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Table with 5 columns: APPLICATION NO., ISSUE DATE, PATENT NO., ATTORNEY DOCKET NO., CONFIRMATION NO.
10/983,606 03/19/2013 8402384 16813-39US 2886

20988 7590 02/27/2013
NORTON ROSE CANADA LLP
1, Place Ville Marie
SUITE 2500
MONTREAL, QC H3B 1R1
CANADA

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 1849 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):

Sherryl Lee Lorraine Scott, Toronto, CANADA;

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.

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)

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.

20988 7590 11/19/2012
NORTON ROSE CANADA LLP
 1, Place Ville Marie
 SUITE 2500
 MONTREAL, QC H3B 1R1
 CANADA

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.
10/983,606	11/09/2004	Sherryl Lee Lorraine Scott	16813-39US	2886

TITLE OF INVENTION: Dynamic bar oriented user interface

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1770	\$300	\$0	\$2070	02/19/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
SALOMON, PHENUELS	2171	715-808000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <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.	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 _____ 2 <u>NORTON ROSE CANADA LLP</u> 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: RESEARCH IN MOTION LIMITED

(B) RESIDENCE: (CITY and STATE OR COUNTRY) Waterloo, Ontario, Canada

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: <input checked="" type="checkbox"/> Issue Fee <input checked="" type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. 2070.00 <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input checked="" type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number <u>195113</u> (enclose an extra copy of this form).
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5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Matthew J. Marquardt/ Date February 19, 2013
 Typed or printed name Matthew J. Marquardt Registration No. 40,997

This collection of information 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.

Electronic Patent Application Fee Transmittal

Application Number:	10983606			
Filing Date:	09-Nov-2004			
Title of Invention:	Dynamic bar oriented user interface			
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott			
Filer:	Matthew J. Marquardt/Joanne Keshen			
Attorney Docket Number:	16813-39US			
Filed as Large 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	1501	1	1770	1770
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				2070

Electronic Acknowledgement Receipt

EFS ID:	14989058
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Matthew J. Marquardt/Joanne Keshen
Filer Authorized By:	Matthew J. Marquardt
Attorney Docket Number:	16813-39US
Receipt Date:	19-FEB-2013
Filing Date:	09-NOV-2004
Time Stamp:	14:15:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$2070
RAM confirmation Number	742
Deposit Account	195113
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)	Issue_Fee_Transmittal.pdf	525060 c73cfe7530cab06c4eca5066e97929604f8f8005	no	1

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	31740 22971c8719#02e172b063084e50c6#2868bc4432	no	2
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Warnings:

Information:

Total Files Size (in bytes): 556800

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.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

20988 7590 11/19/2012
NORTON ROSE CANADA LLP
1, Place Ville Marie
SUITE 2500
MONTREAL, QC H3B 1R1
CANADA

EXAMINER

SALOMON, PHENUEL S

ART UNIT PAPER NUMBER

2171

DATE MAILED: 11/19/2012

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
10/983,606 11/09/2004 Sherryl Lee Lorraine Scott 16813-39US 2886

TITLE OF INVENTION: Dynamic bar oriented user interface

Table with 7 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE
nonprovisional NO \$1770 \$300 \$0 \$2070 02/19/2013

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 SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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.

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

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)

20988 7590 11/19/2012
NORTON ROSE CANADA LLP
1, Place Ville Marie
SUITE 2500
MONTREAL, QC H3B 1R1
CANADA

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/983,606	11/09/2004	Sherryl Lee Lorraine Scott	16813-39US	2886

TITLE OF INVENTION: Dynamic bar oriented user interface

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1770	\$300	\$0	\$2070	02/19/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
SALOMON, PHENUEL S	2171	715-808000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.563).

- 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, 1 _____
- (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 _____
- 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 _____ (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

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 credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

- a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
 Typed or printed name _____ Registration No. _____

This collection of information 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.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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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.
10983,606 11/09/2004 Sherryl Lee Lorraine Scott 16813-39US 2886

2008 7590 11/19/2012
NORTON ROSE CANADA LLP
1, Place Ville Marie
SUITE 2500
MONTREAL, QC H3B 1R1
CANADA

EXAMINER
SALOMON, PHENUEL S

ART UNIT 2171
PAPER NUMBER

DATE MAILED: 11/19/2012

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

The Patent Term Adjustment to date is 1481 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1481 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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. 10/983,606	Applicant(s) SCOTT, SHERRYL LEE LORRAINE	
	Examiner PHENUEL SALOMON	Art Unit 2171	

-- 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 the amendment filed on 8/1/2012.
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 28-31, 34-38 and 40-43.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - 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. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date ____.
 - (b) 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).
7. 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)

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date ____ . 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other ____. |
|---|---|

/Phenuel S. Salomon/
Primary Examiner, Art Unit 2171

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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given through telephonic correspondence by Matthew Marquardt on 11/02/2012.

Allowable Subject Matter

2. Claims 28-31, 34-38 and 40-43 are allowed in light of applicants' arguments and prior art made of record.

Claims

3. Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

28. (Currently amended) A method for controlling an apparatus comprising a display, the method comprising:

displaying a dynamic bar on the display;

displaying dynamic preview information in the dynamic bar, the dynamic preview

information being determined from information managed by a software application, the dynamic

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preview information being updated to reflect a change to the information managed by the software application;

expanding the dynamic bar to display an expanded dynamic bar in response to a first input **from an input device**, displaying the expanded dynamic bar comprising:

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application; **[and]**

displaying a selectable link embedded in the additional dynamic preview information to invoke the software application; and

activating the software application in response to a second input invoking the link.

29. (Previously presented) The method of claim 28, further comprising displaying a status portion on the display.

30. (Previously presented) The method of claim 29, wherein displaying the status portion comprises displaying signal strength.

31. (Previously presented) The method of claim 28, wherein the apparatus comprises a cellular telephone.

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32. (Cancelled)

33. (Cancelled)

34. (Previously presented) The method of claim 28, further comprising, following activation of the software application, displaying a user interface for the software application.

35. (Previously presented) The method of claim 28, further comprising displaying an application portion on the display, the application portion comprising at least one icon.

36. (Previously presented) The method of claim 35, wherein, in response to a user input invoking the icon, the software application is activated.

37. (Previously presented) The method of claim 28, wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email.

38. (Previously presented) The method of claim 28, wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party.

39. (Cancelled)

40. (Previously presented) The method of claim 28, wherein the software application is a communications application, wherein the dynamic preview information is determined from information about one or more communications managed by the communications application, and wherein the additional dynamic preview information is also determined from the information about the one or more communications managed by the communications application.

41. (Previously presented) The method of claim 28, wherein the dynamic bar further comprises an icon representing the software application, and the dynamic preview information is displayed in association with the icon.

42. (Previously presented) The method of claim 28, wherein the expanded dynamic bar further comprises an icon representing the software application, and the additional dynamic preview information is displayed in association with the icon.

43. (Previously presented) The method of claim 42, wherein the second input comprises selecting the icon.

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

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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 Phenuel S. Salomon whose telephone number is (571) 270-1699. The examiner can normally be reached on Mon-Fri 7:00 A.M. to 4:00 P.M. (Alternate Friday Off) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3800.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phenuel S. Salomon/

Primary Examiner, Art Unit 2171

Notice of References Cited	Application/Control No. 10/983,606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRA	
	Examiner PHENUEL SALOMON	Art Unit 2171	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-7,221,331	05-2007	Bear et al.	345/1.1
*	B US-2001/0028365	10-2001	Ludolph, Frank	345/764
*	C US-2006/0156256	07-2006	Lee, Changseok	715/857
*	D US-2003/0160815	08-2003	Muschetto, James Edward	345/733
*	E US-2002/0126146	09-2002	Burns et al.	345/752
*	F US-6,486,914	11-2002	Anderson, Eric C.	348/333.02
*	G US-			
*	H US-			
*	I US-			
*	J US-			
*	K US-			
*	L US-			
*	M US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
*	N				
*	O				
*	P				
*	Q				
*	R				
*	S				
*	T				

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
*	U			Apple Press, <i>Newton 2.0 User Interface Guidelines</i> , May 1996, Addison-Wesley, pp. 1-307	
*	V				
*	W				
*	X				

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification



Application/Control No.

10983606

Applicant(s)/Patent Under Reexamination

SCOTT, SHERRYL LEE LORRAINE

Examiner

PHENUEL SALOMON

Art Unit


2171

ORIGINAL						INTERNATIONAL CLASSIFICATION											
CLASS			SUBCLASS			CLAIMED				NON-CLAIMED							
715			779			G	0	6	F	3 / 048 (2006.01.01)							
CROSS REFERENCE(S)																	
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																
715	808	864															

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

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	6		22	9	38										
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	14	3	30												
	15	4	31												
	16		32												

NONE		Total Claims Allowed:	
		13	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/PHENUEL SALOMON/ Primary Examiner. Art Unit 2171	11/2/2012	1	6
(Primary Examiner)	(Date)		

Search Notes 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

SEARCHED			
Class	Subclass	Date	Examiner
715	779,808,854,864	7/3/07	pss
455	566,564,556,557	7/3/07	pss
715	808,854	5/12/2011	pss
455	564,566	5/12/2011	pss
715	808,854	11/7/2011	pss
715	808,854	4/23/2012	pss
715	779,808,864	10/16/2012	pss

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB,USPAT,USOCR,EPO,JPO,DERWENT,IBM_TDB	7/3/07	PSS
US-PGPUB,USPAT,USOCR	5/12/2011	pss
US-PGPUB,USPAT,USOCR	11/7/2011	pss
US-PGPUB,USPAT,USOCR	4/23/2012	pss
US-PGPUB,USPAT,USOCR	10/16/2012	pss
NPL GOOGLE srch	11/2/2012	pss
EIC-Fast & Focused Search	11/2/2012	pss

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
715	808,864,779	11/2/2012	pss

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EAST Search History

EAST Search History (Prior Art)

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L14	483	13 and mobile device	US-PGPUB; USPAT; USOCR	ADJ J	OFF	2012/11/03 12:33
L15	1877	13 and (preview or quickview)	US-PGPUB; USPAT; USOCR	ADJ J	OFF	2012/11/03 12:34
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S74	7	("20090089666" "20090077464" "20020143828" "20090172523" "20050283726" "20080244387" "20090249232").PN.	US-PGPUB; USPAT USOCR; EPO	ADJ J	ON	2012/10/04 11:40
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S76	49	("20080040693" "20080307305" "20080276170" "5565888" "5959621" "20050024341" "20100058231" "5664128" "20090271731" "20100285785" "20110102357" "6664983" "7030837" "20050213717" "20060253801" "20070011614" "6757002" "6850255" "7603458" "6169911" "20050120306" "20090006570" "20060253801" "20100146384" "7925305" "20050213717" "20030018714" "20090006570" "20100185980" "20110202656" "8055444" "20070162871" "20050188320" "20060101350" "5736974" "20040155909" "20010028365" "20040075691" "20040155909" "20050153745" "20060101350" "20060156256" "20080207184" "20080256472" "20100214250" "20100235732" "6169911" "20050282564" "20090069038" "7250955" "20030160815" "20080051152" "20100017872" "20100228577" "5657049" "5959621").PN.	US-PGPUB; USPAT USOCR; EPO	AD J	ON	2012/10/04 11:47
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		"20060020942" "5508718" "5726883" "5956024" "6144962" "6918091" "6990520" "7007029" "7030890" "7185290").PN.	USOCR; EPO			
S78	8	("20050213717" "20060119537" "20070162871" "20060123353" "20050138575" "20090249247" "20040189710" "7221331").PN.	US-PGPUB; USPAT; USOCR; EPO	ADJ J	ON	2012/10/04 12:41
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S84	195	S83 and (expand\$4 (window or pane or view))	US-PGPUB; USPAT; USOCR; EPO	ADJ J	ON	2012/10/04 13:14
S85	44	S84 and preview	US-PGPUB; USPAT; USOCR; EPO	ADJ J	ON	2012/10/04 13:14
S86	1008139	((notification or warning or alarm or report or event) (icon or element or mark or object)) same ((status or dynamic) bar)	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:21
S87	515598	((status or dynamic) bar) with ((notificat\$4 or warning or alarm or report or event) (icon or element or mark or object))	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:23
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S89	515598	S87 and S88	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:24

S90	3667630	(expand\$4 or glid\$4 or drag\$4 or slid\$4) ((status or dynamic) bar) with ((open or expan\$6) (window or pane or view))	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:28
S91	521021	((status or dynamic) bar) with ((open or expan\$6 or slid\$4) (window or pane or view))	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:29
S92	2850898	S91 and preview information	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:29
S93	12304	S87 and preview\$4	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:31
S94	18303	S87 and "715"/\$.CCLS.	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:31
S95	2451	S93 and "715"/\$.CCLS.	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:31
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S98	4505	S96 and @ay<="2004"	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:34
S99	974	S98 and "715"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:34
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S101	538018	(mobile device or pda) with ((status or dynamic) bar)	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:47
S102	1732384	(mobile device or pda) with alert event	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:48
S103	1718608	((status or dynamic) bar) with alert event	US-PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:48
S104	175798	S101 and S103	US-PGPUB;	OR	ON	2012/10/18 10:48

			USPAT; USOCR			
S105	515598	((status or dynamic) bar) with ((notificat\$4 or warning or alarm or report or event) (icon or element or mark or object))	US- PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:49
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S108	4505	S107 and @ay<="2004"	US- PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:49
S109	974	S108 and "715"/\$.ccls.	US- PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:49
S110	201	S109 and S104	US- PGPUB; USPAT; USOCR	OR	ON	2012/10/18 10:49
S111	42	(US-20040155909-\$ or US-20060253801- \$ or US-20060156256-\$ or US- 20100214250-\$ or US-20080256472-\$ or US-20050213717-\$ or US-20110202656- \$ or US-20100228577-\$ or US- 20030018714-\$ or US-20100058231-\$ or US-20090271731-\$ or US-20080276170- \$ or US-20050153745-\$ or US- 20100146384-\$ or US-20040075691-\$ or US-20080207184-\$ or US-20080051152- \$ or US-20050024341-\$ or US- 20100235732-\$ or US-20100185980-\$ or US-20090006570-\$ or US-20060101350- \$ or US-20100285785-\$ or US- 20070011614-\$ or US-20030160815-\$ or US-20110102357-\$).did. or (US- 20100017872-\$ or US-20010028365- \$).did. or (US-5959621-\$ or US-6757002- \$ or US-7603458-\$ or US-7925305-\$ or US-6169911-\$ or US-7030837-\$ or US- 8055444-\$ or US-6664983-\$ or US- 6850255-\$ or US-5664128-\$ or US- 5657049-\$ or US-6011550-\$ or US- 6133898-\$).did. or (US-20100045621-\$ or KR -2009106768-\$)did.	US- PGPUB; USPAT; USOCR; EPO	ADJ	ON	2012/10/31 16:48
S112	2	("20060156256" "20030160815").pn.	US- PGPUB; USPAT; USOCR	ADJ	OFF	2012/10/31 17:28
S113	7	("6850781" "20040077340" "20050153745" "6912664" "20040068458" "7039423" "20020080195").PN.	US- PGPUB; USPAT; USOCR	ADJ	OFF	2012/10/31 17:30
S114	4	("20070162871" "6169911"	US-	ADJ	OFF	2012/11/01

EAST Search History

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11/ 3/ 2012 1:58:07 PM


C:\Users\psalomon\Documents\EAST\Workspaces\10983606-Dynamic Bar Oriented User Interface.wsp

EAST Search History**EAST Search History (Interference)**

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L17	1724389	pull down menu same ((dynamic or updated or notif\$5 or preview) (icon or element or content))	USPAT; UPAD	OR	ON	2012/11/03 13:46
L18	1768695	16 and (expand\$4 or glid\$4 or drag\$4 or slid\$4) ((status or dynamic) bar)	USPAT; UPAD	OR	ON	2012/11/03 13:46
L20	22417	18 and "715"/\$.ccls.	USPAT; UPAD	O R	ON	2012/11/03 13:49
L21	21928	20 and ((software or program) (activ\$4))	USPAT; UPAD	OR	ON	2012/11/03 13:49
L22	952	21 and mobile device	USPAT; UPAD	ADJ	OFF	2012/11/03 13:51
L23	100	22 and (preview or quickview)	USPAT; UPAD	ADJ	OFF	2012/11/03 13:51
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11/3/2012 1:58:25 PM

C:\Users\psalomon\Documents\EAST\Workspaces\10983606-Dynamic Bar Oriented User Interface.wsp

<i>Index of Claims</i> 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171


✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

<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			
CLAIM		DATE							
Final	Original	07/03/2007	11/20/2007	05/16/2011	11/17/2011	04/26/2012	11/02/2012		
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	26		✓	-	-	-	-		
	27		✓	-	-	-	-		
	28			✓	✓	✓	=		
	29			✓	✓	✓	=		
	30			✓	✓	✓	=		
	31			✓	✓	✓	=		
	32			✓	-	-	-		
	33			✓	-	-	-		
	34			✓	✓	✓	=		
	35			✓	✓	✓	=		

Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

<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			
CLAIM		DATE							
Final	Original	07/03/2007	11/20/2007	05/16/2011	11/17/2011	04/26/2012	11/02/2012		
	36			✓	✓	✓	=		
	37			✓	✓	✓	=		
	38			✓	✓	✓	=		
	39			✓	-	-	-		
	40				✓	✓	=		
	41				✓	✓	=		
	42				✓	✓	=		
	43				✓	✓	=		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/983,606

Art Unit: 2179

Filed: November 9, 2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenuel S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 020988

MS AMENDMENT
Commissioner of Patents
P.O. Box 1450
Alexandria, V.A. 22313-1450

Dear Sir/Madam:

STATEMENT OF SUBSTANCE OF THE INTERVIEW

Applicant thanks the Examiner for the time and insights he provided during the interview of September 5, 2012. The interview took place by telephone. The Examiner and his supervisor, Matt Kim, were present. Also present were Applicant's attorneys Christine Wong (Reg. No. 62,935) and Matthew Marquardt (Reg. No. 40,997), and Applicant's representative Daniel Hanson (Reg. No. 46,757).

During the interview, distinctions between the claims and the Ögren and Wagner references were discussed. No demonstrations were conducted and no exhibits were shown. With respect to the claims, discussions centered principally on claim 28. With respect to the references, particular reference was made to FIGS. 3 and 4, and paragraphs [0019], [0056], [0058] and [0059] of Wagner.

While no immediate agreement was reached with regard to patentability, the Examiner undertook to consider the distinctions explained by Applicant and to contact Applicant's attorneys prior to taking any further action.

Applicant believes that no fees are due in connection with the filing of this paper. In the event that the office determines that any further fee is due, Applicant requests that such fee be charged to its Deposit Account No. 195113.

Respectfully submitted,

Dated: September 26, 2012

/Christine Y. Wong/
Christine Y. Wong
Reg. No. 62,935
Attorney for the Appellant/Applicant

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Electronic Acknowledgement Receipt

EFS ID:	13838329
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Joanne Keshen
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	26-SEP-2012
Filing Date:	09-NOV-2004
Time Stamp:	09:10:22
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	Applicant summary of interview with examiner	Statement_of_Substance_of_Interview.pdf	46199 <small>94c9a1e8746366c30409bfb088365c1277e8ab2c</small>	no	2

Warnings:

Information:

Total Files Size (in bytes):

46199

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

Application No.: 10/983,606

Art Unit: 2179

Filed: 11/09/2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenuel S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 20988

MS AMENDMENT

Commissioner of Patents

P.O. Box 1450

Alexandria, V.A. 22313-1450

Dear Sir/Madam:

RESPONSE TO OFFICE ACTION

This is being filed in response to the Office Action of May 1, 2012.

Remarks/Arguments begin on page 2.

REMARKS/ARGUMENTS

Claims 28-31, 34-38 and 40-43 are pending. Claims 1-27, 32, 33 and 39 were previously cancelled without prejudice. No admission or representation is made by the present argument other than that explicitly provided herein.

Applicant thanks the Examiner for his summary of the interview of April 20, 2012. Applicant's Statement of Summary of the Interview of April 20 and 25, 2012 was filed on May 8, 2012. Applicant thanks the Examiner for withdrawing the Aaltonen reference, and understands that Applicant's comments of April 25, 2012 have adequately addressed the Shiraishi reference (U.S. 6,809,724).

Status of Related Applications

The following U.S., foreign, and international patent applications are or may be considered to be related to the application herein. Relevant documents pertaining to such cases are or have been provided in one or more separately-filed Information Disclosure Statements. The status of such applications is summarized in order to ensure that the Office is fully apprised of the current state thereof. In the event the Office has any questions about the identified cases, the Examiner is requested to call Applicant's representative at the number below.

Serial No.	Country	Status
2,525,296	Canada	Granted
ZL200510120010.X	China	Granted
1 659 766	Europe	Granted
1 659 766	Germany	Granted
1 659 766	Spain	Granted
1 659 766	France	Granted
1 659 766	United Kingdom	Granted
1 659 766	Italy	Granted
1089599	Hong Kong	Granted
122909	Singapore	Granted
06125884.4	Europe	Pending
2961/DEL/2005	India	Pending

Claim Rejections - 35 U.S.C. 103

Claims 28-31, 34-38 and 40-43 have been rejected under 35 U.S.C. 103(a) having regard to Ögren (EP 1434411 A1) in view of Wagner (US 2004/0155908).

Applicant respectfully traverses. The present claims are patentable over Ögren and Wagner at least because Ögren and Wagner, whether taken alone or in combination, do not

teach or suggest each and every element set forth in the claims. For example, Ögren and Wagner fail to teach or suggest at least:

- a) “displaying the expanded dynamic bar comprising: displaying additional dynamic preview information determined from the information managed by the software application”
- b) an expanded dynamic bar displaying “additional dynamic preview information [that is] different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application”
- c) “displaying a **selectable link embedded** in the additional dynamic preview information to invoke the software application”

Applicant has previously explained patentable distinctions between its claims and the disclosure of Ögren, and those distinctions remain valid. For the sake of brevity, such arguments will not be repeated here. Applicant requests that the Examiner give due consideration to the Arguments previously set forth with regards to Ögren. To the extent necessary for those arguments to be considered, and only to that extent, Applicant withdraws the disclaimer of prior arguments it entered herein 27 April 2012.

On that basis, the response herein focuses on Wagner.

The legal test for obviousness

In order to reject a claim based on a combination of references, as explained at MPEP 2143 (citing the Supreme Court in *KSR v. Teleflex*), “Office personnel must resolve the Graham factual inquiries. Then, Office personnel must articulate the following:

- (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
- (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
- (3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and

(4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

KSR, 82 USPQ2d at 1395; *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

MPEP 2143 further notes that if “any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.”

