensor, which can detect that the communicator is adjacent to a heat source such as the skin of a child and the means to generate an alarm
10 message if the heat source is removed.

It is a further object of the present invention to provide a programmable communications apparatus, which has the means to detect any other detectable physical characteristic of the human skin, which may be used to trigger an alarm if the means is moved away from the
15 skin.

It is a further object of the present invention to provide a programmable communications apparatus for a security application, which comprises an infrared heat detector and which is able to generate an alarm message if a change in the level of infrared radiation is detected.
20

It is a further object of the present invention to provide a programmable communications apparatus, which may form part of a home network of devices, which is used to monitor a domestic appliance such as a washing machine or a device to monitor whether a door or window is open or closed and to react to a change in status of said appliance or device by
25 sending an alarm message or data message to a linked fixed or mobile telephone or internet IP address to indicate a current status of said appliance or device. In addition the said apparatus may be incorporated in a bicycle frame or attached to a bicycle for monitoring movement of the bicycle.

30 It is a further object of the present invention to provide a programmable communications apparatus, which has a memory means to store sound as a sound byte for a certain period of

time such as the voice of the child wearing the programmable communicator and the means to send this sound to the telephone number to which the said apparatus is linked.

5 It is a further object of the present invention to provide a programmable communications apparatus, which has a means to store and transmit a sound byte in response to receiving a sound above a predetermined threshold such that a person who is in distress may shout out and the distress call is processed by the programmable communicator and forwarded to the fixed or mobile telephone or IP address to which the said communicator is linked.

10 It is a further object of the present invention to provide a programmable communications apparatus, which is able to make a call to a linked fixed or mobile telephone or IP address and which if it detects that the telephone number is engaged or does not answer or that the IP address is invalid, the said apparatus has the means to select any other telephone number or IP address in the permitted callers list such that it can be connected to said other telephone or
15 IP device.

It is a further object of the present invention to provide a programmable communications apparatus, which is able to store a sound byte or store a data record and send the sound byte or data record to any other telephone number or IP address in the permitted callers list after a
20 certain interval of time in the instance that the primary number or IP address is engaged or connection is not able to be made at that time due to the network capacity not being sufficient at that time. The feature may also include a continuous retry feature such that the attempt to send the sound byte or data record is continued until the sound byte or data record is successfully sent.

25

It is a further object of the present invention to provide a programmable communications apparatus, which has the means to convert a voice message into text and send this as a data message to a fixed or mobile telephone or IP address to which the said apparatus is linked.

30 It is a further object of the present invention to provide a programmable communications apparatus, which is able to receive data from a plurality of data monitoring devices, which

may be connected by any wired or wireless means, and that each of said devices has an associated status condition, such that the programmable communications apparatus can transmit data from said devices on request or periodically to a fixed or mobile telephone or IP address to which the said apparatus is linked.

5

It is a further object of the present invention to provide a programmable communications apparatus, in which the said first alarm means may communicate directly with a central communications point in the network.

10 It is a further object of the present invention to provide a programmable communications apparatus, in which the said first alarm means may communicate directly with a web page and write information to that page or cause an E-mail to be sent to a specific address.

15 It is a further object of the present invention to provide a programmable communications apparatus, which comprises a second alarm means, which can be programmed to cause a message to be sent to the fixed or mobile number to which the said apparatus is linked in the case that the battery is low in power or in the case that the battery is removed or in the case that the communicator be switched off.

20 It is a further object of the present invention to provide a programmable communications apparatus, which comprises a second alarm means, which can be programmed to send a message periodically comprising any status message such as the current power status of the battery.

25 It is a further object of the present invention to provide a programmable communications apparatus, which comprises a battery charger adapter-pin such that the apparatus can make use of suitable battery chargers of other mobile phones.

30 It is a further object of the present invention to provide a programmable communications apparatus, which comprises the means to be interrogated remotely by another fixed or mobile telephone or network connected device, such that different codes are used to obtain different

data from the said apparatus. In the context of remote health monitoring, by way of example, a doctor could send different codes from her mobile terminal and obtain different data on blood pressure and the heart rate of the person wearing the apparatus associated with a health monitoring system. The said apparatus may make use of physical monitoring means
5 associated with said apparatus for providing information about the skin temperature and blood pressure and other characteristics of the human body.

It is a further object of the present invention to provide a programmable communications apparatus, which has application to smart clothes such that it provides a secondary
10 communications means for emergency service personnel.

It is a further object of the present invention to provide a programmable communications apparatus, which is suitable for attachment to a life vest. A further object of this application includes a water-enabled communications apparatus, which may be used to communicate
15 with a portable central communications unit.

It is a further object of the present invention to provide a programmable communications apparatus, which comprises a GPS signal processing circuit and the means to respond to an authenticated request to determine its own position and send data relating to its position
20 to the linked fixed or mobile telephone or to a location determination centre or to a specified web page.

It is a further object of the present invention to provide a programmable communications apparatus, which may be securely attached to a device such as a bicycle, which may be used
25 for communication and for determining the position of the bicycle.

It is a further object of the present invention to provide a programmable communications apparatus, which is suitable for young children such that it comprises an auto-answer facility to connect the caller immediately with an associated microphone and loudspeaker to avoid
30 the need that the child must press a button to answer the call. This application also includes the feature, which returns the programmable communicator automatically to idle state as

soon as the caller to the child terminates the call remotely. This avoids the need that the child must terminate the call. It also prevents the child from terminating the call by accident.

5 It is a further object of the present invention to provide a programmable communications apparatus, which can be used with mobile location based services such that it is possible for an authenticated person to access a web page, either on a hand-held terminal or fixed device, which shows the position of the programmable communications apparatus as an icon on a map after its position has been determined by its own GPS signal processing circuitry or remotely by the network.

10

Other objects and advantages of this invention will become apparent from the description to follow when read in conjunction with the accompanying drawings.

Summary of the Invention

15 Certain of the foregoing and related objects are readily-attained according to the present invention by the provision of a novel portable programmable communicator, which serves to address the diverse communication requirements of children and elderly persons and for the purposes of remote data monitoring applications such as for monitoring the status of remote technical devices.

20 The programmable communicator preferably comprises a basic mobile telephone circuit having no keypad or display and a rechargeable battery and antenna and a basic two-way microphone device and remotely pre-programmable identity module linking it to a single mobile or fixed telephone. Where appropriate, in alternative embodiments, the programmable communicator comprises an alarm means to indicate certain conditions of the
25 communicator such as the charge level of its battery or if the battery is removed. Similar alarm messages are generated according to the particular embodiment of the programmable communicator application which include the generation of messages when an associated wrist strap or attachment of the communicator in the case of a smart clothes application is undone or displaced or when the communicator is switched on or off or when the
30 communicator is set to monitor the status condition of an associated device and the status

changes beyond a preset threshold level. The invention also includes the generation of periodic messages to indicate that the communicator is working and that any associated status condition thresholds remain unchanged. This last set of messages, which includes periodic reassurances messages includes the facility that the user may set the duration of the period according to the application.

The programmable communicator has direct and effective application to home networks for the purpose of transmitting information about the status condition of domestic appliances such as the pressure of water pipes and whether a door or window is opened or closed. The wireless programmable communicator can be attached to an associated monitoring device and programmed with the number of a mobile or fixed telephone to which it is to be linked or to an Internet web page which can be made accessible to authenticated users or to security monitoring personnel.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings, which disclose one embodiment of the invention. It is to be understood, however, that the drawings are designed for the purpose of illustration only and that the particular description of the portable hot link communicating apparatus is given by way of example only and does not limit the scope of the invention.

Brief Description of the Drawings

The foregoing features of the invention will be more readily understood by reference to the following detailed description, taken with reference to the accompanying drawings, in which:

FIG. 1 illustrates the schematic of the programmable communicator according to one embodiment of the invention.

FIG. 2 illustrates a schema showing the actions performed by the programmable communicator in response to an incoming call or message according to the present invention.

30

FIG. 3 illustrates a schema showing actions done by the programmable communicator and the outgoing calls or messages, which are generated as a consequence of said actions.

Description of a Preferred Embodiment

Referring now in detail to the drawings and in particular FIG. 1 thereof, therein illustrated is a programmable communicating apparatus according to one embodiment of the present invention.

The following description makes reference to the detailed features as outlined in the objects of the invention.

10

In FIG. 1 is shown a telephone circuit 10, which comprises an antenna 20 and a battery 30. To the telephone circuit, which may similarly comprise a communicating PDA device circuit, is shown an optional BlueTooth module 40 for communication with a nearby data communication or programming device having a similar BlueTooth radio module. The telephone circuit 10 has a ringing tone generator and an auto answer module 50 which may be used to cause the programmable communicator to generate one of a number of ringing tones or to auto answer upon receipt of an authenticated permitted caller.