Applicant submits that in the present case, the cited references fail to teach or suggest each element claimed.

a) The cited references do not teach or suggest “displaying the expanded dynamic bar comprising: displaying additional dynamic preview information determined from the information managed by the software application”

The Examiner concedes that Ögren does not explicitly disclose “displaying additional dynamic preview information determined from the information managed by the software application”

To remedy this deficiency of Ögren, the Examiner has relied on Wagner. In particular, the Examiner cites paragraphs [0056], [0058], [0059] and [0061] and FIG. 4 of Wagner. The Examiner notes that “for example item 304 consists of numerical ‘2’ that is displayed on the email icon and additional information that further described the content is also displayed. Also, icons are displayed in various locations and can be presented in the tertiary position as evidence in fig. 4”.

The present claims recite an “expanded dynamic bar” that displays “additional dynamic preview information determined from the information managed by the software application” where the additional dynamic preview information is different from dynamic preview information displayed for the software application in an unexpanded dynamic bar. That is, **further** to the dynamic preview information displayed in an unexpanded dynamic bar for a software application, there is **additional different** dynamic preview information displayed in an expanded dynamic bar for the **same software application**.

Thus, the present claims provide the very elegant and convenient result that an unexpanded dynamic bar presents the user with at-a-glance dynamic preview information for a software application, and, if the user is interested in further details, the user can choose to display

an expanded dynamic bar, which conveniently presents the user with additional (typically more detailed) dynamic preview information for that same software application.

These elements and advantages of the present claims are neither taught nor suggested in Wagner.

Wagner does not teach or suggest any “expanded dynamic bar”. As stated in paragraph [0056] of Wagner, “each icon can be presented in a primary position 302, secondary position 304, or tertiary position 306”. As explained in paragraph [0056] of Wagner, the positioning of the icons is dependent on predicted usage. Nowhere is there any teaching or suggestion that the icons or the primary, secondary and tertiary positions have any expanded or unexpanded relationship to each other. The icons in the tertiary position (e.g., in the tertiary icon tray 400 shown in FIG. 4) have no stated expanded or unexpanded relationship to the icons in the primary or secondary positions, and are not equivalent to Applicant’s claimed “expanded dynamic bar”, which is expanded from the unexpanded dynamic bar.

Thus, Wagner does not teach or suggest “displaying the expanded dynamic bar comprising: displaying additional dynamic preview information determined from the information managed by the software application”, and does not remedy at least this deficiency of Ögren.

b) The cited references do not teach or suggest an expanded dynamic bar displaying “additional dynamic preview information [that is] different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application”

The Examiner also concedes that Ögren does not explicitly disclose “the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application”.

Regardless of the failure of Wagner to teach any “expanded dynamic bar”, Applicant submits that Wagner does not teach or suggest any display of “additional dynamic preview information [that is] different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application”

As explained above, the additional dynamic preview information displayed by the expanded dynamic bar of the present claims conveniently provides the user with information

different from (and typically more detailed than) the dynamic preview information displayed in the unexpanded dynamic bar. This provides the user with two levels of dynamic preview information, which are conveniently accessible by the user according to the user's needs.

Wagner does not teach or suggest the **two levels** of dynamic preview information provided by the present claims. Although the Examiner particularly notes that icons "can be presented in the tertiary position as evidenced in fig. 4", FIG. 4 shows that there is no preview information displayed for the icons in the tertiary position. Thus, the display in the tertiary position does not provide any "additional dynamic preview information".

The Examiner also notes that "item 304 consists of numerical '2' that is displayed on the email icon and additional information that further described the content is also displayed". The email icon is shown in FIG. 3 of Wagner. Applicant submits that this is not equivalent to the claimed display of "additional dynamic preview information" in an expanded dynamic bar where the additional dynamic preview information is different from dynamic preview information displayed in the unexpanded dynamic bar.

In the present claims, the unexpanded dynamic bar displays dynamic preview information, while a different expanded dynamic bar displays additional dynamic preview information. That is, **two levels** of dynamic preview information are displayed in **two levels** of dynamic bars. The user is able to first view the dynamic preview information on a first level (i.e., the unexpanded dynamic bar), then the user is able to expand the dynamic bar to view the additional dynamic preview information on a second level (i.e., the expanded dynamic bar).

In contrast, the numerical '2' and the description of the content for the email icon shown in FIG. 3 of Wagner are provided in a single level of display. In Wagner, the user cannot select the amount of information displayed, rather the user is presented with both the numerical '2' and the description of the content at the same time and in the same display portion. In contrast, the present claims provide the user with the ability to selectively expand a dynamic bar in order to display additional dynamic preview information that is different from the dynamic preview information of the unexpanded dynamic bar.

Thus, Wagner does not teach or suggest an expanded dynamic bar displaying "additional dynamic preview information [that is] different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application", and does not remedy at least this deficiency of Ögren.

c) The cited references do not teach or suggest “a selectable link embedded in the additional dynamic preview information to invoke the software application”

The Examiner concedes that Ögren does not explicitly disclose “displaying a selectable link embedded in the additional dynamic preview information to invoke the software application”.

Wagner is relied upon to remedy this deficiency. In particular, the Examiner cites paragraph [0056] of Wagner as teaching this claim element.

Claim 28 recites “displaying a **selectable link embedded** in the additional dynamic preview information to invoke the software application”. This is shown, for example, in FIGS. 4 and 6 of the present application, and described in paragraphs [0046] and [0048]. A person skilled in the art would understand that a “selectable link” is a portion of the display, often text, which a user can select, for example by positioning a cursor over the link and actuating an input device, such as a mouse button or a clickable trackball switch. This selectable link is **embedded** in the additional dynamic preview information of the expanded dynamic bar. That is, the selectable link may be selected by selecting a portion of the additional dynamic preview information, such as by moving a cursor over a portion of the dynamic preview information and actuating an input device.

Among other advantages, this provides a simple and intuitive user interface, in which the same input device, for example a mouse or a clickable trackball, can be used to move the cursor to the link and then select the link. Such a streamlined interface is particularly useful in the case of a handheld apparatus, such as a cellular telephone, since the input devices for the apparatus are limited in number and function, and it is often awkward for the user to access different input devices when the apparatus is being held in the user’s hand.

This is not found in Wagner. Nowhere in Wagner, and nowhere in the particular passage cited, is there any teaching or suggestion of a **selectable link embedded** in any additional dynamic preview information that is displayed in an expanded dynamic bar. FIG. 4 of Wagner does not show any selectable link anywhere.

The Examiner, in citing paragraph [0056] of Wagner, has underlined “tertiary position 306”, suggestion that the Examiner is equating the tertiary position taught in Wagner to the claimed **“selectable link embedded** in the additional dynamic preview information to invoke the software application”. However, nowhere does Wagner teach or suggest any additional dynamic preview information being displayed in the tertiary position, let alone any **selectable link embedded** in any additional dynamic preview information. Indeed, FIG. 4 of Wagner, which illustrates the tertiary position, shows that the icons in the tertiary position (306) are provided with no labels, preview information nor selectable links.

Thus, similarly to Ögren, Wagner does not teach or suggest “displaying a **selectable link embedded** in the additional dynamic preview information to invoke the software application” and does not remedy this deficiency of Ögren.

Therefore, Applicant submits Wagner does not teach or suggest “displaying a selectable link embedded in the additional dynamic preview information to invoke the software application” and does not remedy at least this deficiency of Ögren.

Summary

In view of the above, Applicant submits that the present claims are all patentable over Ögren and Wagner at least because Ögren and Wagner, whether taken alone or in combination, do not teach each and every element set forth in the claims and arranged as claimed. For example, Ögren and Wagner do not teach or suggest at least the claim elements:

- a) “displaying the expanded dynamic bar comprising: displaying additional dynamic preview information determined from the information managed by the software application”
- b) an expanded dynamic bar displaying “additional dynamic preview information [that is] different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application”
- c) “displaying a **selectable link embedded** in the additional dynamic preview information, to invoke the software application”

Conclusion

It is believed that Applicant has responded to each ground of rejection raised, and that the claims, as presented, are in condition for immediate allowance. Favourable reconsideration and allowance of the application are respectfully requested. Should the Examiner have any questions in connection with Applicant's submissions, please contact the undersigned.

If any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

Dated: August 1, 2012

/Christine Y. Wong/
Christine Y. Wong
Reg. No. 62,935
Attorney for the Appellant/Applicant

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Electronic Acknowledgement Receipt

EFS ID:	13389412
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Joanne Keshen
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	01-AUG-2012
Filing Date:	09-NOV-2004
Time Stamp:	09:50:26
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		Response_.pdf	363015 <small>f454c0a5080563136522a23c00ae954145492371</small>	yes	9

Multipart Description/PDF files in .zip description			
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Applicant Arguments/Remarks Made in an Amendment	2	9
Warnings:			
Information:			
		Total Files Size (in bytes):	363015
<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>			



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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
10/983,606 11/09/2004 Sherryl Lee Lorraine Scott 16813-39US 2886

20988 7590 05/01/2012
NORTON ROSE CANADA LLP
1, Place Ville Marie
SUITE 2500
MONTREAL, QC H3B 1R1
CANADA

EXAMINER

SALOMON, PHENUEL S

ART UNIT PAPER NUMBER

2171

MAIL DATE DELIVERY MODE

05/01/2012

PAPER

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.

<i>Applicant-Initiated Interview Summary</i>	Application No. 10/983,606	Applicant(s) SCOTT, SHERRYL LEE LORRAINE	
	Examiner PHENUEL SALOMON	Art Unit 2171	

All participants (applicant, applicant's representative, PTO personnel):

- (1) PHENUEL SALOMON. (3) Matthew Marquardt.
(2) Xiomara Bautista. (4) Daniel Hanson.

Date of Interview: 20 April 2012.

Type: Telephonic Video Conference
 Personal [copy given to: applicant applicant's representative]

Exhibit shown or demonstration conducted: Yes No.
If Yes, brief description: _____.

Issues Discussed 101 112 102 103 Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 28.

Identification of prior art discussed: Ogren (EP 1434411 A1), Aaltonen (US 2006/0020904).

Substance of Interview

(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

We discussed "the dynamic preview information being updated to reflect a change to the information managed by the software application" that applicant submits that the above references do not disclose. We determined tha a further search will be considered. As per the prior art to Aaltonen, applicants argued that the provisional date that is relied upon does not provide support for the subject matter. Therefore, Aaltonen will be withdrawn and further search will be considered.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Attachment

/Phenuel S. Salomon/
Examiner, Art Unit 2171

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Office Action Summary	Application No. 10/983,606	Applicant(s) SCOTT, SHERRYL LEE LORRAINE	
	Examiner PHENUEL SALOMON	Art Unit 2171	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 March 2012.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) 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.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 28-31, 34-38 and 40-43 is/are pending in the application.
 - 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 28-31, 34-38 and 40-43 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 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)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. 20120426.
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This action is in response to the amendment filed on 3/28/2012. Claims 1-27, 32-33, 39 are canceled; and claims 28-31, 34-38, and 40-43 are pending and have been considered below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 28-31, 34-38 and 40-43 are rejected under 35 U.S.C. 102(a) as being unpatentable over Ögren (EP 1434411A1) in view of Wagner (US 2004/0155908 A1).

Claim 28. Ögren discloses a method for controlling an apparatus, comprising a display (fig. 1, item 14), the method comprising:

displaying a dynamic bar on the display, (para. [0038], fig. 3, status bar with icons 32-36 and 38);

displaying dynamic preview information in the dynamic bar, the dynamic preview information being determined from information managed by a software application, (col. 7, lines 17-25 and 2-7, para. [0038], lines 39-52);

expanding the dynamic bar to display an expanded dynamic bar in response to a first input (col. 8, lines 32-44), displaying the expanded dynamic bar comprising:

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Ögren does not explicitly disclose

the dynamic preview information being updated to reflect a change to the information managed by the software application

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application; and

displaying a selectable link embedded in the additional dynamic preview information to invoke the software application; and wherein, activating the software application in response to a second input invoking the link.

However, Wagner discloses

the dynamic preview information being updated to reflect a change to the information managed by the software application (*the text comprising each informational icon label 310 can be automatically updated as the state of that particular service changes as it applies to the particular user*) ([0059]),

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application (*the text comprising each informational icon label 310 can be automatically updated as the state of that particular service changes as it applies to the*

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particular user) ([0056],[0058], [0059][0061]) [for example item 304 consists of numerical ‘2’ that is displayed on the email icon and additional information that further described the content is also displayed. Also, icons are displayed in various locations and can be presented in the tertiary position as evidenced in fig. 4];

displaying a selectable link embedded in the additional dynamic preview information to invoke the software application (*the icons are displayed in various locations on the context-based display 300 dependent on predicted usage. In particular, each icon can be presented in a primary position 302, secondary position 304, or tertiary position 306*) ([0056]); and wherein, activating the software application in response to a second input invoking the link (*the method can also include selecting the second icon. Selecting the second icon can initiate a corresponding application or service*) ([0020]) [clicking on the mail icon will invoke the mail application which an artisan is well aware of]. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the features of dynamic preview information in Ögren. One would have been motivated to do so in order to provide an improved user interface that is intuitive and user friendly with access to data services ([0012]).

Claim 29. Ögren and Wagner disclose the method of claim 28, Ögren further discloses comprising displaying a status portion on the display (para. [0038], lines 39-46).

Claim 30. Ögren and Wagner disclose the method of claim 29, Ögren further discloses wherein displaying the status portion comprises displaying signal strength (para. [0033], lines 4-6).

Claim 31. Ögren and Wagner disclose the method of claim 28, Ögren further discloses wherein the apparatus comprises a cellular telephone (fig. 1, para. [0035], lines 28-29).

Claim 34. Ögren and Wagner disclose the method of claim 28, Wagner further discloses comprising, following activation of the software application, displaying a user interface for the software application (*the method can also include selecting the second icon. Selecting the second icon can initiate a corresponding application or service*) ([0020]) [the icon is part of the tertiary tray]. One would have been motivated to do so in order to provide an improved user interface that is intuitive and user friendly with access to data services ([0012]).

Claim 35. Ögren and Wagner disclose the method of claim 28, Ögren further discloses comprising displaying an application portion on the display, the application portion comprising at least one icon (fig. 4, items 32-36 and 38).

Claim 36. Ögren and Wagner disclose the method of claim 35, Ögren further discloses wherein, in response to a user input invoking the icon, the software application is activated (fig. 5b, steps 68, 70 and 72).

Claim 37. Ögren and Wagner disclose the method of claim 28, Ögren further discloses wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email (col. 7, lines 45-50) [Ögren discloses the

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information is an SMS but further in col. 9, lines 22-24, the application can be e-mail; therefore the same preview feature could also apply to e-mail].

Claim 38. Ögren and Wagner disclose the method of claim 28, Ögren further discloses wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party (fig. 4, items 32, 52 and 54).

Claim 40. Ögren and Wagner disclose the method of claim 28, Ögren further discloses wherein the software application is a communications application, wherein the dynamic preview information is determined from information about one or more communications managed by the communications application ([0039, lines 45-57, col. 8, lines 1-8), and Wagner further discloses wherein the additional dynamic preview information is also determined from the information about the one or more communications managed by the communications application ([0056],[0059]). One would have been motivated to do so in order to provide an improved user interface that is intuitive and user friendly with access to data services ([0012]).

Claim 41. Ögren and Wagner disclose the method of claim 28, Ögren further discloses wherein the dynamic bar further comprises an icon representing the software application, and the dynamic preview information is displayed in association with the icon ([0038],[0039]).

Claim 42. Ögren and Wagner disclose the method of claim 28, Wagner further discloses wherein the expanded dynamic bar further comprises an icon representing the software application, and

the additional dynamic preview information is displayed in association with the icon ([0056],[0059], figs. 3,4). One would have been motivated to do so in order to provide an improved user interface that is intuitive and user friendly with access to data services ([0012]).

Claim 43. Ögren and Wagner disclose the method of claim 42, Wagner further discloses wherein the second input comprises selecting the icon (*the method can also include selecting the second icon. Selecting the second icon can initiate a corresponding application or service*) ([0020]) [clicking on the mail icon will invoke the mail application which an artisan is well aware of]. One would have been motivated to do so in order to provide an improved user interface that is intuitive and user friendly with access to data services ([0012]).

Response to Arguments

6. Applicant's arguments filed on 03/28/2012 have been fully considered but are moot in view of new ground of rejection(s).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure (See PTO-892).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phenuel S. Salomon whose telephone number is (571) 270-1699.

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The examiner can normally be reached on Mon-Fri 7:00 A.M. to 4:00 P.M. (Alternate Friday Off) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3800.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phenuel S. Salomon/

Examiner, Art Unit 2171

Notice of References Cited	Application/Control No. 10/983,606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRA	
	Examiner PHENUEL SALOMON	Art Unit 2171	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-6,597,378	07-2003	Shiraishi et al.	715/764
*	B US-6,172,677	01-2001	Stautner et al.	715/716
*	C US-2004/0155908	08-2004	Wagner, Annette M.	345/854
*	D US-2003/0169294	09-2003	Vatula et al.	345/764
*	E US-7,353,466	04-2008	Crane et al.	715/752
*	F US-2004/0259598	12-2004	Wagner et al.	455/566
*	G US-6,522,347	02-2003	Tsuji et al.	715/848
*	H US-6,868,283	03-2005	Bonansea et al.	455/566
*	I US-2001/0035881	11-2001	Stoakley et al.	345/772
*	J US-2005/0188320	08-2005	Bocking, Andrew D.	715/752
*	K US-2005/0020316	01-2005	Mahini, Hassan	455/566
*	L US-2005/0117733	06-2005	Widger et al.	379/221.05
*	M US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N				
	O				
	P				
	Q				
	R				
	S				
	T				

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	
V	
W	
X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S48	1	"20040172455"	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/20 15:20
S49	37	("6253202" "7191239" "20050117733" "6950502" "7111232" "7007085" "20030231207" "6725269" "20020130904" "5588148" "7225409" "20030046296" "20030219104" "6820204" "20020091774" "6108688" "20030013483" "20020019852" "20060020677" "20050117733" "20040054735" "20030023681" "7295836" "6560637" "20030233265" "7128695" "6092101" "20030020749" "20030236832" "6396513" "20030064707" "20060084450" "6708205" "20040039630" "6791583" "6778642" "20040216059" "7454716").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/20 15:21
S50	2	("6809724" "20090265666").pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/23 14:05
S51	30	("4794388" "5612931" "5825353" "6054990" "6128006" "6271488" "6535615").PN. OR ("6809724").URPN.	US-PGPUB; USPAT; USOCR	ADJ J	OFF	2012/04/23 14:56
S52	10040	(notification or status or alarm or report with ((dynamic or updat\$4)(information or data or content))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/25 12:59
S53	347	(notification or warning or alarm or report) (bar or navbar or tray)	US-PGPUB; USPAT; USOCR	ADJ	OFF	2012/04/25 13:19
S54	16	S52 and S53	US-PGPUB; USPAT; USOCR	ADJ	OFF	2012/04/25 13:20
S55	1	"6313736".pn.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2012/04/25 13:32


S56	2	("6313736" "6333973").pn.	US-PGPUB; USPAT; USOCR	ADJJ	OFF	2012/04/25 13:33
S57	3	("6313736" "6333973" "6313736" "20070300183").pn.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2012/04/25 13:42
S58	4	("6313736" "6333973" "6313736" "20070300183" "6907447").pn.	US-PGPUB; USPAT; USOCR	ADJJ	OFF	2012/04/25 13:43
S59	4	("6313736" "6333973" "6313736" "20070300183" "6907447").pn.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2012/04/25 13:45
S60	5	("6313736" "6333973" "6313736" "20070300183" "6907447" "20060085758").pn.	US-PGPUB; USPAT; USOCR	ADJJ	OFF	2012/04/25 13:47
S61	16	("6313736" "6333973" "6313736" "20070300183" "6907447" "20060085758" "20010035881" "20030169294" "5796394" "5802466" "6522347" "6546263" "6597378" "20040021703" "6759944" "6868283" "20050188320").pn.	US-PGPUB; USPAT; USOCR	AD J	OFF	2012/04/25 14:30
S62	38	("20020160817" "20050248437" "20040259598" "20040155908" "5579472" "6466654" "20020019852" "20040056893" "20040073605" "20040155908" "20060084450" "5936548" "6778069" "7281215" "20020130904" "20050114781" "20050193345" "20100057875" "20100287483" "5617539" "5758079" "5764901" "5867654" "6212547" "6731308" "6981223" "7185054" "7213206" "7398296" "7412482" "7421470" "7433921" "7437411" "7437412" "7441001" "7444373" "7487210" "7707244" "7908320").PN.	US-PGPUB; USPAT; USOCR	AD J	OFF	2012/04/25 16:17
S63	0	S52 and S62	US-PGPUB; USPAT; USOCR	ADJ	J OFF	2012/04/25 16:17
S64	0	S53 and S62	US-PGPUB; USPAT; USOCR	ADJ	J OFF	2012/04/25 16:17
S65	18	("20030023688" "7672879" "5579472" "20030013483" "5579472" "7096009" "20030120957" "20030023688" "6661877" "5781857" "6778642" "6571275" "7225409" "6868283" "7295836" "20030026393" "20050130631" "20030013483" "6778642" "6661877" "20030026393" "6640239" "20040010808" "7283808").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	AD J	OFF	2012/04/25 16:52

EAST Search History

S66	21	("20020054174" "20020054117" "20030142125" "20040192299" "20010020957" "6320602" "20040192339" "20050120306" "20010030667" "20050020316" "20050181803" "20050235224" "20040249846" "7565623" "20040155909" "20040041841" "20040155909" "20060107232" "7555723" "7600189" "20050229102" "20050227676").PN.	US- PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/25: 16:59
S67	2751	S62 and expan\$6	US- PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/25: 17:28
S68	116	S63 and expan\$6	US- PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2012/04/25: 17:28
S69	1	"6172677".pn.	US- PGPUB; USPAT; USOCR; EPO	ADJ	ON	2012/04/26: 11:36
S70	1	"20110016396"	US- PGPUB; USPAT; USOCR; EPO	ADJ	ON	2012/04/26: 11:39

4/ 27/ 2012 11:29:09 AM

C:\Users\psalomon\Documents\EAST\Workspaces\10983606-Dynamic Bar Oriented User Interface.wsp


Search Notes 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

SEARCHED			
Class	Subclass	Date	Examiner
715	779,808,854,864	7/3/07	pss
455	566,564,556,557	7/3/07	pss
715	808,854	5/12/2011	pss
455	564,566	5/12/2011	pss
715	808,854	11/7/2011	pss
715	808,854	4/23/2012	pss

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB,USPAT,USOCR,EPO,JPO,DERWENT,IBM_TDB	7/3/07	PSS
US-PGPUB,USPAT,USOCR	5/12/2011	pss
US-PGPUB,USPAT,USOCR	11/7/2011	pss
US-PGPUB,USPAT,USOCR	4/23/2012	pss

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

✓	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	07/03/2007	11/20/2007	05/16/2011	11/17/2011	04/26/2012					
	1	✓	✓	-	-	-					
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	3	✓	-	-	-	-					
	4	✓	✓	-	-	-					
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	33			✓	-	-					
	34			✓	✓	✓					
	35			✓	✓	✓					

<i>Index of Claims</i> 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

<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			
CLAIM		DATE							
Final	Original	07/03/2007	11/20/2007	05/16/2011	11/17/2011	04/26/2012			
	36			✓	✓	✓			
	37			✓	✓	✓			
	38			✓	✓	✓			
	39			✓	-	-			
	40				✓	✓			
	41				✓	✓			
	42				✓	✓			
	43				✓	✓			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s) SCOTT, Sherryl L. L.
Serial No.: 10/983,606
Filed: 9 November 2004
Examiner: SALOMON, Phenuel S.
Group Art Unit: 2179
Confirmation No.: 2886
Title: DYNAMIC BAR ORIENTED USER INTERFACE

VIA ELECTRONIC FILING

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
U.S.A.