15

For the purposes of programming the IP address or telephone number of the fixed or mobile telephone to which the communicator is linked is provided an SMS processing means 60. This communicates with an authentication means 90, which in turn is able to store numbers into a permitted callers list 110. For the purposes of security, a sound byte capture means and threshold detector means 100 is provided to generate an alarm message or to send a sound byte to one of the numbers on the permitted callers list. Additional voice recognition software may be used to convert the sound byte into text and send this to the destination telephone number or IP address.

25

An SMS alarm generation means 70 is provided to work together with a battery charge monitor 35 and a sensor means 80 and an alarm message list 120 and a programmable interface means 140 to generate alarm messages in response to changes in status conditions.

30

Said programmable interface means may be attached to all manner of sensor devices for the purpose of relaying data from external devices and sensors either automatically or in response to a request for information from a remote device.

5 The periodic status report means 130 may be programmed to provide data on the current status of the programmable communicator as well as data from one or more devices, which may be connected to the communicator via the BlueTooth module 40.

In the case that the programmable communicator is unable to make an immediate connection
10 with the linked telephone or IP address, a reselection means 150 provides one or more connection numbers from the permitted callers list.

This device comprises a novel combination of existing technologies and features, which make possible the existence of a new and improved communicating apparatus to address the
15 communication needs of children and elderly persons and for programmable data tags for monitoring the status of associated technical equipment.

The use of the programmable communicator involves two phases, a pre-programming phase and an active phase. In the pre-programming phase, the communicator is programmed with
20 the number it can call which comprises a unique code. By way of example only, the invention is now described in the context of the GSM mobile telecommunications standard using the Short Message Service or SMS circuit-switched data call. The invention relates to all telephone standards including, and not limited to CDMA and US-TDMA, and is effectively used also in a packet switching mode such as the GSM GPRS packet switching
25 mode. Furthermore the invention is suitably applicable to IP devices, which comprise IP addresses rather than telephone numbers.

According to the invention, it is wished to allow only authenticated callers to change the telephone number or IP address of a fixed or mobile telephone or network device to which
30 the programmable communicator is to be linked. This may be done in GSM using an SMS message, which includes data as well as a unique code such as the unique code of the

Subscriber Identity Module or SIM card, often referred to as the PUK code. The PUK code is a unique identifier, which is different for every SIM card. The choice of the PUK is made by way of example only and any similar unique coding may be used for the purpose of the invention

5

It is a straightforward procedure to communicate with the programmable communicator by SMS. The remote transmitting device includes the PUK code of the receiving programmable communicator in its SMS transmission as well as a telephone number to which the programmable communicator is to be linked.

10

The programmable communicator includes a processing means to determine that the PUK code is correct and the means to store the transmitted number. The PUK code may also be used to program the list of permitted callers. An SMS comprising the PUK code may contain a plurality of telephone numbers each of which designates a permitted caller's number. Only numbers, which are stored as designated permitted callers, will cause the programmable communicator to generate a ringing tone.

15

Alternatively, the programmable communicator may include circuitry to terminate the calls of non-permitted callers automatically. In the same way that the telephone number of an incoming call can be shown on the screen of a mobile phone before the phone is answered, this information may be used to enable the programmable communicator to receive the call or to reject it.

20

Additional codes may be used by authenticated callers to interrogate the status condition of the programmable communicator, or to interrogate the status of data monitoring devices to which the communicator is wired or wirelessly attached.

25

In this way, in the application for an improved child communicator, only persons knowing the secret PUK code would be able to change the calling number. This provides the essential security for the parents. Furthermore, the feature, which causes the communicator to reject all calls but those from telephone numbers on the permitted callers list serves to shield the

30

child from unwelcome contact.

The following example demonstrates how five SMS messages might program the permitted callers list A-E

5

SMS 1. PUK code A:040 111 1111

SMS 2. PUK code B:040 222 2222

SMS 3. PUK code C:040 333 3333

SMS 4. PUK code D:040 444 4444

10 SMS 5. PUK code E:040 555 5555

The letters A to E in the five messages or any equivalent coding may be used to designate the priority of the telephone numbers of the permitted callers such that letter A designates the number to which the programmable communicator is linked at this moment.

15

In a simple use scenario, a child may be playing in the garden or near to the house wearing a programmable communicator programmed to the mother's telephone phone number, 040 111 1111. In the next moment, the father comes home and sends an SMS to the child's programmable communicator using his phone having telephone number 040 222 2222. In this example, the message comprises PUK code A:040 222 2222 which cause the calling number of the programmable communicator to be now reprogrammed to call the father's number if its call button is pressed by the child.