APPLICANT'S SUMMARY OF INTERVIEWS

This paper is filed in summary of interviews herein conducted 20 April 2012 and 25 April 2012.

20 April 2012

The 20 April 2012 interview was conducted in person, at the Examiner's office. Applicant thanks the Examiner and his supervisor L. Bautista for the time and insight they shared during that interview. In addition to Examiner Salomon and SPE Bautista, Applicant's representative D J Hanson (Reg. No. 46,757) and Applicant's attorney M J Marquardt (Reg. No. 40,997) were present.

Claim 28 was discussed, both alone and in view of the Ögren and the Aaltonen references. It was agreed that:

- Presentation of static icons in, for example, a dynamic bar is distinct from presentation of dynamic preview information in a dynamic bar.

- “Notifying” and “updating,” in the present context, are distinct concepts.
- The cited Aaltonen reference, US Patent Application Publication 2006/0020904, is not prior art against the Application herein.
- Subject to confirmation by the Examiner, US Provisional Patent Application No. 60/506,855, which is relied upon by the Aaltonen reference for priority, does not disclose the material cited at paragraph 5 of the Detailed Action of the office action dated 28 November 2011.

25 April 2012

The 25 April 2012 interview was conducted by telephone. Examiner Salomon and Applicant’s attorney Marquardt participated. US patent 6,809,724 to Shiraishi et al., entitled “Display Apparatus and Portable Information Processing Apparatus,” was discussed.

Applicant’s attorney noted that Applicant is unable to find in Shiraishi anything that teaches or suggests various material features of the claims now presented.

Conclusion

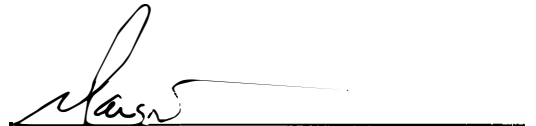
Applicant expressly disclaims all arguments entered during prior prosecution, including all arguments pertaining to the Ögren and Aaltonen references, and requests that the Examiner re-visit and reconsider all art cited against the claims herein.

Applicant is concerned to advance this application as quickly as is reasonably possible. Accordingly, Applicant respectfully requests that, in the event the Examiner has any further questions about this application, the Examiner call Applicant’s attorney at the number provided below.

Applicant believes that no fees are due in connection with the filing of this paper. In the event that the office determines that any fee is due, Appellant requests that such fee be charged to its Deposit Account No. 195113.

Respectfully submitted,

Dated: 27 APRIL 2012


Matthew J. MARQUARDT
Reg. No. 40,997
Attorney for the Appellant / Applicant

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Fax 416-216-3930

Electronic Acknowledgement Receipt

EFS ID:	12650374
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Matthew J. Marquardt
Filer Authorized By:	
Attorney Docket Number:	16813-39US
Receipt Date:	27-APR-2012
Filing Date:	09-NOV-2004
Time Stamp:	15:32:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Supplemental Response or Supplemental Amendment	Summary.pdf	78840 <small>a3c9#f604ba7051#ea6507#100b0507e33c25107</small>	no	3

Warnings:

Information:

Total Files Size (in bytes):

78840

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

Application No.: 10/983,606

Art Unit: 2179

Filed: 11/09/2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenuel S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 20988

MS AMENDMENT

Commissioner of Patents

P.O. Box 1450

Alexandria, V.A. 22313-1450

Dear Sir/Madam:

AMENDMENT

This is being filed in response to the Office Action of November 28, 2011. This is being filed concurrently with a Petition for Extension of Time.

Remarks/Arguments begin on page 2.

REMARKS/ARGUMENTS

Claims 28-31, 34-38 and 40-43 are pending. Claims 1-27, 32, 33 and 39 are cancelled without prejudice. No admission or representation is made by the present argument other than that explicitly provided herein.

Status of Related Applications

The following U.S., foreign, and international patent applications are or may be considered to be related to the application herein. Relevant documents pertaining to such cases are or have been provided in one or more separately-filed Information Disclosure Statements. The status of such applications is summarized in order to ensure that the Office is fully apprised of the current state thereof. In the event the Office has any questions about the identified cases, the Examiner is requested to call the Applicant's representative at the number below.

Serial No.	Country	Status
2,525,296	Canada	Granted
ZL200510120010.X	China	Granted
1 659 766	Europe	Granted
1 659 766	Germany	Granted
1 659 766	Spain	Granted
1 659 766	France	Granted
1 659 766	United Kingdom	Granted
1 659 766	Italy	Granted
1089599	Hong Kong	Granted
06125884.4	Europe	Pending
2961/DEL/2005	India	Pending
122909	Singapore	Granted

Claim Rejections - 35 U.S.C. 103

Claims 28-31, 34-38 and 40-43 stand rejected under 35 U.S.C. 103(a) having regard to Ögren (EP 1434411 A1) in view of Aaltonen (US 2006/0020904).

The claims stand as they were amended in the Response of October 25, 2011. The claims have been amended with a consideration of the Decision on Appeal dated February 8, 2011, an interview with the Examiner dated August 3, 2011, and the findings of the previous Office Actions. It is believed that the present claims address all the

concerns noted by the Board of Patent Appeals and Interferences as well as those noted by the Examiner.

In particular, the Applicant submits that the present claims are patentable over Ögren and Aaltonen at least because Ögren and Aaltonen, whether taken alone or in combination, do not teach each and every element set forth in the claims and arranged as claimed. For example, Ögren and Aaltonen do not teach at least:

- a) “displaying a **selectable link embedded in the additional dynamic preview information** to invoke the software application”
- b) “activating the software application in response to a second input invoking the link”
- c) “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”

The legal test for obviousness

In order to reject a claim based on a combination of references, as explained at MPEP 2143 (citing the Supreme Court in *KSR v. Teleflex*), “Office personnel must resolve the Graham factual inquiries. Then, Office personnel must articulate the following:

- (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
- (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
- (3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and

(4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

KSR, 82 USPQ2d at 1395; *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

MPEP 2143 further notes that if “any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.”

The Applicant submits that in the present case, the cited references do not include each element claimed.

a) The cited references do not teach “a selectable link embedded in the additional dynamic preview information to invoke the software application”

The Office Action concedes, on page 3, that Ögren does not explicitly disclose displaying a selectable link embedded in the additional dynamic preview information to invoke the software application.

Aaltonen is relied upon to remedy this deficiency. The Office Action cites FIG. 22E, items 2251-2255 of Aaltonen in particular. The Applicant disagrees with this interpretation of Aaltonen.

Claim 28 recites “displaying a selectable link embedded in the additional dynamic preview information to invoke the software application”. This is shown, for example, in FIGS. 4 and 6 of the present application, and described in paragraphs [0046] and [0048]. A person skilled in the art would understand that a “selectable link” is a portion of the display, often text, that a user can **select**, for example by positioning a cursor over the link and actuating an input device, such as a mouse button or a clickable trackball switch. This selectable link is **embedded** in the additional dynamic preview information of the expanded dynamic bar. That is, the selectable link may be selected by selecting a portion of the additional dynamic preview information, such as by moving a cursor over a portion of the dynamic preview information and actuating an input device.

Among other advantages, this provides a simple and intuitive user interface, in which the same input device, for example a mouse or a clickable trackball, can be used to move the cursor to the link and then select the link. Such a streamlined interface is particularly useful in the case of a handheld apparatus, such as a cellular telephone, since the input devices for the apparatus are limited in number and function, and it is often awkward for the user to access different input devices when the apparatus is being held in the user's hand.

This is not found in Aaltonen. Paragraph [0119] of Aaltonen describes FIG. 22E. FIG. 22E is described as being expanded from the notification 2211 FIG. 22A "to provide detailed information related to the notification". The view of FIG. 22E is described as showing a "list 2250 of events...that provides detailed information related to each event". There is no teaching or suggestion that any of the events in the list 2250 include any selectable link.

On page 4 of the Office Action, it is asserted that "clicking on the mail icon will invoke the mail application which an artisan is well aware of". The Applicant respectfully disagrees and submits that there is no basis for this assertion. FIG. 22E is described as shown a list of events, not a list of links or a list of icons. A person of ordinary skill in the art would not interpret a list of events as including any selectable links.

Further, even if the list of events in Aaltonen included selectable links, which the Applicant maintains is not the case, there is still no teaching or suggestion of selectable links that are "**embedded** in the additional dynamic preview information", as presently claimed. As shown in FIG. 22E, the mail icon, which the Office Action has interpreted as being a selectable link, is separate from and not embedded in the displayed information. For example, in the item 2251, the mail icon is shown apart from the information about the mail (in this case, the name of the sender, the time of receipt and a portion of the mail message) and is not **embedded** in the mail information.

Thus, similarly to Ögren, Aaltonen does not teach or suggest "displaying a **selectable link embedded** in the additional dynamic preview information to invoke the software application" and does not remedy this deficiency of Ögren.

Therefore, the Applicant submits that Ögren and Aaltonen do not teach or suggest at least the claimed element of “displaying a selectable link embedded in the additional dynamic preview information to invoke the software application”.

b) The cited references do not teach “activating the software application in response to a second input invoking the link”

As explained above, the present claims provide a selectable link embedded in the additional dynamic preview information that, when selected, activates the associated software application. This is not taught in Ögren and Aaltonen.

On page 3, the Office Action concedes that Ögren does not explicitly disclose activating the software application in response to a second input invoking the link.

Aaltonen is relied upon to remedy this deficiency of Ögren. In particular, the Office Action cites FIG. 22E, item 2251 of Aaltonen, with the assertion that “clicking on the mail icon will invoke the mail application which an artisan is well aware of”.

As explained above, there is no teaching or suggestion in Aaltonen that the item 2251 contains any selectable link for activating a software application. There is no reason for a person of ordinary skill in the art to think that item 2251, which is referred to as being part of a list of events, would include any link for activating a software application.

Therefore, Aaltonen does not teach or suggest “activating the software application in response to a second input invoking the link” and does not remedy the deficiencies of Ögren.

The Applicant submits that Ögren and Aaltonen do not teach or suggest at least the claimed element of “activating the software application in response to a second input invoking the link”.

c) The cited references do not teach “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”

Claim 34 is dependent on claim 28 and recites “following activation of the software application, displaying a user interface for the software application.” This follows from “activating the software application in response to a second input invoking the link” in claim 28. That is, when the user selects the link in the expanded dynamic bar, the software application is activated and the user interface for the software application is displayed.

On page 5 of the Office Action, column 9, lines 11-28 of Ögren is cited as teaching “displaying main menu of SMS/email application”. The Applicant respectfully notes that the cited passage does not teach displaying any “main menu” in response to a selection of a link, contrary to the Office Action’s assertion. Firstly, there is no link in Ögren, as explained above. Further, pressing the soft key in Ögren does not display a “main menu”. Rather, as stated in column 9, lines 17-22, “If the user has selected an action by depressing the first soft navigation key 17, step 70...the action is performed, step 72, i.e. the call is being made and thereafter the display is made to show the original status bar again, step 56, after the call is ended.” Clearly, selecting an action does not result in the display of any main menu, but rather the action is directly carried out.

Instead, Ögren teaches in column 9, lines 25-28, that “If the user did not select an action, step 70...the control unit 20 connects the user to the main menu of the application in the menu system, step 74.” That is, it is by not selecting an action that the user is connected to a main menu. This is in fact opposite that what is being claimed, in which selecting the link results in display of a user interface for the application.

Therefore, the cited art does not teach or suggest “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”, as recited by claim 34, dependent on claim 28.

Summary

In view of the above, the Applicant submits that the present claims are all patentable over Ögren and Aaltonen at least because Ögren and Aaltonen, whether taken alone or in combination, do not teach each and every element set forth in the claims and arranged as claimed. For example, Ögren and Aaltonen do not teach or suggest at least the claim elements:

- a) “displaying a **selectable link embedded in the additional dynamic preview information** to invoke the software application”
- b) “activating the software application in response to a second input invoking the link”
- c) “following activation of the software application, displaying a user interface for the software application”

Conclusion

It is believed that the Applicant has responded to each ground of rejection raised, and that the claims, as presented, are in condition for immediate allowance. Favourable reconsideration and allowance of the application are respectfully requested. Should the Examiner have any questions in connection with the Applicant's submissions, please contact the undersigned.

If any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

Dated: March 28, 2012

/Christine Y. Wong/
Christine Y. Wong
Reg. No. 62,935
Attorney for the
Appellant/Applicant

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CANADA

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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.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) 16813-39US																								
Application Number 10983606	Filed 2004-09-11																								
For DYNAMIC BAR ORIENTED USER INTERFACE																									
Art Unit 2171	Examiner Phenuel S. Salomon																								
<p>This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.</p> <p>The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="text-align: center; border-bottom: 1px solid black;">Fee</th> <th style="text-align: center; border-bottom: 1px solid black;">Small Entity Fee</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))</td> <td style="text-align: center;">\$150</td> <td style="text-align: center;">\$75</td> <td style="text-align: right;">\$ <u>150.00</u></td> </tr> <tr> <td><input type="checkbox"/> Two months (37 CFR 1.17(a)(2))</td> <td style="text-align: center;">\$560</td> <td style="text-align: center;">\$280</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Three months (37 CFR 1.17(a)(3))</td> <td style="text-align: center;">\$1270</td> <td style="text-align: center;">\$635</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Four months (37 CFR 1.17(a)(4))</td> <td style="text-align: center;">\$1980</td> <td style="text-align: center;">\$990</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Five months (37 CFR 1.17(a)(5))</td> <td style="text-align: center;">\$2690</td> <td style="text-align: center;">\$1345</td> <td style="text-align: right;">\$ _____</td> </tr> </tbody> </table> <p><input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.</p> <p><input type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>19 5113</u>.</p> <p>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p> <p>I am the <input type="checkbox"/> applicant/inventor.</p> <p style="padding-left: 40px;"><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> attorney or agent of record. Registration Number <u>62935</u></p> <p style="padding-left: 40px;"><input type="checkbox"/> attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____</p>			Fee	Small Entity Fee		<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$150	\$75	\$ <u>150.00</u>	<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$560	\$280	\$ _____	<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1270	\$635	\$ _____	<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$1980	\$990	\$ _____	<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$2690	\$1345	\$ _____
	Fee	Small Entity Fee																							
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<u>/Christine Y. Wong/</u> Signature	<u>March 28, 2012</u> Date																								
<u>Christine Y. Wong</u> Typed or printed name	<u>416-216-1874</u> Telephone Number																								
<p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.</p> <p><input type="checkbox"/> Total of <u>2</u> forms are submitted.</p>																									

This collection of information is required by 37 CFR 1.136(a). 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 1.11 and 1.14. This collection is estimated to take 6 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.

Electronic Patent Application Fee Transmittal

Application Number:	10983606			
Filing Date:	09-Nov-2004			
Title of Invention:	Dynamic bar oriented user interface			
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott			
Filer:	Christine Y. Wong/Joanne Keshen			
Attorney Docket Number:	16813-39US			
Filed as Large 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:				
Extension - 1 month with \$0 paid	1251	1	150	150

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				150

Electronic Acknowledgement Receipt

EFS ID:	12413357
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Joanne Keshen
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	28-MAR-2012
Filing Date:	09-NOV-2004
Time Stamp:	14:59:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$150
RAM confirmation Number	1330
Deposit Account	195113
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		Response_.pdf	318710 27833e569c09e97804f61afab0ef735553434562	yes	9
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Amendment/Req. Reconsideration-After Non-Final Reject	1	1	
		Applicant Arguments/Remarks Made in an Amendment	2	9	

Warnings:

Information:

2	Extension of Time	Petition_for_Extension_of_Time.pdf	57754 4356a4694358ab312719e11580bace688c49ec	no	1
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Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30189 f7e7e3d0fa533d406aafa35ccf36e2101f62368	no	2
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Warnings:

Information:

Total Files Size (in bytes): 406653

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.



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 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 10/983,606, 11/09/2004, Sherryl Lee Lorraine Scott, 16813-39US, 2886
Row 2: 20988, 7590, 11/28/2011, NORTON ROSE OR LLP, 1, Place Ville Marie, SUITE 2500, MONTREAL, QC H3B 1R1, CANADA
Row 3: EXAMINER, SALOMON, PHENUEL S
Row 4: ART UNIT, PAPER NUMBER, 2171
Row 5: MAIL DATE, DELIVERY MODE, 11/28/2011, PAPER

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.

Office Action Summary

Application No. 10/983,606	Applicant(s) SCOTT, SHERRYL LEE LORRAINE	
Examiner PHENUEL SALOMON	Art Unit 2171	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 October 2011.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) 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.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 28-31, 34-38 and 40-43 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 28-31, 34-38 and 40-43 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
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)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/01/2011
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This action is in response to the RCE filed on 10/25/2011. Claims 1-27, 32-33, 39 are canceled, claims 28 is amended; claims 40-43 are newly added; and claims 28-31, 34-38, and 40-43 are pending and have been considered below.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/25/2011 has been entered.

3. The rejections of Claims 32-33 under 35 U.S.C. 112, second paragraph are moot in view of applicant amendment.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2171

5. Claims 28-31, 34-38 and 40-43 are rejected under 35 U.S.C. 102(a) as being unpatentable over Ögren (EP 1434411A1) in view of Aaltonen et al. (US 2006/0020904 A1).

Claim 28. Ögren discloses a method for controlling an apparatus, comprising a display (fig. 1, item 14), the method comprising:

displaying a dynamic bar on the display, (para. [0038], fig. 3, status bar with icons 32-36 and 38);

displaying dynamic preview information in the dynamic bar, the dynamic preview information being determined from information managed by a software application, the dynamic preview information being updated to reflect a change to the information managed by the software application (col. 7, lines 17-25 and 2-7, para. [0038], lines 39-52);

expanding the dynamic bar to display an expanded dynamic bar in response to a first input (col. 8, lines 32-44), displaying the expanded dynamic bar comprising:

Ögren does not explicitly disclose

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application; and

displaying a selectable link embedded in the additional dynamic preview information to invoke the software application; and wherein, activating the software application in response to a second input invoking the link.

However, Aaltonen discloses

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application (para. [0115], [0118],[0119]);

displaying a selectable link embedded in the additional dynamic preview information to invoke the software application (fig. 22E, items 2251-2255); and wherein, activating the software application in response to a second input invoking the link (fig. 22E, item 2251 [clicking on the mail icon will invoke the mail application which an artisan is well aware of]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the features of dynamic preview information in Ögren. One would have been motivated to do so in order to provide enough information for the user about the object/event associated with; thereby facilitating interaction and navigation ([0013]).

Claim 29. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses comprising displaying a status portion on the display (para. [0038], lines 39-46).

Claim 30. Ögren and Aaltonen disclose the method of claim 29, Ögren further discloses wherein displaying the status portion comprises displaying signal strength (para. [0033], lines 4-6).

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Claim 31. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses wherein the apparatus comprises a cellular telephone (fig. 1, para. [0035], lines 28-29).

Claim 34. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses comprising, following activation of the software application, displaying a user interface for the software application (*displaying main menu of SMS/email application*) (col. 9, lines 11-28).

Claim 35. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses comprising displaying an application portion on the display, the application portion comprising at least one icon (fig. 4, items 32-36 and 38).

Claim 36. Ögren and Aaltonen disclose the method of claim 35, Ögren further discloses wherein, in response to a user input invoking the icon, the software application is activated (fig. 5b, steps 68, 70 and 72).

Claim 37. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email (col. 7, lines 45-50) [Ögren discloses the information is an SMS but further in col. 9, lines 22-24, the application can be e-mail; therefore the same preview feature could also apply to e-mail].

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Claim 38. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party (fig. 4, items 32, 52 and 54).

Claim 40. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses wherein the software application is a communications application, wherein the dynamic preview information is determined from information about one or more communications managed by the communications application ([0039, lines 45-57, col. 8, lines 1-8), and Aaltonen further discloses wherein the additional dynamic preview information is also determined from the information about the one or more communications managed by the communications application ([0118],[0119]. One would have been motivated to do so in order to provide enough information for the user about the object/event associated with; thereby facilitating interaction and navigation ([0013]).

Claim 41. Ögren and Aaltonen disclose the method of claim 28, Ögren further discloses wherein the dynamic bar further comprises an icon representing the software application, and the dynamic preview information is displayed in association with the icon ([0038],[0039]).

Claim 42. Ögren and Aaltonen disclose the method of claim 28, Aaltonen further discloses wherein the expanded dynamic bar further comprises an icon representing the software application, and the additional dynamic preview information is displayed in association with the icon ([0118],[0119]. One would have been motivated to do so in order to provide enough

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information for the user about the object/event associated with; thereby facilitating interaction and navigation ([0013]).

Claim 43. Ögren and Aaltonen disclose the method of claim 42, Aaltonen further discloses wherein the second input comprises selecting the icon (fig. 22E, item 2251) [clicking on the mail icon will invoke the mail application which an artisan is well aware of]. One would have been motivated to do so in order to provide enough information for the user about the object/event associated with; thereby facilitating interaction and navigation ([0013]).