20

An additional security feature comprises software, which will cause an SMS emergency message to be sent automatically to the pre-programmed number if the wrist strap is broken or undone, or the communicator is switched off. An additional sensor may be used instead of a means to generate an SMS message if the wrist strap is broken or undone whereby said sensor can sense the heat of the skin, which will cause an SMS message to be sent if the communicator is moved away from the skin.

25
30

Additional software features may generate messages to indicate the charge of the battery or if

the battery drains completely or is removed.

To avoid a total failure condition, the programmable communicator may comprise a separate back-up power supply in addition to the battery, which is sufficient to generate an alarm message or number of alarm messages, in the instance that a power connection is lost from
5 an associated device or if its own battery supply drains completely.

In this way, the telephone number to which the programmable communicator is linked receives messages about the status of the battery and an indication of whether the
10 communicator has been removed from the child.

In a separate embodiment, is included the feature that certain alarm messages are sent to one or more of the telephone numbers, or IP addresses in the IP network application of this invention, which are on the permitted callers list. This feature would enable at least one other
15 person to receive an alarm message in case the primary linked telephone is busy or the associated user of the linked telephone is unable to read the message immediately.

The programmable communicator comprises a processing module, which can receive information about its wrist strap or associated attachment. In the embodiment of a smart
20 clothes tag, the said associated attachment may comprise a fibre or wire, which, if mechanically pulled, causes the generation of an alarm message. Clearly, in the case of a wrist worn communicator, the opening or closing of the wrist strap may be used to activate an electronic circuit to generate a status condition of the wrist strap. It is anticipated that the receiver of the alarm message may then call the child directly, if possible, to check if there is
25 a problem. Additionally, location based services may be used to locate the position of the communicator relative to the network infrastructure.

In a separate embodiment, the programmable communicator comprises a feature, which enables a user to cause it to transmit a status message periodically, according to a periodic
30 duration as set by the user, which will provide reassurance that the communicator is functioning correctly, and for example, that the wrist strap is closed, and that the battery has

sufficient power.

The types of data that the communicator can provide periodically, or on request, are determined directly by the application of the invention according to different remote monitoring embodiments. In each application the programmable communicator has the appropriate means to receive the data from the monitoring device and the means to process the data.

The programmable communicator has further direct application to the field of remote data monitoring such as in the home network environment. Today, domestic appliances such as washing machines and sauna heaters remain separate from one another and only a few have the capability to be integrated into remote monitoring applications.

The programmable communicator may be used to generate data messages, which describe the status or change in status beyond a threshold condition, of a household appliance and communicate this data directly to a linked telephone number or IP address of a linked device or Internet web page.

The use of GSM GPRS packet switching technology in this context is ideal since the application does not require a continuous circuit switched connection to the network. The remote monitoring application comprises the use of a programmable communicator, which reacts to a status condition and then initiates a packet data transmission to the network. Consequently, the programmable communicator comprises a separate back-up power supply in addition to the battery, which is sufficient to generate an alarm message or number of alarm messages, in the instance that a power connection is lost from an associated device or if its own battery supply drains completely.

In a separate home-network application, the programmable communicator may be used to gather data from a number of associated monitoring devices and to communicate this to the linked telephone or IP device or Internet web page. The monitoring devices may be directly linked to the programmable communicator by wire or wirelessly connected by, for example,

the BlueTooth radio technology in which case the programmable communicator comprises the necessary additional BlueTooth communications module.

5 In a sports or safety application, the programmable communicator may comprise a smart clothes tag and be sewn into the lining of a life vest such that a person paddling a canoe may use it for urgent communication.

Other applications for the programmable communicator include theme parks and other sports events or places where children may become lost in the crowds.

10

In addition, the invention may be utilised as a voice and data communicator for bicycles. In this application, data from the bicycle such as speed could be used in sports training as a means to enhance the performance of a cyclist. In a more general application, a programmable communicator can be used to inform the owner of a bicycle that his parked
15 bicycle is being moved and to determine its location, if needed, by making use of the location-based services functionality of the telecommunications network.

While only one embodiment of the present invention: the programmable communicator within the context of the digital GSM telephone system in particular, has been shown and
20 described in detail, it will be obvious to those persons of ordinary skill in the art, that many changes and modifications may be made thereunto without departing from the spirit of the invention. For example, the hot link communicator may make use of any telephone technology such as CDMA, and US-TDMA. Moreover, the inventive features of the programmable communicator may be incorporated into a monitoring device and integrated
25 with it such that the device comprises the capability of the programmable communicator. The invention is not limited to the application of the programmable communicator as a separate device, which separately communicates with data monitoring devices but also includes the application of the functionality of the invention as an integrated part of the monitoring device.