Response to Arguments

6. Applicant's arguments filed on 10/25/2011 have been fully considered but are moot in view of new ground of rejection(s).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Wagner (U.S. 2004/0155909).
- b. Ogren (US 2010/0042951)
- c. Mahini (US 2005/0020316 A1)

Application/Control Number: 10/983,606
Art Unit: 2171

Page 8

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phenuel S. Salomon whose telephone number is (571) 270-1699. The examiner can normally be reached on Mon-Fri 7:00 A.M. to 4:00 P.M. (Alternate Friday Off) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chat Do can be reached on (571) 272-3721. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3800.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phenuel S. Salomon/

Examiner, Art Unit 2171

Notice of References Cited	Application/Control No. 10/983,606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRA	
	Examiner PHENUEL SALOMON	Art Unit 2171	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-2006/0020904	01-2006	Aaltonen et al.	715/850
*	B US-2004/0155909	08-2004	Wagner, Annette M.	345/854
*	C US-2010/0042951	02-2010	Ogren, Per	715/841
*	D US-2005/0020316	01-2005	Mahini, Hassan	455/566
	E US-			
	F US-			
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N				
	O				
	P				
	Q				
	R				
	S				
	T				

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
	U				
	V				
	W				
	X				

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	10983606
	Filing Date	2004-11-09
	First Named Inventor	Sherry Lee Lorraine Scott
	Art Unit	2171
	Examiner Name	Phenuel S. Salomon
	Attorney Docket Number	16813-39US

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² j	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	1265157	EP	A2	2002-11-12	Microsoft Corporation		<input type="checkbox"/>
	2	1152333	EP	A2	2001-07-11	Geoworks Corporation		<input type="checkbox"/>

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	10983606
	Filing Date	2004-11-09
	First Named Inventor	Sherry Lee Lorraine Scott
	Art Unit	2171
	Examiner Name	Phenuel S. Salomon
	Attorney Docket Number	16813-39US

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	Ipulse, Response to Search and Examination Report, filed in respect of European Patent Application No. 06125884.4, dated September 5, 2007.	<input type="checkbox"/>
	2	European Patent Office, Examination Report, issued in respect of European Patent Application No. 06125884.4, dated June 19, 2008.	<input type="checkbox"/>
	3	Ipulse, Response to Examination Report, filed in respect of European Patent Application No. 06125884.4, dated December 19, 2008.	<input type="checkbox"/>
	4	European Patent Office, Examination Report, issued in respect of European Patent Application No. 06125884.4, dated January 16, 2009.	<input type="checkbox"/>
	5	Ipulse, Response to Examination Report, filed in respect of European Patent Application No. 06125884.4, dated June 1, 2009.	<input type="checkbox"/>
	6	European Patent Office, Summons to Attend Oral Proceedings, issued in respect of European Patent Application No. 06125884.4, dated September 29, 2010.	<input type="checkbox"/>
	7	Barker Brettell, Response to Summons to Attend Oral Proceedings, filed in respect of European Patent Application No. 06125884.4, dated December 22, 2010.	<input type="checkbox"/>
	8	European Patent Office, Decision to Refuse a Patent Application, issued in respect of European Patent Application No. 06125884.4, dated April 13, 2011.	<input type="checkbox"/>
	9	Barker Brettell, Response to Notice of Appeal, filed in respect of European Patent Application No. 06125884.4, dated August 23, 2011.	<input type="checkbox"/>

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	10983606
	Filing Date	2004-11-09
	First Named Inventor	Sherry Lee Lorraine Scott
	Art Unit	2171
	Examiner Name	Phenuel S. Salomon
	Attorney Docket Number	16813-39US

EXAMINER SIGNATURE			
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Examiner Signature	/Phenuel Salomon/	Date Considered	11/20/2011
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.


Search Notes 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

SEARCHED			
Class	Subclass	Date	Examiner
715	779,808,854,864	7/3/07	pss
455	566,564,556,557	7/3/07	pss
715	808,854	5/12/2011	pss
455	564,566	5/12/2011	pss
715	808,854	11/7/2011	pss

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB,USPAT,USOCR,EPO,JPO,DERWENT,IBM_TDB	7/3/07	PSS
US-PGPUB,USPAT,USOCR	5/12/2011	pss
US-PGPUB,USPAT,USOCR	11/7/2011	pss

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171


✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

<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	
CLAIM		DATE					
Final	Original	07/03/2007	11/20/2007	05/16/2011	11/17/2011		
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	31			✓	✓		
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	33			✓	-		
	34			✓	✓		
	35			✓	✓		

Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

✓	Rejected
=	Allowed

-	Cancelled
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N	Non-Elected
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A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	07/03/2007	11/20/2007	05/16/2011	11/17/2011				
	36			✓	✓				
	37			✓	✓				
	38			✓	✓				
	39			✓	-				
	40				✓				
	41				✓				
	42				✓				
	43				✓				

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S36	1	"6047197".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 13:36
S37	1	notification bar with (additional (information or link or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 14:19
S38	1	(notification (bar or tab)) with (additional (information or link or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 14:23
S39	1	(notification (bar or tab)) same (additional (information or link or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 14:23
S40	3326	notification same (additional (information or link or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 14:23
S41	460	S40 and mobile device	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 14:24
S42	137	S41 and "455"/\$.ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/07 15:20
S43	3357	notification same (additional (information or link or icon))	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/17 16:50
S44	3	expand\$4 ((notification or alert or status or warning) (bar or tab or menu))	US-PGPUB;	ADJ	OFF	2011/11/17 16:52

			USPAT; USOCR; EPO; JPO			
S45	264	expand\$4 (notification or alert or status or warning)	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/17 16:54
S46	8	S45 and mobile device	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/17 16:54
S47	20	("20020054174" "20020054117" "20030142125" "20040192299" "20010020957" "6320602" "20040192339" "20010030667" "20050020316" "20050181803" "20050235224" "20040249846" "7565623" "20040155909" "20040041841" "20040155909" "20060107232" "7555723" "7600189" "20050229102" "20050227676").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO	ADJ	OFF	2011/11/17 18:14

11/20/2011 12:40:53 PM

C:\Users\psalomon\Documents\EAST\Workspaces\10983606-Dynamic Bar Oriented User Interface.wsp

**REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
 (Submitted Only via EFS-Web)**

Application Number	10983606	Filing Date	2004-11-09	Docket Number (if applicable)	16813-39US	Art Unit	2171
First Named Inventor	Sheryl Lee Lorraine Scott			Examiner Name	Phenuel S. Salomon		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
 Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

- Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.
- Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- Other _____
- Enclosed
- Amendment/Reply
- Information Disclosure Statement (IDS)
- Affidavit(s)/ Declaration(s)
- Other _____

MISCELLANEOUS

- Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
 (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)
- Other _____

FEEES

- The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
- The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 195113

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

- Patent Practitioner Signature
- Applicant Signature

Signature of Registered U.S. Patent Practitioner

Signature	/Christine Y. Wong/	Date (YYYY-MM-DD)	2011-10-25
Name	Christine Y. Wong	Registration Number	62935

This collection of information is required by 37 CFR 1.114. 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 1.11 and 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.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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.

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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 the Freedom of Information Act requires disclosure of these records.
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional) 16813-39US	
Application Number 10/983,606		Filed November 9, 2004	
For DYNAMIC BAR ORIENTED USER INTERFACE			
Art Unit 2171		Examiner Phenuel S. Salomon	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
		<u>Fee</u>	<u>Small Entity Fee</u>
<input type="checkbox"/>	One month (37 CFR 1.17(a)(1))	\$150	\$75
<input checked="" type="checkbox"/>	Two months (37 CFR 1.17(a)(2))	\$560	\$280
<input type="checkbox"/>	Three months (37 CFR 1.17(a)(3))	\$1270	\$635
<input type="checkbox"/>	Four months (37 CFR 1.17(a)(4))	\$1980	\$990
<input type="checkbox"/>	Five months (37 CFR 1.17(a)(5))	\$2690	\$1345
<input type="checkbox"/>	Applicant claims small entity status. See 37 CFR 1.27.		
<input type="checkbox"/>	A check in the amount of the fee is enclosed.		
<input type="checkbox"/>	Payment by credit card. Form PTO-2038 is attached.		
<input type="checkbox"/>	The Director has already been authorized to charge fees in this application to a Deposit Account.		
<input checked="" type="checkbox"/>	The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>195113</u> .		
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.			
I am the	<input type="checkbox"/>	applicant/inventor.	
	<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).	
	<input checked="" type="checkbox"/>	attorney or agent of record. Registration Number <u>62,935</u>	
	<input type="checkbox"/>	attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	
<u>/Christine Y. Wong/</u>		<u>October 25, 2011</u>	
Signature		Date	
<u>Christine Y. Wong</u>		<u>416-216-3539</u>	
Typed or printed name		Telephone Number	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input checked="" type="checkbox"/>	Total of <u>1</u> forms are submitted.		

This collection of information is required by 37 CFR 1.136(a). 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 1.11 and 1.14. This collection is estimated to take 6 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.**

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Electronic Patent Application Fee Transmittal

Application Number:	10983606			
Filing Date:	09-Nov-2004			
Title of Invention:	Dynamic bar oriented user interface			
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott			
Filer:	Christine Y. Wong/Joanne Keshen			
Attorney Docket Number:	16813-39US			
Filed as Large 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:				
Extension - 2 months with \$0 paid	1252	1	560	560

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	1801	1	930	930
Total in USD (\$)				1490

Electronic Acknowledgement Receipt

EFS ID:	11258680
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Joanne Keshen
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	25-OCT-2011
Filing Date:	09-NOV-2004
Time Stamp:	13:16:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1490
RAM confirmation Number	11525
Deposit Account	195113
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		10983606_Response_.pdf	468006 #625e631b8fa5a27dca87586de893914cc575db1	yes	13
Multipart Description/PDF files in .zip description					
	Document Description		Start		End
	Amendment Submitted/Entered with Filing of CPA/RCE		1		1
	Claims		2		4
	Applicant Arguments/Remarks Made in an Amendment		5		13
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	10983606_RCE_.pdf	697859 cf68171c9842789ff639516714bbb3696244b927	no	3
Warnings:					
Information:					
3	Extension of Time	10983606_Extension_of_Time.pdf	58213 152419a443274#9a8e12c71a398774e1ea0922#a	no	1
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	32160 b118e#305a19#493cb48bc0849c5a36#a8770008	no	2
Warnings:					
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Total Files Size (in bytes):			1256238		

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

Application No.: 10/983,606

Art Unit: 2171

Filed: 11/09/2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenuel S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 20988

MS AMENDMENT

Commissioner of Patents

P.O. Box 1450

Alexandria, V.A. 22313-1450

Dear Sir/Madam:

AMENDMENT

This is being filed in response to the Office Action of May 26, 2011. This is being filed concurrently with a Request for Continued Examination and a Petition for Extension of Time.

Amendments to the Claims begin on page 2.

Remarks/Arguments begin on page 5.

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

1-27. (Cancelled)

28. (Currently amended) A method for controlling an apparatus, ~~the apparatus~~ comprising a display, the method comprising:

~~displaying a dynamic bar on the display, the dynamic bar being displayed on a main screen of a graphical user interface for controlling the apparatus;~~

~~the dynamic bar~~ displaying dynamic preview information in the dynamic bar, the dynamic preview information being determined from information managed by a software application, the dynamic preview information being updated to reflect a change to the information managed by the software application;

expanding the dynamic bar to display an expanded dynamic bar in response to a first input, displaying the expanded dynamic bar comprising:

displaying additional dynamic preview information determined from the information managed by the software application, the additional dynamic preview information being different from the dynamic preview information displayed in the dynamic bar, and the additional dynamic preview information being updated to reflect the same or different change to the information managed by the software application; and

~~the dynamic bar further including~~ displaying a selectable link embedded in the additional dynamic preview information to invoke the software application; and

~~wherein,~~ activating the software application in response to [[an]] a second input invoking the link, ~~the software application is activated.~~

29. (Previously presented) The method of claim 28, further comprising displaying a status portion on the display.

30. (Previously presented) The method of claim 29, wherein displaying the status portion comprises displaying signal strength.

31. (Previously presented) The method of claim 28, wherein the apparatus comprises a cellular telephone.

32. (Cancelled)

33. (Cancelled)

34. (Previously presented) The method of claim 28, further comprising, following activation of the software application, displaying a user interface for the software application.

35. (Previously presented) The method of claim 28, further comprising displaying an application portion on the display, the application portion comprising at least one icon.

36. (Previously presented) The method of claim 35, wherein, in response to a user input invoking the icon, the software application is activated.

37. (Previously presented) The method of claim 28, wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email.

38. (Previously presented) The method of claim 28, wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party.

39. (Cancelled)

40. (New) The method of claim 28, wherein the software application is a communications application, wherein the dynamic preview information is determined from information

about one or more communications managed by the communications application, and wherein the additional dynamic preview information is also determined from the information about the one or more communications managed by the communications application.

41. (New) The method of claim 28, wherein the dynamic bar further comprises an icon representing the software application, and the dynamic preview information is displayed in association with the icon.

42. (New) The method of claim 28, wherein the expanded dynamic bar further comprises an icon representing the software application, and the additional dynamic preview information is displayed in association with the icon.

43. (New) The method of claim 42, wherein the second input comprises selecting the icon.

REMARKS/ARGUMENTS

Claims 28-31, 34-38 and 40-43 are pending. Claims 1-27, 32, 33 and 39 are cancelled without prejudice. Claims 28, 37 and 38 are currently amended. Claims 40-43 are new. No admission or representation is made by the present argument other than that explicitly provided herein.

Status of Related Applications

The following U.S., foreign, and international patent applications are or may be considered to be related to the application herein. Relevant documents pertaining to such cases are or have been provided in one or more separately-filed Information Disclosure Statements. The status of such applications is summarized in order to ensure that the Office is fully apprised of the current state thereof. In the event the Office has any questions about the identified cases, the Examiner is requested to call the Applicant's representative at the number below.

Serial No.	Country	Status
2,525,296	Canada	Allowed
ZL200510120010.X	China	Granted
1 659 766	Europe	Granted
1 659 766	Germany	Granted
1 659 766	Spain	Granted
1 659 766	France	Granted
1 659 766	United Kingdom	Granted
1 659 766	Italy	Granted
1089599	Hong Kong	Granted
06125884.4	Europe	Pending
2961/DEL/2005	India	Pending
122909	Singapore	Granted

Claim Amendments

Claim 28 has been amended for clarity. Support for these amendments may be found throughout the application as filed, for example in FIGS. 3-6, and in paragraphs [0044]-[0048].

New claims 40-43 are added. Support for claim 40 may be found throughout the application as filed, for example in paragraphs [0044]-[0048] and in FIGS. 3-6. Support for claims 41-43 may be found throughout the application as filed, for example in FIGS. 3-6, and in paragraphs [0048] and [0053].

Claim Rejections - 35 U.S.C. 112

Claims 32-33 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite. These claims have been cancelled and therefore this rejection is moot.

Claim Rejections - 35 U.S.C. 102

Claims 28-32 and 34-35 stand rejected under 35 U.S.C. 102(a) having regard to Ögren (EP 1434411 A1). Although the Examiner did not initially list claim 33 as being anticipated (claim 33 being initially rejected as being dependent upon an indefinite base claim), Ögren is cited against claim 33 on page 4 of the Office Action.

The Applicant submits that the present claims are patentable over Ögren at least because Ögren does not teach each and every element set forth in the claims and arranged as claimed. Ögren does not teach at least:

- a) “a **selectable link embedded in the additional dynamic preview information** to invoke the software application”
- b) “**activating the software application** in response to a second input invoking the link”
- c) “wherein the software application is a communications application” and the dynamic bar and the expanded dynamic bar display **two levels** of dynamic preview information “determined from **information about one or more communications** managed by the communications application”; and

d) “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”.

The Legal Test for Anticipation is Very Strict

A claim is anticipated if, and only if, each and every element set forth in the claim is either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). All elements of the claim must be shown in the single reference, *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In order to anticipate, a single prior art reference must not only disclose all elements of the claim, but the reference must also disclose those elements “as arranged in the claim.” *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 548 (Fed. Cir. 1983).

These requirements are not satisfied by Ögren, at least for the reasons outlined above. The Applicant notes that discussion of particular claim elements not disclosed by a reference is not intended as a concession that other elements are disclosed by that reference.

a) Ögren does not teach “a selectable link embedded in the additional dynamic preview information to invoke the software application”

Claim 28 describes the expanded dynamic bar including additional dynamic preview information and “a **selectable link embedded** in the additional dynamic preview information to invoke the software application”. This is shown, for example, in FIGS. 4 and 6 of the present application, and described in paragraphs [0046] and [0048]. A person skilled in the art would understand that a “selectable link” is a portion of the display, often text, that a user can select, for example by positioning a cursor over the link and actuating an input device, such as a mouse button or a clickable trackball switch. This selectable link is **embedded** in the additional dynamic preview information of the expanded dynamic bar. That is, the selectable link may be selected by selecting a portion

of the additional dynamic preview information, such as by moving a cursor over a portion of the dynamic preview information and actuating an input device.

Among other advantages, this provides a simple and intuitive user interface, in which the same input device, for example a mouse or a clickable trackball, can be used to move the cursor to the link and then select the link. Such a streamlined interface is particularly useful in the case of a handheld apparatus, such as a cellular telephone, since the input devices for the apparatus are limited in number and function, and it is often awkward for the user to access different input devices when the apparatus is being held in the user's hand.

Such simplicity is not found in Ögren. The Examiner has equated the view in FIG. 4 of Ögren with the claimed expanded dynamic bar. In this interface, there is no embedded selectable link in the displayed information. Rather, Ögren requires the user to scroll among the sections with a joystick or an arrow button in the keypad to highlight the desired section, then select a function by depressing one of the soft keys (see column 8, lines 44-49 and column 9, lines 17-20). Thus, the user is required to perform two separate actions using two separate input devices to perform an action.

There is no teaching in Ögren of any selectable link embedded in any displayed information for invoking an application. The method by which the interface in Ögren accepts user input is entirely different from that of the present claims, and does not function at all like the embedded selectable link of the present claims.

Therefore, the Applicant submits that Ögren does not teach at least the claimed element of "a selectable link embedded in the additional dynamic preview information to invoke the software application".

b) Ögren does not teach “activating the software application in response to a second input invoking the link”

As explained above, the present claims provide a selectable link embedded in the additional dynamic preview information that, when selected, activates the associated software application. This is not taught in Ögren.

Ögren does not teach any selectable link embedded in any displayed information, nor any input that invokes such a link. Therefore, the element of “activating the software application in response to a second input invoking the link” also is not found in Ögren.

c) Ögren does not teach “wherein the software application is a communications application” and the dynamic bar and the expanded dynamic bar display two levels of dynamic preview information “determined from information about one or more communications managed by the communications application”

Claim 40 is dependent on claim 28. In claim 40, the software application is a communications application, such as an email application, a SMS application or a telephone application. The dynamic bar and the expanded dynamic bar provide two levels of information, namely dynamic preview information “determined from information about one or more communications managed by the communications application” and further additional dynamic preview information, which is different from the dynamic preview information, and also “determined from information about one or more communications managed by the communications application”.

For example, as described in paragraphs [0044]-[0048], the unexpanded dynamic bar may display dynamic preview information determined from information about the communications managed by an email application, such as information about the number of unread emails, in the form of a count. Clicking or selecting the dynamic bar causes it to expand to the expanded dynamic bar, in which additional preview information about the communications managed by the email application, such as the sender and subject line of unread emails, may be displayed. This provides the user with at-a-glance

information at two levels of detail, helping the user to decide the level of interaction with the apparatus.

Thus, the user can see the count of unread emails in the dynamic bar, and make a decision whether he needs to check the unread emails. For example, if the count shows less than 10 unread emails, the user might not feel a need to check his email. When the user wants to check the emails, the user can expand the dynamic bar and see the sender and subject line of unread emails in the expanded dynamic bar. The user can then decide which, if any, of the unread emails to open up. For example, if none of the emails have an urgent subject line, the user might not feel a need to invoke the email application to view the entire email. This allows the user to minimize interaction with the apparatus, thereby improving convenience to the user and reducing the burden on the processing resources of the apparatus.

These two levels of information and associated advantages are not available in Ögren. In Ögren, the icons shown in the status bar are either present at all times or else are present whenever the associated application or function is activated or invoked (see column 6, line 57 to column 7, line 7, and column 8, lines 18-24 and FIG. 3). Thus, for the first icon 32 associated with making phone calls, the icon is shown whenever the phone application is active. Similarly, for the second icon 34 associated with SMS or email, the icon is shown whenever the SMS or email application is active. There is no information provided to the user about communications managed by any of these applications. Further information is only available if the user selects the view of FIG. 4 (see column 8, lines 32-37 and FIG. 4).

Therefore, Ögren does not teach “wherein the software application is a communications application” and the dynamic bar and the expanded dynamic bar display two levels of dynamic preview information “determined from information about one or more communications managed by the communications application”, as in claim 40.

d) Ögren does not teach “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”

Claim 34 is dependent on claim 28 and recites “following activation of the software application, displaying a user interface for the software application.” This follows from “activating the software application in response to a second input invoking the link” in claim 28. That is, when the user selects the link in the expanded dynamic bar, the software application is activated and the user interface for the software application is displayed.

On page 4 of the Office Action, the Examiner cites column 9, lines 11-28 of Ögren as teaching “displaying main menu of SMS/email application”. The Applicant respectfully notes that the cited passage does not teach displaying any main menu in response to a selection of a link. Firstly, there is no link in Ögren, as explained above. Further, pressing the soft key in Ögren does not display a main menu. Rather, as stated in column 9, lines 17-22, “If the user has selected an action by depressing the first soft navigation key 17, step 70...the action is performed, step 72, i.e. the call is being made and thereafter the display is made to show the original status bar again, step 56, after the call is ended.” Clearly, selecting an action does not result in the display of any main menu, but rather the action is directly carried out.

Instead, Ögren teaches in column 9, lines 25-28, that “If the user did not select an action, step 70...the control unit 20 connects the user to the main menu of the application in the menu system, step 74.” That is, it is by not selecting an action that the user is connected to a main menu. This is in fact opposite that what is being claimed, in which selecting the link results in display of a user interface for the application.

Therefore, Ögren does not teach “activating the software application in response to a second input invoking the link” and “following activation of the software application, displaying a user interface for the software application”, as required by claim 34, dependent on claim 28.

Summary

In view of the above, the Applicant submits that the present claims are all patentable over Ögren at least because Ögren does not teach each and every element set forth in the claims and arranged as claimed. Ögren does not teach at least:

- a) “a **selectable link embedded in the additional dynamic preview information** to invoke the software application”
- b) “**activating the software application** in response to a second input invoking the link”
- c) dynamic preview information that is displayed in the dynamic bar and further **additional dynamic preview information** that is displayed in the expanded dynamic bar; and
- d) “following activation of the software application, **displaying a user interface** for the software application.”

Conclusion

It is believed that the Applicant has responded to each ground of rejection raised, and that the claims, as presented, are in condition for immediate allowance. Favourable reconsideration and allowance of the application are respectfully requested. Should the Examiner have any questions in connection with the Applicant’s submissions, please contact the undersigned.

If any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

Dated: October 25, 2011

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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 10/983,606		Filing Date 11/09/2004		<input type="checkbox"/> To be Mailed		
APPLICATION AS FILED – PART I					OTHER THAN SMALL ENTITY						
		(Column 1)	(Column 2)		SMALL ENTITY <input type="checkbox"/>		OR				
FOR		NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)			RATE (\$)	FEE (\$)	
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>		N/A	N/A		N/A				N/A		
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>		N/A	N/A		N/A				N/A		
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>		N/A	N/A		N/A				N/A		
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>		minus 20 =		*	X \$ =		OR		X \$ =		
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>		minus 3 =		*	X \$ =				X \$ =		
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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 <small>(37 CFR 1.16(j))</small>											
* If the difference in column 1 is less than zero, enter "0" in column 2.											
APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY						
		(Column 1)	(Column 2)		SMALL ENTITY		OR			SMALL ENTITY	
AMENDMENT	10/25/2011	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)			RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 13	Minus	** 25	=	X \$ =		OR		X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	* 1	Minus	***3	=	X \$ =		OR		X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>										
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>										
		(Column 1)	(Column 2)		SMALL ENTITY		OR			SMALL ENTITY	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)			RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =		OR		X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =		OR		X \$ =	
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		(Column 1)	(Column 2)		SMALL ENTITY		OR			SMALL ENTITY	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)			RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =		OR		X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =		OR		X \$ =	
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Name/Print	Christine Y. Wong	Registration Number	62935

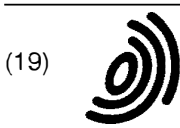
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under INID code 62.

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(54) Wireless communication device with markup language based man-machine interface

(57) A system, method, and software product provide a wireless communications device with a markup language based man-machine interface. The man-machine interface provides a user interface for the various telecommunications functionality of the wireless communication device, including dialing telephone numbers, answering telephone calls, creating messages, sending messages, receiving messages, establishing configuration settings, which is defined in markup language, such as HTML, and accessed through a browser program executed by the wireless communication device. This feature enables direct access to Internet and World Wide Web content, such as Web pages, to be directly integrated with telecommunication functions of the device, and allows Web content to be seamlessly integrated with other types of data, since all data presented to the user via the user interface is presented via markup language-based pages. The browser processes an extended form of HTML that provides new tabs and attributes that enhance the navigational, logical, and display capabilities of conventional HTML, and particularly adapt HTML to be displayed and used on wireless communication devices with small screen displays. The wireless communication device includes the browser, a set of portable components, and portability layer. The browser includes protocol handlers, which implement different protocols for accessing various functions of the wireless communication device, and content handlers, which implement various content display mecha-

nisms for fetching and outputting content on a screen display.

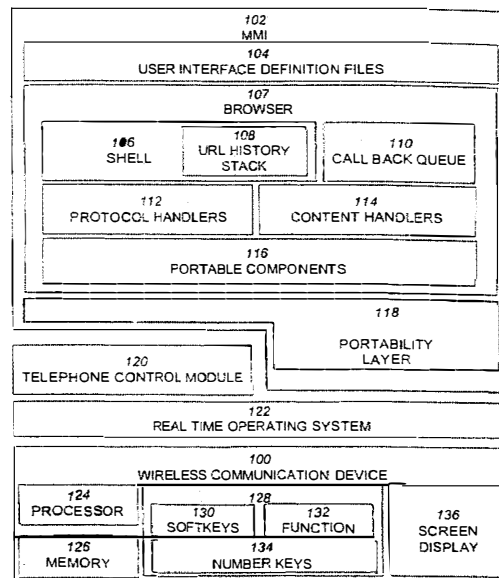


FIG. 1

DescriptionField of Invention

5 **[0001]** This invention relates to man-machine interfaces for wireless communication devices, and more particularly, to man-machine interfaces constructed from markup languages.

Background of the Invention

10 **[0002]** Wireless communication devices are becoming an increasingly prevalent for personal communication needs. These devices include, for example, cellular telephones, alphanumeric, pagers, "palmtop" computers and personal information managers (PIMS), and other small, primarily handheld communication and computing devices. Wireless communication devices have matured considerably in their features, and now support not only basic point-to-point communication functions like telephone calling, but more advanced communications functions, such as electronic mail, facsimile receipt and transmission, Internet access and browsing of the World Wide Web, and the like.

15 **[0003]** Generally, wireless communication devices have software that manage various handset functions and the telecommunications connection to the base station. The software that manages all the telephony functions is typically referred to as the telephone stack, and the software that manages the screen display and processes user inputs of key presses is referred to as the Man-Machine-Interface or "MMI." The MMI is the topmost, and most visible layer of the wireless communication device's software.

20 **[0004]** Because wireless communication devices have generally reached a very desirable and small form factor, the primary determinant of a successful device will likely be in its feature set and its ease of use. Thus, the ability to quickly design, test, and deliver wireless communication devices that are both easy to use, and have a rich set of features--attributes that are often opposed to one another--will be essential to successful product performance.

25 **[0005]** However, wireless communication devices present a variety of more challenging design and implementation issues that do not arise with larger processor-based systems, such as notebook and desktop computers, which may also have similar telecommunication features. These design challenges include the design of the user interface, the customization of the devices for particular service operators, the integration of Internet and World Wide Web access with other communication functionality, and the software development process.

30

User Interface Design Constraints

[0006] Unlike desktop and notebook computers, wireless communication devices have a form factor which requires a very small screen display size. Desktop computers typically have displays with at least 14" screen size, and resolution typically between 640x480 and 1024x768 pixels. In contrast, wireless communication devices typically have a screen size between 25x25mm and 80x120mm, and resolutions between 90x60 to 120x120 pixels, or about 3-8% of the size of the desktop or notebook screen. As a direct result, the user interface design of the wireless communication device must provide access to essentially the same features as desktop computers, such as electronic mail, facsimiles, and Web browsing, yet with only a fraction of the screen area for displaying text, images, icons, and the like. This problem of constructing the user interface to provide these features is particularly significant when handling Web based content, since conventional Web content, such as forms, assume the larger screen size of conventional desktop computers. Displaying such forms on the small screen of a wireless communication device results in jumbled and difficult to use content.

40 **[0007]** Another user interface limitation of wireless communication devices is the severely restricted set of inputs available to the user. Conventional desktop or notebook computers have cursor based pointing devices, such as computer mouse, trackballs, joysticks, and the like, and full keyboard. This enables navigation of Web content by clicking and dragging of scroll bars, clicking of hypertext links, and keyboard tabbing between fields of forms, such as HTML forms. Wireless communication devices have a very limited number of inputs, typically up and down keys, and one to three softkeys.

50 **[0008]** Accordingly, it is desirable to provide a software architecture for the MMI of a wireless communication device that enables the customization and use of user interface with Web content accounting for the limited screen resolution and input functionality of the wireless communication device.

Integration of Internet/Web Functional with Telephony

55

[0009] With the advent of the Internet and the World Wide Web, the highest performance wireless communication devices provide complete Internet access and the ability to directly browse the World Wide Web. Current devices provide Internet and World Wide Web access through a strictly modal interface, in which the user must select between

using the wireless communication device in a browser mode in its native telecommunications mode for making telephone calls, accessing a stored telephone book, sending facsimiles, and the like. In the "browser mode" the user cannot dial a telephone number to make a telephone; likewise in the telephony mode, the user cannot access a Web site. Thus, the user is unable to operate the wireless communication device in a seamless fashion that allows Web content to be downloaded and manipulated in context of the telephone functions, such as embedding an item of Web content that is obtained while browsing into the user's telephone book, or into an email message.

[0010] Accordingly, it is desirable to provide an MMI in which Internet and World Wide Web access features are seamlessly integrated with the telephony and other controls of the wireless communication device so that user can access any feature of the wireless communication device at any time.

Software Engineering of the MMI

[0011] Typically, an MMI is implemented as a module in a larger piece of code that manages the telephone control functions. The MMI is coded in the same computer language as the rest of the telephone control software. This makes the MMI difficult to modify without using the same programming skills and tools used to create the entire telephone control software. In other words, changing anything in the MMI requires the services of a skilled programmer familiar with the underlying telephony programming details and computer language. In addition, since the MMI is an integral part of the code for the telephone control software, implementing new changes in the MMI means compiling a new image of all the telephone control software, and testing the result to ensure that the new MMI features are compatible with all other code modules. In short, problems introduced by modifying the MMI software can potentially cause the handset to malfunction, disrupting service on the network to other users. Depending on the extent of the modifications, the change of any portion of the telephone control software can result in bugs, and/or the need for new type approval of the entire wireless communication device. Thus, it is desirable to provide a software architecture which separates the design and implementation of the MMI functionality from the implementation of the telephone control software, allowing the manufacturer to quickly and safely customize the MMI design to suit the needs of a particular customer

Customizing of the MMI for Service Operators: "Branding"

[0012] In the wireless communication device industry, the services operators, such as cellular service providers, are interested in attracting and retaining their customers by aggressively branding their wireless communication device products, and offering new telephony features and network services to the user. Important among these are services that add value to the user, such as voice mail, electronic messaging, Internet access, and the like as mentioned above. "Branding" is the embedding of insignia, logos, or other indicia into the MMI of the wireless communication device and its features that identifies it to the consumer as originating from the service operator.

[0013] The manufacturers of the wireless communication device, who typically provide only the basic hardware components, must therefore provide a way for the service operator to integrate these features and services into the wireless communication device by software programming, and provide a mechanism for branding the features. A key problem is that these services are necessarily different in their functionality and requirements, and the task of providing users with a current array of services and features a difficult one.

[0014] Wireless communication device manufacturers have traditionally attacked this problem by making a special version of the wireless communication device control software for each service operator selling that wireless communication device in conjunction with its own communication services. Each specific version of the wireless communication device contains the device manufacturer's branding, the operator's branding, and support for whatever features and services the service operator supports. Each of these versions becomes a different piece of software to be tested, maintained, and modified as new features or services are provided to the consumer. This significantly increases the software development expense and maintenance issues. Further, unless the wireless communication device manufacturer provides the service operator with the source code of the MMI and telephone control software, it requires the wireless communication device manufacturer to be directly involved in the branding and MMI design requirements of the service operator. Thus, it desirable to provide a software architecture for an MMI that allows the wireless communication device manufacturer to provide a single body of telephone control software to each service operator, and allows each service operator to independently, and without the assistance of the wireless communication device manufacturer, design, implement, and brand the MMI for the wireless communication device.

[0015] One system for accessing the world wide web through a wireless cellular phone is described in "Compact HTML for Small Information Appliances" (W3C NOTE 09-Feb-1998) submitted by Tomihisa Kamada of Access Co., Ltd. This document suggests that cellular phones may use "Compact HTML" for accessing the Internet. The "Compact HTML" proposed defines a subset of HTML for small information appliances such as smart phones, smart communicators, mobile PDAs, etc, and excludes features such as JPEG images, tables, frames and other functions which require high resolution screens or a large memory to implement.

SUMMARY OF THE INVENTION

5 **[0016]** According to a first embodiment of the present invention, there is provided a computer implemented method of data processing a page of data encoded in a markup language, the page including a reference to an embedded object, the method comprising: receiving a user selection of a displayed user interface element in the page, the element associated with a URL (Uniform Resource Locator) encoded within the page, the URL having a protocol component and a data component; invoking the embedded object, and providing the URL to the embedded object for processing; and responsive to the embedded object not processing the URL, fetching content specified by the data component, or executing a command specified by the data component.

10 **[0017]** According to a second embodiment of the present invention, there is provided a computer implemented method of data processing a page of data encoded in a markup language, the method comprising: receiving a user selection of a displayed user interface element in the page, the element associated with a command encoded within the page, the command having a protocol component and a data component; and invoking the embedded object, and providing the command to the embedded object for processing, the embedded object processing the command using an internally defined function.

15 **[0018]** In one aspect of the present invention, there is provided a wireless communication device comprising: a screen display; a memory; a processor coupled to the screen display and the memory; a plurality of user interface pages stored in the memory and encoded in a markup language, selected ones of the user interface pages providing access to telecommunication functions of the wireless communication device; and a markup language browser, executed by the processor, and communicatively coupled to the memory and the screen display, that: accesses either the stored user interface pages from the memory or remotely stored pages encoded in the markup language via a telecommunications network; decodes accessed pages to display user interface elements on the screen display; and effects a telecommunication function in response to a user input to a displayed user interface element.

20 **[0019]** In another aspect of the present invention, there is provided a wireless communication device, comprising: a shell for receiving a URL having a protocol component and a data component, the data specifying a command to be executed or content to be fetched, the shell providing the data component to a protocol handler according to the protocol component, and the fetched content to a content handler for processing; a plurality of protocol handlers, each protocol handler coupled to the shell to receive a URL and either fetch content specified by the data component and provide the fetched content to the shell, or execute the command specified by the data component; and a plurality of content handlers, each content handler couple to the shell to receive fetched content and process the fetched content to output the content to a screen display.

25 **[0020]** In one embodiment of the wireless communication device, the plurality of protocol handlers include: a telephone protocol handler that receives a URL from the shell and decodes the URL to activate a telephony function of the wireless communications device; a file protocol handler that receives a URL from the shell and decodes the URL to access data stored in a memory of the wireless communications device; a remote file protocol handler that receives a URL from the shell and fetches content addressed by the data component of the URL that is stored remotely from the wireless communication device; and the plurality of content handlers include: a markup language content handler that receives markup language content corresponding to a URL and displays the content on the screen display.

30 **[0021]** Preferably, the plurality of protocol handlers include: a message protocol handler that receives a URL from the shell and executes a command specified by the data to activate an alphanumeric message display or transmission function of the communication device; and a configuration protocol handler that receives a URL from the shell and establishes a configuration setting of the communications device according to the data component of the URL.

35 **[0022]** In another embodiment, the wireless communication device includes a screen display; a memory coupled to the screen display, and storing the shell, the protocol handlers, and the content handlers; and a processor coupled to the memory to execute the shell, the protocol handlers and content handlers.

40 **[0023]** In another aspect of the present invention, there is provided a computer-implemented method of operating a wireless communications device having a plurality of keys, comprising: receiving a first markup language page containing a tag defining an association between one of the keys and an action; receiving a user selection of the key; and effecting the action associated with the user selected key.

45 **[0024]** Preferably, the action is a URL having a data component, further comprising: responsive to the data component of the URL specifying a second page to be fetched, fetching the second page, and displaying the second page; and responsive to the data component of the URL specifying a telephony command of the wireless communication device, executing the telephony command.

50 **[0025]** In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: decoding a markup language page including a key tag specifying one of the plurality of keys and an action; storing an association between the specified key and the action; and responsive to receiving a user input of the specified key, effecting the action associated with the specified key.

[0026] Preferably, the key tag specifies a URL, and responsive to user input of the specified key, the browser fetches content associated with the URL and displays the content.

[0027] Preferably, the key tag specifies a label associated with the specified key, and the browser responsive to decoding the page, displays the label on a screen display.

5 [0028] In another aspect of the present invention, there is provided a computer implemented method for automatically displaying help data to a user, comprising: displaying a window having a title in a title bar area; incrementing a counter of an amount of time elapsed since a last user input; and responsive to the counter equaling or exceeding a threshold amount of time, replacing the title by scrolling first help data in the title bar area.

10 [0029] In one embodiment, the method further comprises responsive to a completion of scrolling the first help data: redisplaying the title in the title bar; resetting the counter; incrementing the counter of an amount of time elapsed since the last user input; and responsive to the counter equaling or exceeding the threshold amount, replacing the title bar by scrolling second help data in the title bar.

15 [0030] In another embodiment, the method further comprises the initial steps of receiving markup language page including a title tag defining the title and a help tag defining the first help data; storing the first help data; and displaying the markup language page in the window including displaying the title in the title bar.

20 [0031] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: decoding a markup language page including title tag defining a title of the page and a help tag specifying help data; storing the help data; displaying the page in a window; displaying the title in a title bar area of the window; responsive to an elapsed amount of time since a last user input exceeding a threshold, replacing the title in the title bar area by scrolling the stored help data in the title bar; and responsive to completion of the scrolling of the stored help data, redisplaying the title in the title bar area.

25 [0032] In another aspect of the present invention, there is provided a computer implemented method of operating a wireless communications device having at least one softkey, comprising: receiving a first user interface definition page defined in a markup language; parsing the first user interface definition page, and storing an association between one of the softkeys and menu of menu items, each menu item associated with either a URL or an action; responsive to receiving a user selection of the softkey, displaying the menu of menu items; responsive to user selection of a displayed menu item associated with an action, effecting the action; and responsive to user selection of a menu item associated with a URL, either fetching data specified by the URL or effecting a communication function of the wireless communication device specified by the URL.

30 [0033] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: retrieving a first user interface definition page defined in a markup language; parsing the first user interface definition page, and storing an association between one of the softkeys and menu of menu items, each menu item associated with either a URL or an action; responsive to receiving a user selection of the softkey, displaying the menu of menu items; responsive to user selection of a displayed menu item associated with an action, effecting the action; and responsive to user selection of a menu item associated with a URL, either fetching data specified by the URL or effecting a communication function of the wireless communication device specified by the URL.

40 [0034] In another aspect of the present invention, there is provided a computer implemented method for displaying a page of data, comprising: receiving a first markup language page containing a tag specifying a URL referencing a second markup language page; fetching the second markup language page according to the URL; replacing the tag with the second markup language page to form a combined markup language page; and displaying the combined markup language page.

45 [0035] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: receiving a first markup language page containing a template tag, the template tag specifying a URL referencing a second markup language page; fetching the second markup language page according to the URL; replacing the template tag with the second markup language page to form a combined markup language page; and displaying the combined markup language page.

50 [0036] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: receiving a first markup language page containing an escape sequence specifying a URL referencing a second markup language page; fetching the second markup language page according to the URL; replacing the escape sequence with the second markup language page to form a combined markup language page; and displaying the combined markup language page.

55 [0037] In another aspect of the present invention, there is provided a computer implemented method of displaying a page of configuration settings for a wireless communication device having a plurality of configurable features, the

method comprising: receiving a markup language page including an input type tag defining an input field for receiving a user input of a configuration setting, and a selection attribute equal to the value of an expression including a URL for a configurable feature, the selection attribute indicating whether the input field is preselected; fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; and displaying the page including the input field of the configuration setting according to the selection attribute as pre-selected or unselected according to the value of the expression.

[0038] In one embodiment, the expression has the form (selection attribute=[!]URL); and evaluating the expression using the fetched data to determine a value of the expression comprises: converting the data associated with the URL to an integer value; and evaluating the expression to obtain either a zero or non-zero value.

[0039] In another embodiment, the expression has the form (selection attribute = (URL[!]=string)), where string is an arbitrary alphanumeric string; and evaluating the expression using the fetched data to determine a value of the expression comprises: evaluating the expression by determining if the data associated with the URL is the same as the string to obtain either a zero or non-zero value.

[0040] In another aspect of the present invention, there is provided a browser program product for displaying a page of configuration settings for a wireless communication device having a plurality of configurable features, the browser controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device, the browser executing the operations of: receiving a markup language page including an input type tag defining an input field for receiving a user input of a configuration setting, and a selection attribute equal to the value of an expression including a URL, for a configurable feature, the selection attribute indicating whether the input field is preselected; fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; and displaying the page including the input field of the configuration setting according to the selection attribute as pre-selected or unselected according to the value of the expression.

[0041] In another aspect of the present invention, there is provided a computer implemented method for displaying a page of data, comprising: receiving a markup language page including a conditional tag having an expression including a URL and first markup language data to be conditionally displayed according to the value of the expression; fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; responsive to the value of the expression being true, displaying the markup language page with the first markup language data; and responsive to the value of the expression being false, displaying the markup language page without the first markup language data.

[0042] Preferably, the conditional tag includes second markup language data; and responsive to the value of the expression being false, displaying the markup language page without the first markup language comprises displaying the markup language page with the second markup language data.

[0043] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device and displaying a page of markup language data, the browser executing the operations of receiving a markup language page including a conditional tag having an expression including a URL and first markup language data to be displayed according to the value of the expression; fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; responsive to the value of the expression being true, displaying the markup language page with the first markup language data; and responsive to the value of the expression being false, displaying the markup language page without the first markup language data.

[0044] In another aspect of the present invention, there is provided a computer implemented method for navigating a markup language page containing a plurality of hyperlinks, the method comprising: receiving a markup language page including a plurality of hyperlinks; selecting a hyperlink of the markup language page as a current hyperlink; scrolling the markup language file in a direction on the screen display in response to a user input to display only a portion of the markup language file; determining whether a next hyperlink in the direction of scrolling is visible; responsive to the next hyperlink in the direction of scrolling being visible, making next hyperlink the current hyperlink; and responsive to the next hyperlink in the direction of scrolling not being visible, scrolling a portion of the markup language file.

[0045] Preferably, the markup language page has an attribute specifying a target name of a hyperlink included in the page; and selecting a hyperlink of the markup language page as a current hyperlink further comprises: comparing the target name specified in the attribute with names specified in each of the hyperlinks; and selecting as the current hyperlink the hyperlink having a name matching the target name.

[0046] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device and displaying a page of markup language data, the browser executing the operations of: receiving a markup language page including a plurality of hyperlinks; selecting a hyperlink of the markup language page as a current hyperlink; scrolling the markup language page in a direction on the screen display in response to a user input to display only a portion of the markup language page; determining whether a next hyperlink in the direction of scrolling is visible;

responsive to the next hyperlink in the direction of scrolling being visible, making next hyperlink the current hyperlink; and responsive to the next hyperlink in the direction of scrolling not being visible, scrolling a portion of the markup language page.

5 [0047] In another aspect of the present invention, there is provided a computer implemented method for automatically displaying advertising data to a user, comprising: receiving a markup language page containing a <MARQUEE> tag including displayable text in a header portion of the page, and a title; displaying the markup language page in a window having the title in a title bar area; incrementing a counter of an elapsed amount of time; and responsive to the counter equaling or exceeding a threshold amount of time, replacing the title by scrolling the displayable text included in the <MARQUEE> tag in the title bar area.

10 [0048] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device and displaying a page of markup language data, the browser executing the operations of: receiving a markup language page containing a <MARQUEE> tag including displayable text in a header portion of the page, and a title; displaying the markup language page in a window having the title in a title bar area; incrementing a counter of an elapsed amount of time; and responsive to the counter equaling or exceeding a threshold amount of time, replacing the title by scrolling the displayable text included in the <MARQUEE> tag in the title bar area.