30

It is further to be understood that the invention may make use of all coding schemes for

storing numbers to the programmable apparatus and the use of the PUK code was by way of example only. The programmable communicator may comprise the means to accept all manner of clip on covers so that the same base model may carry one of a number of different covers to suit the tastes and the age groups of different wearers.

5

What is claimed is:

1. A programmable communicator device comprising:

5 a programmable interface for establishing a communication link with at least one monitored technical device, wherein the programmable interface is programmable by wireless packet switched data messages; and

a processing module for authenticating one or more wireless transmissions sent from a programming transmitter and received by the programmable communicator device by determining if at least one transmission contains a coded number;

10 wherein the programmable communicator device is configured to use a memory to store at least one telephone number or IP address included within at least one of the transmissions as one or more stored telephone numbers or IP addresses if the processing module authenticates the at least one of the transmissions including the at least one telephone number or IP address and the coded number by determining that the at least one of the
15 transmissions includes the coded number, the one or more stored telephone numbers or IP addresses being numbers to which the programmable communicator device is configured to and permitted to send outgoing wireless transmissions;

20 wherein the programmable communicator device is configured to use an identity module for storing a unique identifier that is unique to the programmable communicator device; and

wherein the programmable communicator device is embedded within and/or integrated with the monitored technical device; and

25 wherein the one or more wireless transmissions from the programming transmitter comprises a General Packet Radio Service (GPRS), or other wireless packet switched data message; and

wherein the programmable communicator device is configured to process data received through the programmable interface from the at least one monitored technical device in response to programming instructions received in an incoming wireless packet switched data message;

30 wherein the programmable communicator is configured to send the processed data by General Packet Radio Service (GPRS), or other wireless packet switched data message.

2. A programmable communicator device according to claim 1, wherein the programmable communicator device comprises the identity module.
- 5 3. A programmable communicator device according to claim 1 further configured to receive wireless transmissions compliant with Bluetooth wireless air interface standards.
4. A programmable communicator device according to claim 1 further configured to request that an at least one monitored technical device send data through the programmable interface
10 for processing by the programmable communicator device.
5. A programmable communicator device according to claim 1 further configured to transmit the processed data to an at least one monitoring device.
- 15 6. A programmable communicator device according to claim 5, wherein the processing module is configured to cause the processed data to be transmitted to the at least one monitoring device.
7. A programmable communicator device according to claim 1 further configured to
20 determine whether the processed received data indicates a change in status of the at least one monitored technical device that crosses a threshold parameter, or that otherwise indicates an alarm condition.
8. A programmable communicator device according to claim 7 further configured to send an
25 at least one transmission for alerting an at least one monitoring device of said change in status or other alarm condition.
9. A programmable communicator device according to claim 1 further configured to request that an at least one monitored technical device send data through the programmable interface
30 for receipt by the programmable communicator device.

10. A programmable communicator device according to claim 1 further configured to transmit the received data to an at least one monitoring device either periodically or in response to a change in status of at least one monitored technical device or in response to a data request initiated by the monitoring device.

5

11. A programmable communicator device according to claim 10, wherein the processing module is configured to cause the received data to be transmitted to the at least one monitoring device.

10 12. A programmable communicator device according to claim 1 further configured to receive data from a location processing module configured to determine an at least one location of the programmable communicator device, and wherein the programmable communicator device is configured to cause the received data to be transmitted to the at least one monitoring device.

15

13. A programmable communicator device according to claim 12 wherein the location-processing module comprises a Global Positioning System (GPS) module.

14. A programmable communicator device according to claim 1 wherein the monitored
20 technical device is a sensor device.

15. A programmable communicator device according to claim 14 wherein the sensor device is attached to or integrated with an article of clothing, the article of clothing including at least one selected from the group consisting of a jacket, a ski jacket, and a life vest

25

16. A programmable communicator device according to claim 14 further configured to be integrated with at least one sensor device to form a smart clothes device.

17. A programmable communicator device according to claim 1 wherein the monitored
30 technical device is a health monitoring system.

18. A programmable communicator device according to claim 17 wherein the programmable communicator device is configured to receive data from the health monitoring system through the programmable interface representing at least one of body temperature, blood pressure, periodic or continuous electrocardiogram heart rhythm, blood glucose
5 concentration, blood electrolyte concentration, kidney function, liver function, and labor contractions.

19. A programmable communicator device according to claim 1 wherein the monitored technical device is a vending machine.

10

20. A programmable communicator device according to claim 1 wherein the monitored technical device is a home or domestic appliance.

21. A programmable communicator device according to claim 20 wherein the home or
15 domestic appliance is a washing machine or a sauna heater.

22. A programmable communicator device according to claim 1 wherein the monitored technical device is at least one of a door status monitoring device, a window status monitoring device, a proximity detector device, and a fire alarm device.

20

23. A programmable communicator device according to claim 1 wherein the monitored technical device is at least one of a pressure sensitive means, a heat sensitive means, a mechanical displacement means, and a water sensitive means.

24. A programmable communicator device according to claim 1 further configured to send
25 data to and/or receive data from an Internet web page.

25. A programmable communicator device according to claim 1 further configured to communicate with a central communications point in the network.

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26. A programmable communicator device according to claim 1 further configured to

process and send at least one of electrical power data and water pressure data.

27. A programmable communicator device according to claim 1 further configured to process data from sensors on a bicycle.

5

28. A programmable communicator device according to claim 1 further configured to be reprogrammed with communications applications received over a wireless connection.

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29. A programmable communicator device according to claim 1 further configured to communicate with one or more technical devices via Bluetooth packet switched messages or other wireless packet switched messages.

Attorney Docket: 3781/1017

Programmable Communicator

Abstract

5 A programmable communicator device is disclosed having a wireless communications
circuit, including an antenna, configured to receive a transmission, and an identity module
having a unique identifier. The programmable communicator further includes a processing
module including program code configured to determine if the transmission is from an
authenticated caller by determining whether a received transmission contains the unique
10 identifier, and memory configured to store telephone numbers or IP addresses received in
transmissions from an authenticated caller.