15 [0049] In another aspect of the present invention, there is provided a computer-implemented method of operating a wireless communications device having a screen display, a plurality of keys, including at least one softkey, and a plurality of configurable features that can be established by configuration settings, the method comprising: a) receiving a first markup language page including at least one tag selected from a group of tags consisting of: a first tag defining an association between a key and an action; a second tag defining help data; a third tag defining an association between a softkey and a menu of menu items, each menu item associated with either a URL or an action; a fourth tag specifying a URL referencing a second markup language page; a fifth tag accompany an escape sequence specifying a URL referencing a third markup language page; a sixth tag defining an input field for receiving a user input of a configuration setting, and a selection attribute equal to the value of an expression including a URL for a configurable feature, the selection attribute indicating whether the input field is preselected; a seventh tag having an expression including a URL and first mark-up language data to be conditionally displayed according to the value of the expression; an eighth tag having attribute specifying a target name of at least one hyperlink included in the first markup language page; and a ninth, <MARQUEE> tag including displayable text in a header portion of the first markup language page; b) responsive to a tag in the first markup language being the first tag: receiving a user selection of the key; and effecting the action associated with the user selected key; c) responsive to a tag in the first markup language page being the second tag: storing the help data; displaying the first mark-up language page in a window; displaying a title of the first markup language page in a title bar area of the window; responsive to an elapsed amount of time since a last user input exceeding a threshold, replacing the title in the title bar area by scrolling the stored help data in the title bar; and responsive to completion of the scrolling of the stored help data, redisplaying the title in the title bar area; d) responsive to a tag in the first markup language page being the third tag: storing the association between the softkey and the menu of menu items; responsive to receiving a user selection of the softkey, displaying the menu of menu items; responsive to user selection of a displayed menu item associated with an action, effecting the action; and responsive to user selection of a menu item associated with a URL, either fetching data specified by the URL or effecting a communication function of the wireless communication device specified by the URL; e) responsive to a tag in the first markup language page being the fourth tag: fetching the second markup language page according to the URL; replacing the fourth tag with the second markup language page to form a combined markup language page; and displaying the combined markup language page; f) responsive to a tag in the first markup language page being the fifth tag: fetching the third markup language page according to the URL; replacing the escape sequence with the third markup language page to form a combined markup language page; and displaying the combined markup language page; g) responsive to a tag in the first markup language page being the sixth tag: fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; and displaying the first markup language page including the input field of the configuration setting according to the selection attribute as pre-selected or unselected according to the value of the expression;

30 h) responsive to a tag in the first markup language page being the seventh tag: fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; responsive to the value of the expression being true, displaying the first markup language page with the first markup language data; and responsive to the value of the expression being false, displaying the first markup language page without the first markup language data; i) responsive to a tag in the first markup language page being the eighth tag: selecting one of the hyperlinks of the first markup language page as a current hyperlink; scrolling the first markup language page in a direction on the screen display in response to a user input to display only a portion of the first markup language page; determining whether a next hyperlink in the direction of scrolling is visible; responsive to the next hyperlink in the direction of scrolling being visible, making next hyperlink the current hyperlink; and responsive to the next hyperlink in

the direction of scrolling not being visible, scrolling a portion of the first markup language page; and j) responsive to a tag in the first markup language page being the ninth tag: displaying the first markup language page in a window having a title of the first markup language page in a title bar area; incrementing a counter of an elapsed amount of time; and responsive to the counter equaling or exceeding a threshold amount of time, replacing the title by scrolling the displayable text included in the <MARQUEE> tag in the title bar area.

[0050] In another aspect of the present invention, there is provided a browser program product for controlling the operation of a wireless communication device by execution of the browser by a processor of the wireless communication device having a screen display, a plurality of keys, including at least one softkey, and a plurality of configurable features that can be established by configuration settings, the browser executing the operations of: a) receiving a first markup language page including at least one tag selected from a group of tags consisting of: a first tag defining an association between a key and an action; a second tag defining help data; a third tag defining an association between a softkey and a menu of menu items, each menu item associated with either a URL or an action; a fourth tag specifying a URL referencing a second markup language page; a fifth tag accompany an escape sequence specifying a URL referencing a third markup language page; a sixth tag defining an input field for receiving a user input of a configuration setting, and a selection attribute equal to the value of an expression including a URL for a configurable feature, the selection attribute indicating whether the input field is preselected; a seventh tag having an expression including a URL and first markup language data to be conditionally displayed according to the value of the expression; an eighth tag having attribute specifying a target name of at least one hyperlink included in the first markup language page; and a ninth, <MARQUEE> tag including displayable text in a header portion of the first markup language page; b) responsive to a tag in the first markup language page being the first tag: receiving a user selection of the key; and effecting the action associated with the user selected key; c) responsive to a tag in the first markup language page being the second tag: storing the help data; displaying the first markup language page in a window; displaying a title of the first markup language page in a title bar area of the window; responsive to an elapsed amount of time since a last user input exceeding a threshold, replacing the title in the title bar area by scrolling the stored help data in the title bar; and responsive to completion of the scrolling of the stored help data, redisplaying the title in the title bar area; d) responsive to a tag in the first markup language page being the third tag: storing the association between the softkey and the menu of menu items; responsive to receiving a user selection of the softkey, displaying the menu of menu items; responsive to user selection of a displayed menu item associated with an action, effecting the action; and responsive to user selection of a menu item associated with a URL, either fetching data specified by the URL or effecting a communication function of the wireless communication device specified by the URL; e) responsive to a tag in the first markup language page being the fourth tag: fetching the second markup language page according to the URL; replacing the fourth tag with the second markup language page to form a combined markup language page; and displaying the combined markup language page; f) responsive to a tag in the first markup language page being the fifth tag: fetching the third markup language page according to the URL; replacing the escape sequence with the third markup language page to form a combined markup language page; and displaying the combined markup language page; g) responsive to a tag in the first markup language page being the sixth tag: fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; and displaying the first markup language page including the input field of the configuration setting according to the selection attribute as pre-selected or unselected according to the value of the expression; h) responsive to a tag in the first markup language page being the seventh tag: fetching data associated with the URL; evaluating the expression using the fetched data to determine a value of the expression; responsive to the value of the expression being true, displaying the first markup language page with the first markup language data; and responsive to the value of the expression being false, displaying the first markup language page without the first markup language data; i) responsive to a tag in the first markup language page being the eighth tag: selecting one of the hyperlinks of the first markup language page as a current hyperlink; scrolling the first markup language page in a direction on the screen display in response to a user input to display only a portion of the first markup language page; determining whether a next hyperlink in the direction of scrolling is visible; responsive to the next hyperlink in the direction of scrolling being visible, making next hyperlink the current hyperlink; and responsive to the next hyperlink in the direction of scrolling not being visible, scrolling a portion of the first markup language page; and j) responsive to a tag in the first markup language page being the ninth tag: displaying the first markup language page in a window having a title of the first markup language page in a title bar area; incrementing a counter of an elapsed amount of time; and responsive to the counter equaling or exceeding a threshold amount of time, replacing the title by scrolling the displayable text included in the <MARQUEE> tag in the title bar area.

[0051] In another aspect of the present invention, there is provided a computer implemented method of navigating a page of data including at least one selectable hyperlink, in a computer system including a screen display but not including an independent cursor controlled by a peripheral pointing device; the method comprising: scrolling the page in a direction on the screen display in response to a user input to display only a portion of the page; and automatically and iteratively assigning a next visible hyperlink in the direction of the scrolling and in the displayed portion of the page to a user selectable key.

5 **[0052]** In another aspect of the present invention, there is provided a computer implemented method of navigating a page of data including a plurality of form fields, each form field having a type, in a computer system including a screen display and a keypad having a plurality of keys, but not including an independent cursor controlled by a peripheral pointing device; the method comprising: scrolling the page in a direction on the screen display in response to a user input to display only a portion of the data file; determining whether a next form field in the direction of scrolling is visible; responsive to the next form field in the direction of scrolling being visible, making next form field a current form field for receiving a user input; and assigning an action for manipulating the current form field to a key of the key pad according to the type of the current form field.

10 **[0053]** In another aspect of the present invention, there is provided a method of configuring a wireless communication device having a display screen and a plurality of user selectable keys, the method comprising: receiving a data file including content and markup language tags defining an arrangement of the content on the display screen, a portion of the content associated with a URL; responsive to the markup language tags, displaying the portion of the content associated with the URL on the display screen in a visually distinguished manner; responsive to the markup language tags, assigning the URL associated with the visually distinguished content to one of the user selectable keys; receiving a user selection of the assigned user selected key; and accessing a data file or function associated with the URL assigned to the user selected key.

15 **[0054]** In another aspect of the present invention, there is provided a computer implemented method of processing data in a form in a stateless system having a server and a client device receiving input data, the method comprising: receiving on the client device a first markup language page including a first part of a form having at least one input field for receiving user input of data; receiving a first user input of first data into the first part of the form on the client device; receiving a second markup language page on the client device including a second part of the form while storing locally on the client the received first data; receiving a second user input of second data into the second part of the form on the client device; combining the stored first data and the second data into a URL; and submitting the URL to the server for processing.

20 **[0055]** In another aspect of the present invention, there is provided a wireless communication device, comprising: a screen display; a plurality of keys; a plurality of configurable features; a processor coupled to the screen display and the keys; a shell executed by the processor for receiving a URL having a protocol component and a data component, the data specifying a command to be executed or content to be fetched, the shell providing the data component to a protocol handler according to the protocol component, and the fetched content to a content handler for processing; a plurality of protocol handlers, each protocol handler executed by the processor and coupled to receive a URL from the shell and either fetch content specified by the data component and provide the fetched content to the shell, or execute the command specified by the data component; and a markup language content handler executed by the processor and coupled to the shell that receives markup language content corresponding to a URL and displays the content on the screen display, the markup language handler decoding markup language tags from a group comprising: a key tag defining an action for one of the plurality of keys; a help tag defining help text data to be periodically displayed on the screen display; a keymenu tag defining a menu item for a menu associated with a key; a tag specifying a second markup language page different from a first markup language page for including the data of the second markup language page in the first markup language page; an input type tag defining an input field for receiving a user input of a configuration setting, and a selection attribute equal to the value of an expression including a URL for a configurable feature, the selection attribute indicating whether the input field is preselected; and a conditional tag having an expression including a URL and first markup language data to be conditionally displayed according to the value of the expression.

25 **[0056]** In another aspect of the present invention, there is provided a wireless communication device comprising: a screen display; a memory; a processor coupled to the screen display and the memory; a plurality of user interface pages stored in the memory and encoded in a markup language, selected ones of the user interface pages providing access to telecommunication functions of the wireless communication device; and browser means executed by the processor, and communicatively coupled to the memory and the screen display, and including: means for accessing either the stored user interface pages from the memory or remotely stored pages encoded in the markup language via a telecommunications network; means for decoding accessed pages to display user interface elements on the screen display; and means for effecting a telecommunication function in response to a user input to a displayed user interface element.

30 **[0057]** In another aspect of the present invention, there is provided an apparatus, comprising: first means for receiving a URL having a protocol component and a data component, the data specifying a command to be executed or content to be fetched, the shell providing the data component to a protocol handler according to the protocol component, and the fetched content to a content handler for processing; a plurality of protocol handler means, each protocol handler means coupled to the first receiving means to receive a URL and either fetch content specified by the data component and provide the fetched content to the shell, or execute the command specified by the data component; and a plurality of content handler means, each content handler means coupled to the first means to receive fetched content and

process the fetched content to output the content to a screen display.

[0058] The present invention overcomes the various limitations of conventional wireless communication devices by providing a wireless communication device with an MMI that is based on a markup language. A markup language is a computer programming language that allows the content of a page or a screen display to be defined by the inclusion of predefined symbols in the content itself indicating the logical components of the content, instructions for the layout of the content on the page or screen, or other data which can be interpreted by some automatic system responsible for displaying, manipulating or modifying the content.

[0059] In one aspect the present invention provides a wireless communication device including a user interface defined in a markup language. To effect this, the present invention includes a markup language browser that it uses to provide both telephony control of the wireless communication device, in response to user selection of telephony functions in the user interface and Internet access via the HyperText Transport Protocol (HTTP), in response to user selection of data items associated with content located on the Internet.

[0060] In one embodiment, the telecommunication control and other functions of the wireless communication device are defined in various user interface pages written in a markup language. Each control function is associated with, or activated by a Uniform Resource Locator (URL). A URL is a data item specifying a protocol for obtaining a data item, and which data item should be fetched or manipulated. The user interface pages are stored in a local memory of the wireless communication device, and fetched by the browser, which decodes them and displays the appropriate user interface elements. The browser can also modelessly fetch markup language pages or other content that is stored remotely, by accessing such pages via a telecommunications network such as the World Wide Web, and likewise decode and display these remotely accessed pages. When a user interface page is displayed, user selection of a control function passes a URL or command data to the browser. The browser effects a telecommunication function in response the received URL or command.

[0061] The browser preferably includes a number of protocol handlers, including a telephony protocol handler, a local file protocol handler, and an remote file protocol handler, and a number of content handlers, including a markup language handler. The telephony protocol handler decodes URLs for telephony control features, such as telephone dialing and answering, activates underlying functions of telephony control software controlling the hardware of the wireless communication device. Any content of the URL which is needed to display the telephony controls is provided to the markup language content handler which parses the content and displays it on a screen display. The markup language content handler is generally responsible for displaying any fetched markup language pages, including all user interface pages, and for receiving user inputs to these pages via forms and other input means.

[0062] The markup language handler generally receives content from two sources, the local file protocol handler and the remote file protocol handler. The remote file protocol handler decodes URLs for accessing content on the World Wide Web, and provides the fetched content, such as a Web page, form, applet, or the like to the markup language content handler for outputting the content to the screen display of the wireless communication device. One suitable remote file protocol handler implements HTTP. The local file protocol handler decodes URLs for accessing local user interface files and provides such content to the markup language content handler. In a preferred embodiment of the MMI, the user interface is defined in HyperText Markup Language, or "HTML," and the browser includes a HTML content handler that displays both Web content and user interface featured defined in HTML.

[0063] The use of a markup language to define the MMI of a wireless communication device provides numerous advantages over conventional MMI software architectures. First, the use of a markup language allows for complete and seamless integration of Internet and World Wide Web access into the telephony and other features of the wireless communication device. Since the MMI uses a markup language such as HTML to display all the functional screens, the World Wide Web content (which is also written in HTML) has the same appearance as other features of the wireless communication device. More particularly, the pages of the MMI are accessed using URLs, just as Web content is similarly accessed. When displaying a functional page the wireless communication device accesses a local URL; when displaying Web content, the wireless communication device automatically initiates a connection with a Web server to obtain the Web content. The markup language based MMI thus allows for a modeless user interface that enables the user to access the Internet and the World Wide Web at any time, without having to switch the wireless communication device between telephony and "browser" modes, as in conventional devices.

[0064] As a further benefit of the markup language based MMI, Web content such as Web pages, forms, and the like, from the World Wide Web can be accessed and incorporated directly into telephony, messaging, and other non-Internet based features of the wireless communication device. For example, in a preferred embodiment, a wireless communication device has a telephone book of stored telephone numbers and names. Conventionally, the user would have to manually key these entries in using the keypad of the wireless communication device. In a wireless communication device using an MMI in accordance with the present invention, the user could add an entry to the telephone book simply by accessing a telephone directory on the World Wide Web, which can contain HTML that allows the user to easily store the information directly into the telephone book.

[0065] The use of a markup language also reduces the complexity of the software engineering process for creating

the MMI for a particular wireless communication device. First, since the MMI of the present invention is based on a markup language, only a very limited amount of programming skill is needed to design a fully featured user interface, unlike a conventional MMI which requires a programmer skilled in C or other low level language programming. Editing and modifying the user interface requires only simple markup language and image editing tools, not a complete application programming environment. Second, using the markup language based MMI of the present invention enables any of the features the MMI to be modified, without having to re-compile the entire telephone control software, and re-test and certify the entire package. Because the MMI is separate from the underlying telephone control and air interface stack, only user interface pages that are individually changed or added need to be tested. This reduces the time to market, and increases the ease of designing, maintaining, and modifying the MMI as new features and services become available. Reduction of the time to create and test changes in the user interfaces also means that more different versions can be prototyped in less time than with a conventional MMI, thereby facilitating design exploration for the best user interface design for a given set of user requirements and features.

[0066] The ease with which the user interface of a MMI can be created and modified, and the reduction of time to market further enables the service operator to quickly generate wireless communication devices targeted at specific customer segments, without requiring the device manufacturer to create specific product software images for each and every target customer segment. For example, the service operator may use the same wireless communication device hardware and telephony control software with different user interfaces designed for executives, teen-agers and seniors, each of which may have different needs, and abilities to use the features of the wireless communication device.

[0067] For example, using a markup language to define the pages of the user interface allows any of the following items to be changed on any page: title bar presence and text; all informational text; option list text; links to all subsequent screens; soft key assignments; permanent scrolling banner messages; banner advertising; and help text.

[0068] The use of markup language based MMI also provides advantages in the branding of the wireless communication device for different service operators. Since the user interface is defined in markup language pages, service operator-specific logos, artwork, and text can be easily added and changed by individual service operators. Thus, the wireless communication device can provide the same wireless communication device hardware and telephone control software to a number of service operators, each of whom can quickly and easily brand the wireless communication device with their own distinctive user interfaces, without requiring the wireless communication device manufacturer to implement, test, and ship different user interfaces to each operator, as is conventional.

[0069] In providing a wireless communication device with a markup language based MMI, the present invention enhances the standard HTML with a number of extensions that make it particularly useful for working with wireless communication devices. Standard HTML assumes the presence of a conventional computer with keyboard, pointing device, and full size display screen, features which are not present in most wireless communication devices. The most notable deficiencies of HTML include:

- Form elements (*e.g.*, checkboxes, radio buttons) are awkward to navigate without a mouse.
- Forms as they exist in content today tend to be too large for the user to maintain some context as she is filling them in on a small screen. If the form is divided into n forms, then the user's input is sent between the client and the server and back to the client $n-1$ times, wasting bandwidth. In addition, with a series of smaller forms, terminating the transaction could be tortuous as the user hits the back key for each form in the series.
- Hyperlinks are awkward to follow without a mouse to select them and a separate scrollbar for scrolling the content of a page. On a device with only an Up key and a Down key to both select which hyperlink to follow and to scroll the display, fixed assignment of either scrolling or selecting to the Up and Down keys is insufficient to provide the needed navigational abilities.

[0070] As a user interface definition language, HTML lacks a number of key features:

- The ability to specify actions for the soft function keys, or indeed for any key on the device.
- The ability to define a pop-up menu of choices.
- The ability to display or alter the data you'd like to store on the device, such as names and phone numbers.
- The ability to design a screen as a template without writing C code to fill in the blanks.
- The ability to allow content arriving over the air to extend or customize the interface the device presents to the user.

[0071] The present invention provides extensions to the HTML language which facilitate the design of multi-part forms, the use of a limited number of keys to both navigate Web pages and select hypertext links, define actions for any key (keypad or softkey) of the wireless communication device using URLs, create menus of options for softkeys, and conditional inclusion of text, formatting, and user interface gadgets.

[0072] More particularly, the present invention provides a "key" tag that allows the assignment of specific functions or actions to any key of a key-pad, including binding a menu to a key. A "keymenu" tag allows specification of the menu

items to be included in a menu bound to a key. A "template" tag and an "include" tag allow for the substitution or insertion of external HTML or other data directly into the HTML of a page. A "help" tag allows for the definition of help strings that are automatically scrolled across the title bar of page after a set time period. A conditional tag allows for the testing of expressions to conditionally display HTML data within a page, for example based on variables or configuration settings of the device. A "next" method for forms allows for maintaining state of a multi-part form without having to repeatedly transmit hidden data between a client and server to maintain the state. Improved navigational methods allow for the Up and Down keys of a wireless communication device to control both scrolling of a page, and selection of user interface gadgets and hyperlinks, in the absence of separate Tab and Enter keys and scroll bars.

BRIEF DESCRIPTION OF THE DRAWINGS

[0073]

Fig. 1 is an illustration of the top level software and system architecture of a wireless communication device in accordance with the present invention.

Fig. 2 is an illustration of a sample user interface page for a wireless communication device in accordance with the present invention.

Fig. 3 is an illustration of the detailed software architecture of a man-machine interface of a wireless communication device in accordance with the present invention.

Fig. 4 is an illustration of the URL history stack.

Fig. 5 is a flowchart of the operation of the shell in handling received URLs.

Fig. 6 is a flowchart of the operation of the HTMLp content handler in processing a string input associated with a user interface gadget

Fig. 7 is an example HTMLp file and page showing a key menu using the <KEY> and <KEYMENU> tags.

Fig. 8 is an example HTMLp file and page showing a help text scrolling banner with the <HELP> tag.

Fig. 9 is an example HTMLp file and page showing the use of the <TEMPLATE> tag for template files.

Fig. 10 is an example HTMLp file and page for editing a phone book.

Fig. 11 is another example HTMLp file and page for editing a phone book.

Fig. 12 is an example HTMLp file and page showing the use of expressions for evaluating the CHECKED and SELECTED attributes.

Fig. 13 is an example HTMLp file and page showing included HTML with the <INC> tag.

Fig. 14 is an example HTMLp file and page using the PHONENUM and PHONENAME attributes for the <INPUT> tag.

Fig. 15 is a flowchart of the process for handling an input key by the HTMLp content handler.

Fig. 16 is an example conventional HTML file and page for a complex form.

Figs. 17a-17b are example HTML files and pages showing an conventional multiple form approach using HIDDEN input data.

Figs. 18a-18b are example HTMLp files and pages showing a multi-part form used with the NEXT method.

Fig. 19 is an example HTMLp file and page showing the default creation of a menu of hyperlinks without the use of the <LINKMENU> tag.

Fig. 20 is an example HTMLp file and page showing the use of the <LINKMENU> tag.

Figs. 21 a-21 e illustrate various user interface pages for dialing a telephone number.

Figs. 22a-22c illustrate various user interface pages for handling active calls.

Fig. 23 is an example HTMLp file and page showing the use of the "extra" protocol.

Fig. 24 is a table of icons and images used with the builtin protocol.

Fig. 25 is an example HTMLp file and page showing the use of the <DIAL> tag.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A. SYSTEM AND SOFTWARE ARCHITECTURE

[0074] Referring now to Fig. 1, there is shown an illustration of the system and software architecture of a wireless communication device **100** using the markup language based MMI **102** in accordance with the present invention. The hardware of the wireless communication device **100** includes a processor **124**, memory **126**, screen display **136**, and keypad **128**. Memory **126** includes ROM, RAM, and a flash memory for long term storage of data. A suitable wireless communication device **100** for providing the hardware features is a Nokia 6100™ manufactured by Nokia Telecommunications, Inc.

[0075] The wireless communication device **100** stores in the memory **126** and executes a conventional real time

operating system **122**, which includes modules for managing power, memory, threads (communication connections), keypad inputs, and timer activities. The real time operating system **122** provides a standard application programming interface to allow higher level components of the MMI **102** to request functionality of the wireless communication device **100**, and to send and receive data.

[0076] Also stored in the memory **126** and in communication with the real time operating system **122** is telephony control module **120** that provides the primary telephone controls, including making and receiving telephone calls, managing multiple telephone lines (if appropriate), management of text messaging (if appropriate), monitoring of telephone signals, and other basic telephony functions. The telephony control module **120** includes a conventional telephone protocol stack that implements an air-interface protocol. The telephony control module **120** provides an application programming interface to the MMI **102** to access these features. The telephony control module **120** and the real time operating system **122** are typically provided by the manufacturer of the wireless communication device **100**, and their particular implementation is not material to the invention.