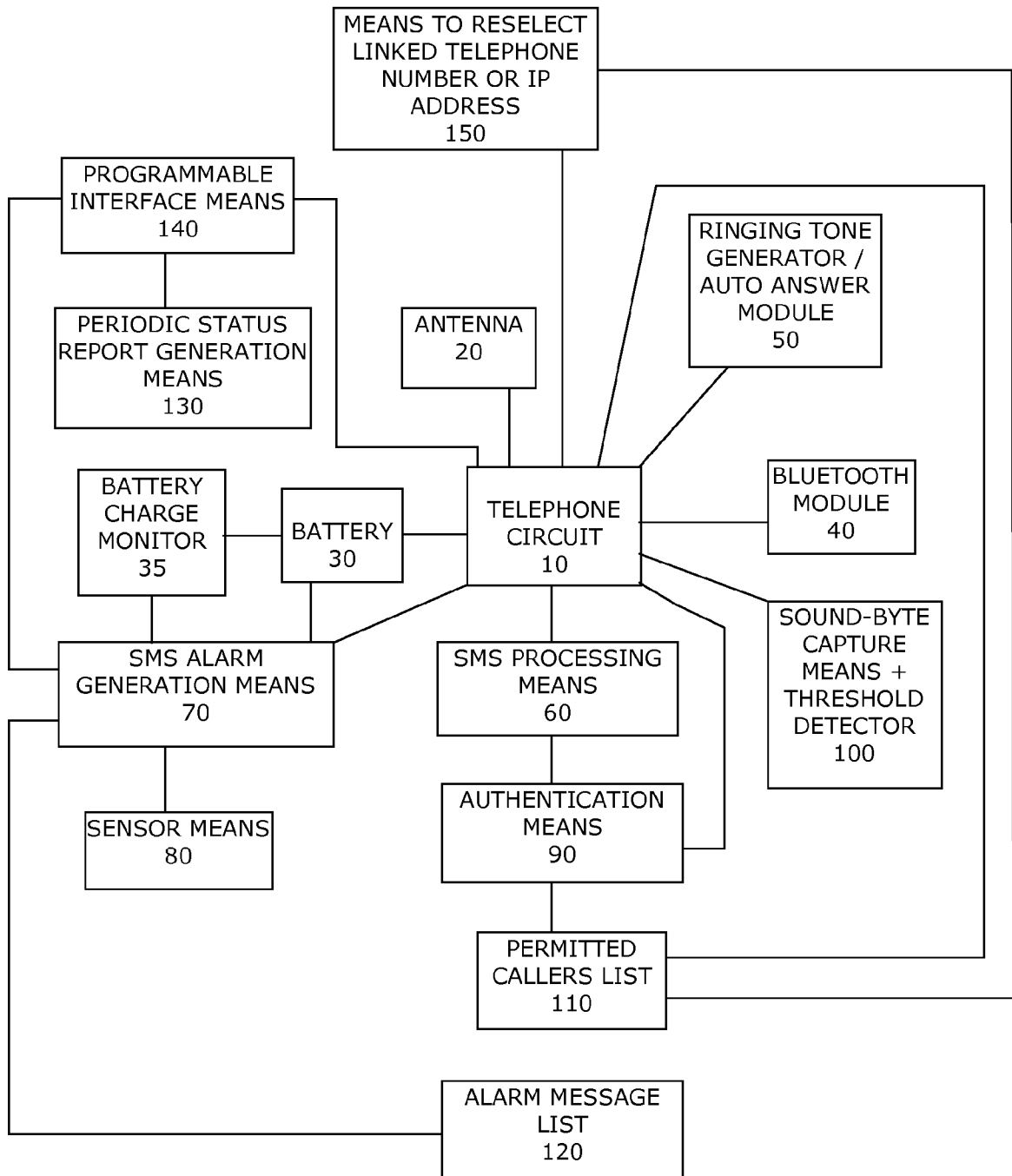


Fig. 1

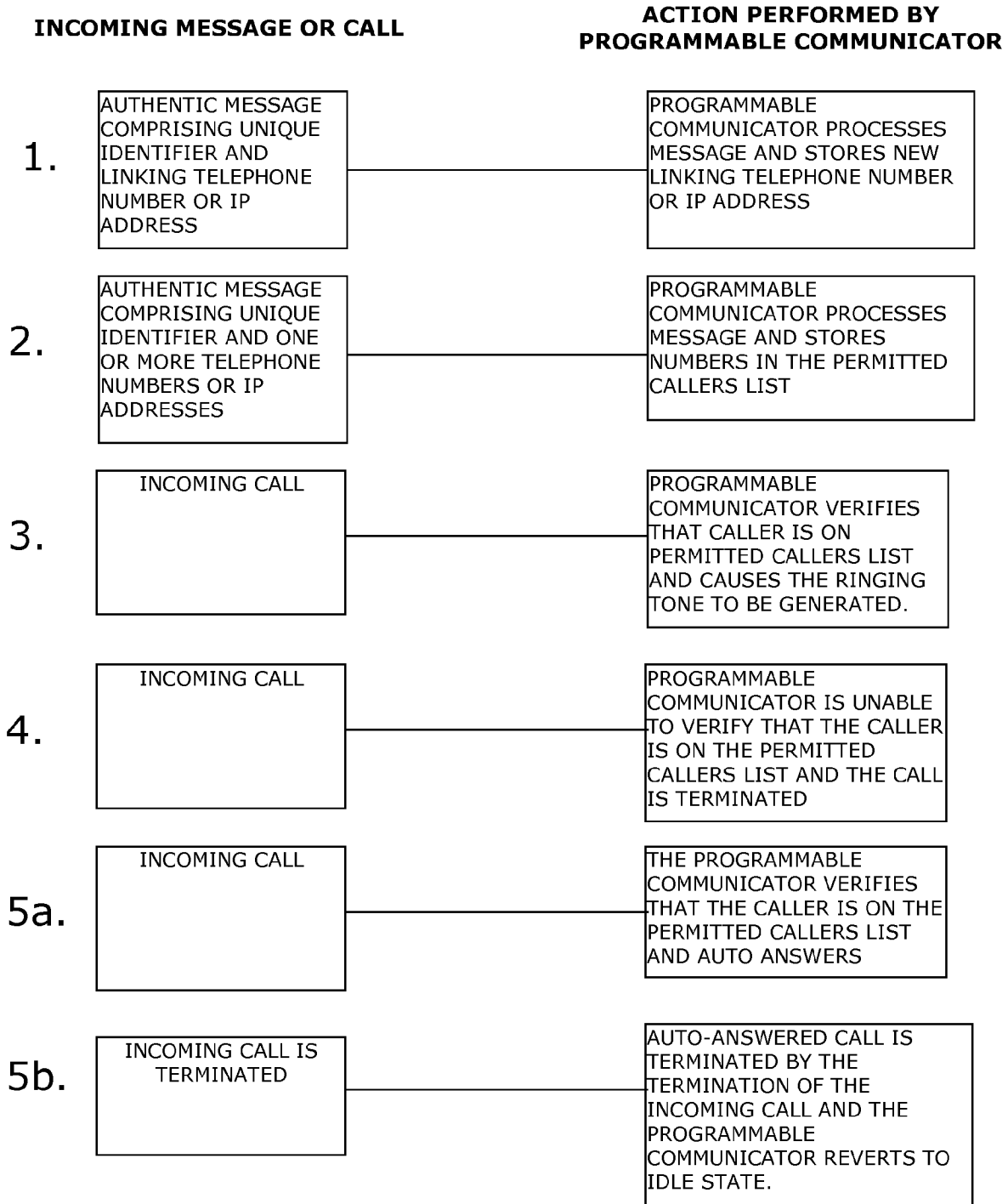


Fig.2

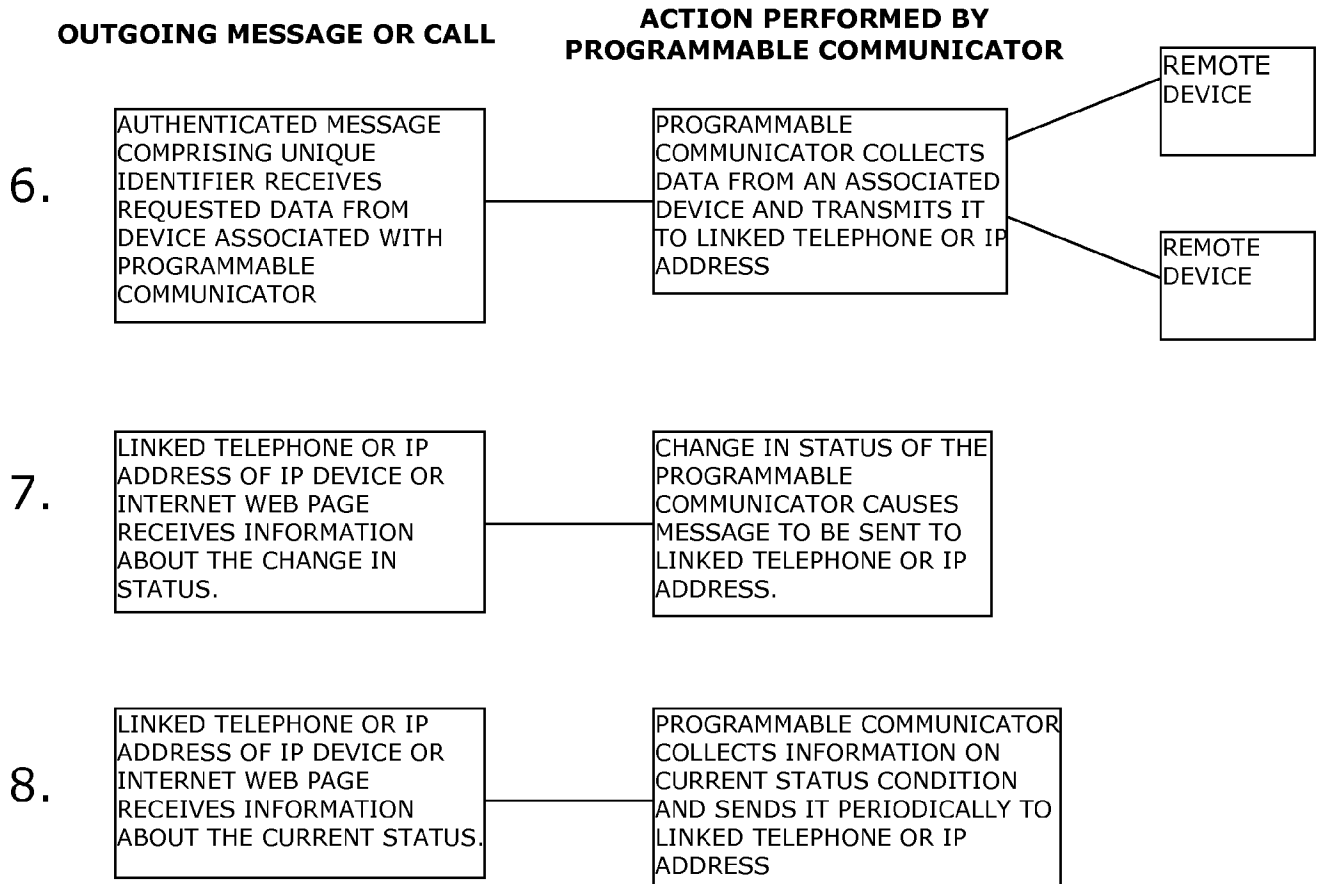


Fig. 3