[0077] The screen display **136** is a bitmapped LCD or similar display device. The screen display **136** is typically of very limited resolution, for example about 90x60 to 120x120 pixels (at about .28mm dot pitch) as would be appropriate for a compact, portable, hand-held electronic device. It is anticipated that advances in display technology will result in screen displays **136** of significantly higher resolution, but even so, the ergonomic and form factor requirements of wireless communication devices will result in screen displays that are relatively small (*e.g.*, between 25x25mm and 80x120mm) as compared to the screen displays of notebook and desktop computers, and as a result will not display content designed for such larger screen displays in the exactly the same manner. The present invention is adapted to increase the ease of use of such screen displays when displaying Web content.

[0078] The wireless communication device **100** has a keypad **128** that includes a number of fixed function keys **132** for accessing defined functions of the wireless communication device **100** (*e.g.*, "Send," "End," and "Power"), number keys **134** for entering digits (and if suitably encoded, for entering other characters), and programmable softkeys **130** which have variable functionality that changes depending on the particular screen display of the user interface **104** being shown.

[0079] The wireless communication device **100** stores in its memory **126** and executes an instance of an MMI **102** made in accordance with the present invention. This MMI **102** includes a set of user interface definition files **104**, a browser **107**, a set of portable components **116**, and a portability layer **118**. The browser **107** provides the primary user interface mechanism to the user, allowing access to both telecommunication functions, and Internet/World Wide Web access. The portable components **116** provide a set of graphics primitives, file store functions, and localization features that allow the browser to be used on a variety of wireless communication devices **100**. The portability layer **118** provides an interface for the browser **107** and portable components **116** to the real time operating system **122** and the telephone control module **120**.

[0080] The MMI **102** executes as a single-threaded application, and is generally designed to run on any real time operating system **122**, telephone control module **120**, and wireless communication device **100** that provides sufficient ROM, RAM, and flash memory, a screen display **136**, and basic services.

B. THE BROWSER

[0081] The browser **107** provides the basic user interface of the wireless communication device **100** and is responsible for displaying content on the screen display **136**, as defined by the user interface definition files **104**, and as may be retrieved from remote sites, such as Web content accessed via a communication link to a remote Web site. The user interface definition files **104** are a set of content and code files written in a markup language such as HTML, or the preferred variant described below, HTMLp, and may include executable embedded code objects. The present invention is not limited to HTML, but also operates with, and may extend any other markup language, such as SGML, or XML, or other extended non-standard versions of HTML, such as the Netscape Communications' set of HTML extensions.

[0082] Since each service operator providing a wireless communication device using the MMI **102** of the present invention will design their own specific user interface, typically modifying some portion of the user interface definition files **104** provided by the device manufacturer, the particular content of the user interface definition files **104** is variable, and expected to be different from any of the illustrative user interface screens described herein. In addition, it is expected that the MMI **102** may be provided to a service operator without any user interface definition files **104** at all, leaving the service operator to create these files as desired; thus the user interface definition files **104**, while used by the MMI **102** of the present invention, themselves are not an essential part of the invention. As the user interface definition files **104** define the user interface presented to the user, they allow the service operator to easily and quickly 'brand' the wireless communication device **100**, by simple editing of the user interface definition files **104**. This branding requires no recompilation of the underlying browser **107**, portability layer **118**, or portable components **116**, and thereby makes customization very easy and cost effective. It also means that the service operator can customize and brand the user

interface using simple markup language editing tools, without necessitating the programming skill and environment of conventional code development.

[0083] Following the terminology of the World Wide Web, an individual user interface screen is herein called a "page." Referring now to Fig. 2, there is shown a basic layout of a page **135** displayed on the screen display **136** by the browser **107**. Each page **135** generally has four basic areas. A status bar **200** that is preferably always present and displays items such as signal strength **202** and battery strength **204**, message-waiting indicator **206**. A title bar **210** displays the name for a particular screen, if so defined. A status message area **212** may be used to present status messages particular to the current content, such as a telephone number being called or answered. A content area **214** is used to display the particular content of a user interface page, for example, text of a message, phone book entries, and the like. Along the bottom (though other locations may be used) are softkey labels **216**, which are dynamically updated according to key definitions provided in the user interface definition files **104**. A scroll arrow **215** indicates the current direction in which the user is scrolling (either up or down). In the content area **214**, a focus and selection icon **220** may optionally be used to indicate the particular item or line of content that has the focus, i.e. is the current user interface gadget or input field. A mode indicator **218** indicates the mode for text entry, whether alpha, numeric, or a combined alphanumeric mode.

[0084] Any of the pages or content displayed on the screen display **136** may be obtained locally from the user interface definition files **104** or remotely from the Internet or World Wide Web. Examples of local content include a telephone book, received text messages, or messages being created for sending, configuration settings for the wireless communication device, and the like. One of the features of the present invention is that whether the content is locally or remotely fetched is largely hidden from the user, except for the delay (if any) in obtaining it. This feature enhances the presentation of seamlessly integrated Internet and World Wide Web access with telecommunication functions.

[0085] Most of the features of the user interface are activated by means of a URL (Universal Resource Locator). Nominally, a URL is a means of identifying a piece of data, which data may be predefined, or may be generated on demand based on arguments that are encoded in the URL. A URL is a string that takes the following form:

protocol:data-identifier [?arguments]

[0086] The *protocol* component specifies a communication protocol that should be used to retrieve the data. For content located on the World Wide Web, the protocol is usually "http" for the HyperText Transport Protocol; local content of the user interface definition files **104** is retrieved with the "file" protocol to obtain data in a local file system stored in the memory **126**. The present invention provides a number of additional new protocols that control the operation and configuration of the wireless communication device **100**.

[0087] The *data-identifier* component is a specification of the desired content to be fetched. Currently, for content on the World Wide Web, the data-identifier normally takes the form of two '/' characters, followed by a machine name, another '/' character, and a path of some sort.

[0088] The *arguments*, if present, are separated from the *data-identifier* by a '?' and take the form of pairs made of an argument name and its value. An '=' character separates an argument name from its value. Multiple arguments are separated by an '&' character between the value of one and the name of the next.

[0089] Architecturally, the browser **107** includes three major pieces: shell **106**, protocol handlers **112**, and content handlers **114**. Fig. 3 illustrates the detailed software architecture of the MMI **102**, including browser **107**.

[0090] The shell **106** is responsible for maintaining the universal parts of the screen display **136**, for processing URLs by passing portions of a URL to the correct protocol **112** and content handler **114** for the URL, for maintaining a history stack **108** of URLs, and for routing user input. User input routing involves passing user input keystrokes to the appropriate content handler **114** or other target entity for processing, such as entering input numbers and letters into a form, or dialing a telephone number.

[0091] Protocol handlers **112** receive a URL from the shell **106**, and are responsible for fetching the data corresponding to the URL, and instructing the shell **106** which content handler **114** should receive the data. In some cases, the URL is a command to control features of the wireless communication device **100**, which the protocol handler **112** is responsible for executing.

[0092] Content handlers **114** are responsible for displaying fetched URL data and interacting with the user. At least one content handler **114** is always the current content handler **114**. It is from the current content handler that any new URL is provided back to the shell **106**, and that receives by default any keystrokes that are not delivered to any other input target. The shell **106** is further described below with respect to Figs. 4-5.

1. Overview of the Protocol Handlers

[0093] The protocol handlers **112** serve two functions in the MMI **102**: First, they fetch data and determine its type; the determination of type in turn determines which content handler is used to display the data. Second, they perform a command in the wireless communication device **100**, by accessing an embedded object or the appropriate API of the real time operating system **122**, or telephone control module **120**. A protocol handler **112** may return the results of

that command, causing a different screen to display, or may return no results. The protocol handlers **112** of a preferred embodiment include the following.

[0094] Builtin protocol handler **112a** provides access to icons that are built in to the wireless communication device **100**.

[0095] Config protocol handler **112b** gets and sets configuration settings of the wireless communication device **100**.

[0096] Extra protocol handler **112c** provides access to arguments and form data that are passed from an embedded object in a page, or from previously accessed pages. This protocol allows data to be passed directly into a page, without requiring the page to be dynamically generated.

[0097] File protocol handler **112d** provides access to local content in ROM and in the flash file systems. Generally, this content is user interface definition files **104** that define the pages of the user interface. The file protocol handler **112d** may be implemented by those of skill in the art according to a suitable specification for file system access, such as the POSIX specification.

[0098] HTTP handler **112e** is a remote file protocol handler that provides accesses to remote content stored on the World-Wide Web, using the standard HyperText Transfer Protocol. The HTTP handler **112e** may be implemented by those of skill in the art according to the specification defined in RFC 2068: Hypertext Transport Protocol - HTTP/1.1. Other remote file access specifications may also be used to implement a remote file protocol handler.

[0099] Message protocol handler **112f** activates various messaging functions, including sending a message, deleting a stored message, reading new or stored messages, or locking a stored message.

[0100] Telephone protocol handler **112g** activates various telephone functions, including making a call, answering an incoming call, displaying the phone book, editing a phone book entry, and creating a new phone book entry.

[0101] Config protocol handler **112b** (shown as part of the portability layer **118**) retrieves and sets various configuration settings for the wireless communication device **100**.

a) Basic Protocol Handler API

[0102] Generally, a protocol handler **112** is similar to a device driver, in that it has a well-defined set of functions it can perform, and each protocol handler **112**, though supporting the same functions, supports those functions in its own manner. Each protocol handler **112** implements three functions:

GetURL: Given a URL and a security level of the page containing the URL to be fetched, returns the data associated with the URL, and the privilege level of that data. If the URL is actually a command, rather than a reference to data, no data need be returned.

BuildURL: Given a full URL and a partial URL (without the *protocol*: element), returns a full URL. This is used primarily for references inside HTML pages.

PutURL: Given a URL, a stream of data to be stored under the URL, and the security level of the page containing a "put" method, stores the data if the security level is high enough to allow it.

The various embedded object and command URLs supported by the protocol handlers **112** are described below.

2. Overview of the Content Handlers

[0103] Content handlers **114** are responsible for decoding the content data of a page corresponding to a fetched URL and displaying the content, or otherwise manipulating the content. A content handler **114** typically decodes content it receives and presents a page in the screen display **136**, or portion thereof. Some content handlers **114** construct the page from data they receive from the memory **126** or over a communications link, while others display the state of the wireless communication device **100** or serve some other administrative function. In a preferred embodiment of the browser **107**, the content handlers **114** include the following:

CallManager content handler **114b** manages an incoming call screen defined in the user interface definition files **104** to enable the user to receive incoming calls. The CallManager content handler **114b** provides other functionality through embedded objects.

HTMLp content handler **114c** displays the bulk of the user interface by accessing the appropriate user interface definition files **104** in memory **126**. The HTMLp content handler **114c** includes a HTML 3.2 compatible parser, and is capable of decoding HTML and creating the necessary data structures and objects to display text and graphics according to HTML tags. In addition, the HTMLp content handler **114c** accepts a modified form of HTML 3.2, herein called "HTMLp" as described below, which provides a number of beneficial extensions to the features and functionality of HTML 3.2.

To better serve as a user interface, and provide added flexibility in designing the user interface, the HTMLp content handler **114c** allows objects, written in C or other programming language, to be embedded in an HTML or HTMLp

page to display different types of data that are in the wireless communication device **100**. However, the HTMLp content handler **114c**, unlike a standard HTML parser, first passes user selected URLs in a current page to any embedded object, allowing the URL to be modified by what the user has selected or entered or fully processed before they are given to the shell **106** to process.

[0104] In the preferred embodiment, the available embedded objects include the following:

A phone book object stores records of names, associated telephone numbers, addresses, email addresses, speed dial key selection, ring tone, and other definable fields of data. The phone book object includes methods to get and set the fields of records. A phone book object may be embedded in a page and activated by the appropriate URL of the phone protocol.

A recent and missed phone call list object stores a continually updated list of telephone numbers that were recently called, received, or not answered. The call list object includes methods to delete and dial a telephone number on the list. The call list may be embedded in a page and activated by the appropriate URL of the phone protocol.

A speed dial number list object stores a set of telephone numbers and associations to keys of the keypad **128**, such that the selection of the key provides for speed dialing functionality. This list object include methods to set, get, and dial a speed dial number.

A phone number lookup object accesses the phone book object to return a telephone number(s) associated with an input or selected name or name fragment.

A phone book name lookup object accesses the phone book object to return a name(s) associated with an input or selected telephone number or number fragment.

A list object of text messages/alpha-numeric pages that have been received or sent. The message list object stores a list of messages, including email or Short Message Service messages, and includes methods to view, store, edit, delete, and send messages. The message list may be embedded in a page and activated by the appropriate URL of the message protocol.

The main content handler **114d** is primarily a front-end for the HTMLp content handler **114c** in that it uses HTMLp to display a main screen for the wireless communication device **100**.

The advert content handler **114a** is a front-end for the HTMLp content handler **114c** that chooses which advertising page to display when the wireless communication device **100** is idle and instructs the HTMLp content handler **114c** to display it. In addition, it intercepts keystrokes and user interface gadget activation to optionally delete an advertisement that has been responded to or expired.

a) Basic Content Handler API

[0105] Like protocol handlers **112**, content handlers **114** have a well-defined interface the shell **106** uses to communicate with them. The interface is tailored around the screen display **135** in the sense that there the content area is defined within the screen display and interaction needs of content handlers **114**. The four functions each content handler **114** supports are:

ContentOpen: This is the call that gives a content handler **114** control of the content area **214** of the screen display **136**, the softkeys **130** and softkey labels **216**, title bar **210**, and status message area **212**. Each content handler **114** receives the following four pieces of information when its ContentOpen function is invoked:

1. A stream of data returned by the protocol handler **112** that fetched the data; this is data to be displayed.
2. A handle to the content area **214**, indicating where the data is to be displayed.
3. A flag indicating whether the content handler **114** has previously displayed this data.
4. A pointer to extra data that was passed by whatever entity asked the shell **106** to fetch the URL, allowing the extra data to be entered into the page being displayed. The use of the extra data is further described below with respect to the <TEMPLATE> tag of HTMLp, and the "extra" protocol.

ContentClose: When the user asks to close a page, or asks to open a different page, the current content handler **114** is closed. It receives a flag that indicates whether the page is maintained in the URL history stack **108**, or if it has been removed from the stack permanently.

ContentProcessKey: In the absence of anything else to process a keystroke, the shell **106** delivers the keystroke to the current content handler **114** by default. The current content handler **114** is the one displaying the content whose URL is at the top of the URL stack.

ContentActivate: When the user presses a softkey **130** or selects an item from a menu, the string that is bound to the key or menu item is passed to the current content handler **114** via this function. In some cases, the string will

be a URL that can be passed straight to the shell **106** to be fetched. In other cases, the string is an indication of what the user wishes to do, and the content handler **114** may perform the action itself, or it may use an item the user has selected on the screen display **136** to generate a URL it can give to the shell **106**. For example, if the user selects an entry in the phone book and presses a softkey **130** labeled "Edit", the HTMLp content handler **114c** will take the string associated with that softkey **130** and pass it to the embedded phone book object, which will use the string as a template for generating the actual URL to pass to the shell **106**, based on which phone book entry the user has selected in the embedded object.

The specific functionality of the content handlers **114** is further described below.

3. Control Flow

[0106] A preferred implementation of the browser **107** is organized around a single callback queue **110**, which takes the place of the event loop used in other environments. Any part of the MMI **102**, can request that a function be called at a later time by adding a function request to the callback queue **110**.

[0107] The callback queue **110** has a number of elements, each of which has a pointer to a function to call, and two 32 bit arguments to pass to the routine. The function pointer can be to any module in the system.

[0108] Essentially, the overall system executes a top most control loop:

1. Call the next item on the callback queue **110**.
2. Update the screen display **136** with any changes that call made. This step includes drawing graphical elements to the screen (e.g. scrolling, updating status messages and icons) displaying keystrokes, and displaying new pages in response to user activation of functions or features associated with URLs.
3. Go to step 1.

[0109] Items for the callback queue **110** are added primarily by asynchronous events such as keystroke (up or down), change in an active call, timer expiration, and incoming text messages.

[0110] Certain protracted operations also will use the callback queue **110** to continue the operation, while still allowing other actions (such as user input) to be handled. For example, reading the frames of an animated GIF image is broken into two conceptual phases:

1. Read the first frame and queue a call to read the next frame.
2. Attempt to read the next frame. If successful, queue a call to read the next frame.

In this way, a page containing the animation can be displayed as soon as possible while the rest of the animation is effectively loaded in the background.

4. The Shell

[0111] The shell **106** provides handling of input keystrokes and other inputs from the lower layers, and passing of such inputs to the appropriate protocol handlers **112** and content handlers **114**. A list of shell **106** functions is provided in Appendix A.

a) Keypad Input

[0112] Keypad input arrives spontaneously at the shell **106** from the portability layer **118**. The shell **106** maintains a keystroke target list which is a list of entities, particularly user interface objects of the currently displayed page, that can process the keystroke. When a keystroke arrives, the shell **106** passes the keystroke to the first entity in the keystroke target list, via ShellProcessKey. If that entity decides not to process the keystroke, it calls the shell **106** to give the keystroke to the next entity in the list (ShellPreviousInput). The final entity in the list, placed there by the shell **106** when the list is initialized, disperses the keystroke to the current content handler **114**, which can choose to pass to a default processing routine in the shell **106** that implements system-wide keystroke defaults, or the current content handler **114** can handle the keystroke as desired.

[0113] The shell **106** includes functions to register an entity (usually a user interface object) into the keystroke target list (ShellGrabInput) and release an entity from the list (ShellReleaseInput).

b) Softkeys

[0114] One type of key that has a special function is a softkey **130**, which is a key whose label is displayed on a

page in the screen display **136**, and whose purpose changes from page to page, according to defined parameters in the user interface definition files **104**. The shell **106** manages a number of softkeys **130**, typically between one and three, but variable depending on the wireless communication device **100**. Each softkey **130** may be bound to a string, or to a menu whose menu items specify a string, or the softkey **130** can be set to pop one or more entries from the URL stack, or to do nothing.

[0115] When a softkey **130** or a menu item that is bound to a string is activated, the string is passed to the current content handler **114** via its ContentActivate function. In some cases, the string that is bound to a softkey **130** is a URL to be fetched. In this instance, the URL is passed by the content handler **114** to the shell **106** for processing (ShellGetURL) and fetching by the appropriate protocol handler **112** and content handler **114**. In other cases, the bound string is a command that the content handler **114** handles itself without changing pages. Finally, the bound string may be a mixture of the two: a template URL (see below) that is modified by the content handler **114**, based on some input from the user, before being fetched.

[0116] As noted above, as part of its ContentActivate function, the HTMLp content handler **114c** passes a string bound to a user selected user interface entity to any embedded object in the current page before it examines the string itself. Some embedded objects simply take commands to operate on what data they are displaying in this way, while others look for special escapes in the string to substitute some portion of the data the user has selected, yielding a URL that they then pass to the shell **106**. The HTMLp content handler **114c** also has certain special commands it accepts, rather than just accepting URLs from hyperlinks.

c) URL Processing

[0117] The step of updating the screen display **136** in the above described control flow, when done in the context of obtaining a new page for display, is accomplished by passing a URL to the shell **106** via the ShellGetURL function. Fig. 4 illustrates the URL history stack **108** used by the shell **106** to support URL processing. The URL history stack **108** is a LIFO stack. Each entry **402** includes a URL **404**, a pointer **406** to a function table **412** for functions for the particular content handler **114** that handles the URL, extra data **408** (if any) that was passed in with the URL to be retrieved by the "extra" protocol or to be used by the content handler for the URL, a pointer **410** to the next URL, a privilege level **414** at which the page is operating, the priority **416** of the URL, and a pointer to the state block **418** the shell **106** maintains on behalf of the content handler **114**.

[0118] Referring to Fig. 5 there is shown a flowchart of the operation of the shell **106** in handling a URL. The shell **106** extracts **500** the first part of the URL string, before the first ':' character, and compares **502** it to the list of known protocol handlers **112** to identify the appropriate handler for fetching the URL data. If no protocol handler **112** is found, then the shell **106** creates **508** a complete URL by calling the BuildURL function of the protocol for the URL currently at the top of the URL stack, passing it the current top URL and the URL that is being fetched. The protocol handler **112** returns the absolute URL that should be used in place of the relative one that was passed in.

[0119] If a protocol handler **112** is found, the shell **106** calls **504** the GetURL function of this protocol handler **112**, passing the remainder of the URL. The protocol handler **112** is expected to fetch the URL, and return a pointer to a ContentStream structure that includes a string indicating the type of data returned, the privilege level at which the data should be interpreted, and a pointer to a Stream, which contains the actual data (the data need not be present yet, but reading from the stream must return the data as it arrives). If no stream is returned **506**, the shell **106** returns **510** an error.

[0120] The shell **106** matches **512** the data-type string against the list of known content handlers **112**. If there is no match, the shell **106** returns **520** an error. If there is a match **514**, this content handler **114** becomes the current content handler. The shell **106** resets **516** the softkeys **130**, content area **214** size, title bar **210**, and status message area **212** to their default state. The shell **106** invokes the ContentOpen function of the current content handler **114**, passing both the ContentStream and control of the content display area **214** to the current content handler **114** for the content to be displayed.

[0121] If the open call is successful **522**, the shell **106** updates the URL history stack **108**, placing the URL, the pointer to the current content handler **114** functions, any extra data, on the stack, and returns **524** success to the entity requesting the URL, otherwise, the shell **106** reopens **526** the previous URL from the URL history stack **108**, and returns an error.

5. Security

[0122] Because content that is received over the air is allowed to activate telephone features and access telephone data, such as telephone book entries, the present invention provides mechanisms for security to prevent unauthorized access to functions or data.

[0123] When a URL is fetched by a protocol handler **112** as part of its GetURL function, its data are assigned a privilege level by the protocol handler. If content comes from a privileged source, the protocol handler **112** assigns the

highest privilege level. For example, all pages from the user interface definition files **104** which are stored in the ROM **126** of the wireless communication device **100** are assigned the highest privilege level. Formatted text messages, whether received or created by the user, are assigned a lowest privilege level. Content that does not have an assigned privilege level is automatically given the lowest privilege level by the shell **106**. For example, content from the World Wide Web (unless otherwise preassigned) is given the lowest privilege level. The privilege level of an item of content is stored with its URL in the URL history stack **108**.

[0124] Selected functions of the wireless communication device **100** are configured to be privilege-sensitive by either the manufacturer of the wireless communication device **100** or the service operator. When such a function is called it determines the privilege level of the page requesting the content from the page's URL in the URL history stack **108**. If the privilege level of the requesting page is higher than the privilege level of the requested content, then the content is accessed. If the privilege level of the requesting page is lower than the privilege level of the requested content, then the function can either deny the access out of hand, or confirm the operation with the user. For example, if a lower privilege page requests to make a telephone call via the CallManager, the user is alerted to the actual number being dialed and must confirm the request before the phone is dialed.

6. The Content Handlers

[0125] The following sections outline how the individual content handlers **114** implement the four functions in the API to each content handler **114**.

a) The HTMLp_c Content Handler

(1) HTMLp API

[0126] The HTMLp content handler **114c** provides a fully HTML compliant parser, using the HTML 3.2 specification. This parser is activated as needed by the HTMLp content handler **114c** during parsing of a page of content to create user interface entities for display of the screen display **136**, and for storing respective data associated with such entities, such as labels, and associated data, including URLs to be fetched when the user interface entity is selected.

[0127] As noted above, each content handler **114** provides an external interface of four functions, HTMLpOpen, HTMLpClose, HTMLpActivate, and HTMLpProcessKey. HTMLpOpen and HTMLpClose are described here. For ease of understanding, HTMLpActivate, and HTMLpProcessKey are described below, after a description of the new tags of HTMLp.

(a) HTMLpOpen

[0128] This function, called by the shell **106**, gives control of the content area **214** of the screen display **136** to the HTMLp content handler **114c** for displaying a page of content. As noted, the HTMLp content handler **114c** receives from the shell **106** a stream of data to display, a handle to the content area **214**, a display flag indicating whether the content data (the page) has been previously displayed, and a pointer to any extra data to be associated with the page.

[0129] The function determines from the display flag whether the page has been previously displayed, and if so, whether any embedded object in the page was cached. In this case, the page is redisplayed and any embedded object has a RestoreState function called to reestablish its previous state.

[0130] If the embedded objects for a page were not cached, or this is the first time the page is being displayed, the content stream for the page is passed to the underlying HTML parser to be interpreted as HTMLp code. The parser will create windows, and user interface entities as needed, and wrap text and update and assign softkeys **130** as necessary. When the page has been completely parsed, it is displayed to the user. In creating the user interface entities, the HTML parser establishes a table of associations between the user interface elements (including keys **132**, softkeys **130**, menu items, and the like) and URLs (whether local or remote) bound to these entities. The association identifies each particular user interface entity, and a URL that is to be fetched if the entity is selected or otherwise activated by the user. These associations are used when subsequently processing key strokes received by the page by the HTMLpProcessKey function. A handle to the main window that holds all the other pieces of the page is set as a state block **418** for the page via a call to ShellSetState.

(b) HTMLpClose

[0131] This function is called when the user closes the current page or switches to a different page. The shell **106** passes in a flag indicating whether the page is to be removed from the URL history stack **108**, or if it may remain on the URL history stack **108**. If the page is not to be removed, and the page has not been marked as non-cacheable,

then the main page is set not visible, effectively hiding it from the user, but maintaining it as an active page.

[0132] If the page is non-cacheable or the page is to be removed from the URL history stack 108, the page window and its associated data structures are destroyed. A page is deemed non-cacheable when it refers to data outside itself that could potentially change while the page is not displayed. For example, if the page contains an <INC> ("include") tag or uses the configuration mechanisms described below to display a configuration setting, it is considered non-cacheable. The use of the conditional <IF> tag, and the <TEMPLATE> tag may or may not cause a page to be non-cacheable, depending on whether the DYNAMIC attribute for these tags is set, and whether a %[url] escape is encountered inside a <TEMPLATE> </TEMPLATE> block. These features are further explained below.

(2) Extensions to HTML: HTMLP

[0133] The present invention provides an MMI 102 that is fully HTML compatible. However, in addition to merely displaying content, it is desirable to provide a set of HTML extensions for further refining the user interface of a wireless communication device 100, making it more functional for telecommunication functions and the small screen display 136, and allowing the wireless communication device to be easily and quickly customized by both the device manufacturer and the service operator.

[0134] The extensions which make up HTMLp are as follows:

(a) A. User Interface Extensions

[0135] In this section, the extensions of HTMLp which enrich the user interface are described. These various tags are decoded by the HTMLp content handler 114c when it receives a page of content from the shell 106.

(i) Binding Keys to Functions: <KEY> Tag

[0136] A typical wireless communication device 100 possesses one to three softkeys 130, the standard number keys 134, and a number of special-purpose keys 132. A new extension of HTMLp allows any key of the keypad 128 to be bound by an HTML page using the <KEY> tag. The syntax is:

<KEY KEY=key LABEL=string ACTION=url|POP|DONE|CLEAR|MENU|GO|NONE>

[0137] The value of the KEY attribute is one of the following:

- 1,...m** Specifies a softkey to be bound. Keys are numbered from left to right, or from top to bottom (depending on where they are on the phone). Typically (m<=3), but this may be varied per device.
- send** Specifies the "Send" or "Talk" key.
- back** Specifies the "Back" key. Not all devices have this key. A page must be privileged to bind this key.
- #n** Specifies one of the dialing keys, where n is the label on the key (0-9, *, or #). To bind all dialing keys to the same action, specify #x.
- end** Specifies the "End" key. A page must be privileged to bind this key.
- mode** Specifies the "Mode" or "ABC" key.
- clear** Specifies the "Clear" or "Del" key.
- up** Specifies the up-arrow key or down action.
- down** Specifies the down-arrow key or down action.
- left** Specifies the left-arrow key.
- right** Specifies the right-arrow key.
- select** Specifies the select key or action.
- power** Specifies the power key. A page must be privileged to bind this key.

default Specifies an action for any key for which no other action has been specified, with the exception of the back, end, and power keys, for which actions must always be explicitly specified, if any other than the standard actions are to be taken.

5 **[0138]** If the key is a softkey **130**, the value of the LABEL attribute is the string that appears in the on-screen label for the key. If the string is too long to fit in the space allotted, it is truncated. The LABEL attribute is valid only for softkeys **130**.

[0139] The value of the ACTION attribute specifies what should happen when the bound key is pressed. The possible values are:

10 **URL** Specifies a URL to be fetched, or some other command for an embedded object in the page. The URL is passed to the HTMLp content handler's HTMLpActivate function for processing.

POP Requests that the previous page be displayed.

15 **DONE** Requests that the page before the most-recent <TOP> page be displayed.

CLEAR Requests that all pages be cleared from the URL history stack 108 and the main screen be displayed.

20 **MENU** Specifies that the softkey **130** should bring up a menu. The items in the menu are specified by <KEYMENU> tags in the <HEAD> section. This is valid only for softkeys **130**.

GO Asks that the currently selected link be fetched. This is valid only for pages with the <LINKMENU> attribute.

25 **NONE** Asks that no action be taken when the key is pressed. This allows the default action for the key to be overridden.

[0140] When the HTMLp content handler **114c** loads a page with the <KEY> tag, it creates a key binding table that stores the association between the key, label (if any) and action.

[0141] The string bound to the ACTION attribute is processed by the HTMLpActivate function, as follows.

30 (ii) HTMLpActivate

[0142] The HTMLpActivate function is used to determine the appropriate response to the string that is bound to a user interface entity, such as a key, softkey, menu item, hyperlink, or the like. The input is a string from the shell **106**, and more particularly, a string that is bound to the ACTION attribute of a KEY or KEYMENU tag, or the HREF attribute of an A tag. The new HTMLp tags generally allow any key or menu item of the wireless communication device **100** to be associated with a specific action or URL.

35 **[0143]** Referring to Figs. 6a-6b, there is shown a flowchart of one embodiment of the HTMLpActivate function. The HTMLp content handler **114c** maintains a list of embedded objects in the current page. If there is an embedded object in the page (**602**), the function passes the string to the embedded object for processing **604**. The embedded object returns a Boolean indicating whether the string was processed, and that no further processing of the string is necessary. If the string was processed by the embedded object (**606**), then the function returns **608** control to the shell **106**. The processing **604** of a string to an embedded object is further described below.

40 **[0144]** If the string was not processed, the HTMLpActivate function proceeds to process **610** the string according to its value as an ACTION attribute.

45 **[0145]** If the string is "POP," (**612**) then the shell's ShellGoBack(POP) function is called **614**. This function pops the top URL of the URL history stack **108**, and cause the previous URL to be loaded.

[0146] Similarly, if the string is "DONE," (**616**) the ShellGoBack(DONE) function is called **618**, which is similar, but displays the page before the most recent <TOP> tag; the <TOP> tag identifies the first part of a multi-part form, as further described below.

50 **[0147]** The HTMLp content handler **114c** maintains a pointer to a current object in the page, which can be an input field in a form or a hyperlink. This current object is where the input focus is located.

[0148] If the string is "GO," (**620**) and the current object is not a hyperlink (**622**), then nothing happens. If the current object is a hyperlink, the content handler **114** gets **624** the URL string associated with the hyperlink, and passes that URL string to ShellGetURL, which then fetches the actual content.

55 **[0149]** If the string is "CLEAR," (**626**) then the ShellGoBack(CLEAR) of the shell **106** is called **628**. This function clears the URL history stack **108** and causes a default main page to be displayed.

[0150] If the string has the form "reset^{formid}," (**630**) then the function returns **632** the input elements of form number

formid to their original state. This action is bound to any softkey **130** or softkey menu for an <INPUT TYPE=reset> gadget.

[0151] If the string has the form "submit*formid,label*," (**634**) then the function submits **636** form number *formid* according to the METHOD and ACTION attributes of the FORM tag that defined form number *formid*. If present, *label* indicates which <INPUT TYPE=submit> gadget the user activated, so its name-value pair can be submitted along with the values from the rest of the gadgets in the form.

[0152] If the string is "SELECT", (**638**) then the function activates **640** the user interface gadget the user has selected, according to the gadget type as follows:

<INPUT TYPE=radio>	Selects that radio button and unselects other radio buttons with the same name.
<INPUT TYPE=checkbox>	Checks or unchecks the checkbox.
<SELECT>	If the options are displayed, it chooses the option the user has selected. If the SELECT list is a pop-down list, the pop-down is closed.
hyperlink	Follows the link.

[0153] If the string is "NONE" (**642**), then no action is taken.

[0154] After all these conditionals are passed, if the string is any other value (**644**), such as a URL, then it is passed **646** to ShellGetURL to be processed. If the URL has no arguments (there is no '?' in it), any parameters that were passed to this page as extra data are also passed in the call to ShellGetURL.

[0155] An example of the HTMLpActivate function and its particular benefits for embedded objects is further described below.

[0156] An example of processing by the Activate function using the <KEY> tag is as follows. Assume that a page contains the following KEY tag:

<KEY KEY= "send" ACTION=phone:dial >

[0157] When this page is loaded, the HTMLp content handler **114c** stores the association between the Send key and the URL "phone:dial" in its key binding table. This stored data will be used to activate the telephone dialing function of the telephone protocol handler **112g** when the user presses the Send key. The HTMLp content handler **114c** is the current content handler **114**.

[0158] Assume that at some later point the user presses the Send key. The portability layer **118** calls the shell's ShellProcessKey function indicating that a key has been pressed, and passes in a key number for the Send key, and a flag indicating that it has been pressed. As noted above, the shell **106** maintains the keystroke target list. The ShellProcessKey sends the received key to the first target on the stack. If this target does not have a purpose for the key, then the target calls the PreviousInput function of the shell **106**, passing the Send key index. The shell **106** finds the next item on its keystroke target list. This process repeats until the key is passed to the HTMLp content handler **114c**. This happens when the shell **106** calls the ProcessKey function of the current content handler **114**, since the URL at the top of the URL history stack **108** contains the pointer **406** to the HTMLp content handler **114c**.

[0159] The shell **106** then calls the HTMLpProcessKey("Send"). This function looks at the key binding table, which includes the association between the Send key and the URL "phone:dial." The HTMLp content handler **114c** calls ShellActivate(phone:dial), which calls the HTMLp content handler's **114c** HTMLpActivate function.

[0160] Here, it is assumed that there is no embedded object in the page. The function then tests the input string against the various other actions, such as POP, DONE, GO, CLEAR, and NONE. Since the string "phone:dial" does not match any of these, the HTMLpActivate function calls the shell's ShellGetURL(phone:dial) function.

[0161] The shell **106** processes this function, as shown in the flowchart of Fig. 5. Continuing the example, the shell determines that the URL is for the telephone protocol handler **112g**, and passes the "dial" portion to it for processing. This protocol handler **112g** returns a content stream of type "CallManager" (destined for the call manager content handler **114b**) that contains the number to be dialed. The shell **106** closes the HTMLp content handler **114c**, but does not remove the URL from the URL history stack **108**. The shell **106** places the URL "phone:dial" on the top of the URL history stack **108**. The shell **106** gets from the content stream returned by the telephone protocol handler **112g** the string name of the content handler **114** to handle the stream. The shell **106** looks up the string in its table, and updates the CONTENT field of the top entry of the URL history stack **108**. Finally, the shell **106** invokes the Open function of the new current content handler **114**, passing in the content stream data. In the Open routine of the call manager content handler **114b**, it retrieves the phone number from the stream and invokes the necessary function in the telephone control module **120** to establish the phone call.

(iii) Building Menus

[0162] If a softkey **130** is bound to a menu using the <KEY> tag, and ACTION="menu", then the entries for the menu are specified using a <KEYMENU> tag in the HEAD section of the page. The <KEYMENU> tag has the following syntax:

```
<KEYMENU KEY=n LABEL=string ACTION=url|POP|DONE|CLEAR|GO>
```

[0163] Entries are displayed in the menu in the order in which they are encountered. However, menu entries do not all have to be together in the header.

[0164] The value of the KEY attribute specifies to which menu the entry should be added.

[0165] This is the same value as given for the <KEY> tag that specified a menu should exist.

[0166] The value of the LABEL attribute is the string that appears in the menu entry. The menu will be as wide as necessary to hold all the entries. However, the label will be truncated if it is wider than the screen.

[0167] The value of the ACTION attribute specifies what should happen when the entry is selected. The possible values are:

URL Specifies a URL to be fetched, or some other command for an embedded object in the page.

POP Requests that the previous page be displayed.

DONE Requests that the page before the most-recent <TOP> page be displayed.

CLEAR Requests that all pages be popped from the URL stack and the main screen be displayed.

GO Requests that the currently selected link be fetched. This is valid only for pages with the <LINKMENU> attribute.

[0168] These ACTION attributes are processed in the same manner as the attributes of the <KEY> tag in the HTMLpActivate function, as described above.

[0169] Fig. 7 illustrates example of the HTMLp source code for page with a key menu defined, and the screen display **136** when the menu is selected to be displayed. The HTMLp code is shown on the left, and the resulting page on the right. Line 4 defines a menu for the first softkey (KEY=1) Note that when the menu is open, the softkey label **216** for the menu changes to "Select," indicating that if the user presses the softkey **130** again, the selected entry will be activated; this label **216** may change to instead close the menu, leaving the Send key to activate the selection. Lines 5-7 define the menu items for this menu, each of which has its ACTION attribute specifying one of the user interface definition files **104** for the appropriate page to display to retrieve messages, recent calls, or phone settings. Selecting one of the entries in the menu, either by pressing the softkey marked "Select" or pressing the numbered key matching the icon to the left of the entry, causes the ACTION specified in the KEYMENU to be executed. In this example, the appropriate HTMLp user interface definition file **104** is fetched from ROM.

(iv) Delayed Help

[0170] Many user interfaces for computers provide some form of online context-specific help text. Conventionally, these help screens are displayed in their own window overlaying the portion of the user interface where the user is expected to enter data. In addition, help screens are typically passive, and appear only in response to a direct action of the user to request help. However, in a wireless communication device with a very small screen display, overlaying a help screen over the content area would hinder the user. In addition, since the user may not know that help is available, passively waiting for the user to request help may be insufficient to assist some users.

[0171] To assist users who might be uncertain of what to do next when viewing a page, and to provide such help without obscuring the content area **214** of a page where the user is expected to input data, the present invention enables help text to automatically scroll across the screen in place of the title **210** of a page after a certain amount of time has elapsed without a user input keystroke. More than one help text string may be specified, in which case the strings are displayed in succession, with a suitable interval between each one. The help text strings are displayed only once each, each time the page is viewed.

[0172] To allow pages to specify one or more help strings a new <HELP> tag is specified in the <HEAD> section of the document. The syntax of the <HELP> tag is:

```
<HELP>help string</HELP>
```

where *help string* is the help text to be displayed.

[0173] When a page containing the <HELP> tag is loaded, the HTMLp content handler **114c** builds a structure, such as a table, that includes the help text strings. This table is passed to the shell **106**, which stores the table for later use.

The functionality of <HELP> tag is then handled primarily by the shell **106** during idle time processing.

[0174] The shell **106** maintain a counter of the number of seconds since the last keystroke. The counter is normally cleared on each ShellProcessKey. The real time operating system **122** has a timer that runs in the background, and calls a routine in the shell **106** that increments the counter. If counter reaches a threshold number of seconds, the shell **106** creates a scrolling banner object, and instructs it to display the first help text string in the table. The scrolling banner object internally determines when the help text string is fully scrolled off of the screen display **136**, and notifies the shell **106**, which redisplay the title **210**. A second threshold is set for displaying the next help string. The thresholds are predetermined by the shell **106** based on a desired length of time for displaying the help text strings.

[0175] Fig. 8 shows an example of the HTMLp source for a page including two HELP tags, and the resulting sequence through which the screen display **136** passes when the page is loaded. Lines 7-8 of the HTMLp code define the help text to be displayed. The second and third screen images show the first help text string being scrolled in place of the title.

(v) Pages as Templates

[0176] There are a number of extensions of HTML in the present invention that allow pages to be designed using a standard HTML editor, using arguments passed by C code to complete form entry fields, or specifying data to be fetched on the fly from the device to determine the initial state of a form in a page. These extensions include templates, conditional HTML, configuration setting capabilities, and "included" HTML.

[0177] Generally, the C code for an embedded object has parameters to be displayed, but it is desirable that the format of the display be defined in the HTML for the page. For example, a page displaying a form of data for an incoming call preferably displays a telephone number and its associated name. Accordingly, the HTML page for displaying the incoming call should be able to take the parameters (telephone number and caller name) and format them as necessary.

[0178] However, conventional HTML 3.2 provides no mechanism to pass data directly into a page for this desired application, but rather at best allows the HTML for the page to be created on demand. The generation of HTML is both slow and compute-intensive, and the executable scripts for generating a page typically require more storage than the page being generated, thereby making it less efficient than storing the page itself. By allowing indirect passing of arguments, the present invention eliminates the need to generate HTML at run time. This enables the pages to be stored in the ROM **126**, and requires less memory than the code for generating the HTML on demand.

(a) Using Pages as Templates

[0179] The first extension which enables data to be passed into a page is the <TEMPLATE> tag. The <TEMPLATE> tag may appear anywhere in page. It must be matched by a corresponding </TEMPLATE> tag at the appropriate place in the structure of the document.

[0180] All text between the <TEMPLATE> and </TEMPLATE> tags is examined for escapes of the form `%(url)`, `%[url]` or `%<url>`. This includes text within tags, even within quoted attribute values. When such an escape is seen, the data for the URL are fetched and, if they are plain text or HTML, they are inserted into the HTML document in place of the escape exactly as if they had been there all along. To include a % character in the text between <TEMPLATE> and </TEMPLATE>, it must be preceded by another %, as in "%%".

[0181] The form `%<url>` causes the text returned as the data for `url` to be encoded for use as an argument for another URL. URL arguments have a restricted character set, with anything outside that character set being encoded as % followed by two hexadecimal digits.

[0182] The distinction between `%(url)` and `%[url]` lies in the caching behavior of the HTML_p content handler **114c**. Normally, the data for a page are parsed and the information needed to render the page is saved so long as the URL remains on the URL history stack **108**. This allows for quick redisplay of a page that has already been fetched. If, however, a `%[url]` escape is seen in a template section, it indicates that the data for the URL are dynamic enough to warrant the reparsing the page when it needs to be redisplayed, to catch any changes in the URL data since the user last saw the page.

[0183] Fig. 9 illustrates an example of the TEMPLATE tag. In this example, the text between the <TEMPLATE> tags on lines 19-25 defines the template text; the escape on line 20 results in the URL "extra:name" being fetched, which replaces the text with whatever data is stored under the variable "name". The screen display shows this as the text "Adam M."

[0184] The HTML 4.0 specification provides for the use of embedded objects in pages. Generally, an embedded object is an item of code positioned at a location on the page that is responsible for constructing and displaying its own content. An embedded object is specified in the URL for the OBJECT tag, located in the desired position in the HTML source. Normally, the URL specifies a code entity such as an ActiveX control, a Java applet, C code, and the like. In the HTML 4.0 specification, the URL is merely passed to a server which return the desired entity. However, in HTML 4.0 once a page with an embedded object is loaded, no further processing or passing of arguments to the embedded

object can occur. In particular, when a user selects a hyperlink (a user interface gadget associated with a URL) on a page containing the embedded object, the embedded object does not have any opportunity to process the URL, and instead, the URL is merely followed to the linked page.

[0185] However, the present invention extends the functionality of embedded objects by providing URL associated with a hyperlink or user interface gadget first to embedded objects for processing. This lets an embedded object respond directly to arguments provided in HTML forms, without having to have the server update the page. The implementation of this embedded object functionality is provided in the HTMLpActivate function of the HTMLp content handler **114c**, as described above with respect to Fig. 6.

[0186] As described, when the HTMLp content handler **114c** processes a string that is a URL, if there is an embedded object in the page, the HTMLp content handler **114c** passes the URL to the embedded object. In accordance with the present invention, an embedded object does one of three actions in processing a URL:

- Process the URL as a command;
- Look for escape sequences in the URL and substitute for those sequences information from the data the user selected, before passing the URL to the shell 106 to be fetched; or
- Return the URL to the HTMLp content handler **114c** without processing, to be processed according to the remainder of HTMLpActivate.

[0187] As an example of the second type of processing, an instance of the phone book embedded object in an HTMLp page may look for escape sequences such as "@n" or "@f" to replace with the name or record ID of the phone book record the user has selected. The phone book object includes an edit method that can edit either the name of a record, or any of the fields. Passing the URL "phone:edit?Name=@n" to the phone book object will begin the process of adding another number to the selected phone book record by entering the phone book entry creation process with the name already set from the selected phone book record; passing the URL "phone:edit?id=@i" to the phone book object will edit all the fields of the record.

[0188] The advantage of this extended functionality is that instead of having pages hardcoded in C, they can have those elements that require the data access and dynamic behavior of C be coded in C, while the specification of functions the user can perform is done in HTML. This is not possible in HTML 4.0 because the only way for an embedded object to interact with the user is by putting up its own user interface, which again will be hardcoded in the language in which the embedded object is implemented, and thus not easily modified or branded by the service operator.

[0189] Figs. 10 and 11 provide two examples of possible phone book pages, and illustrate the flexibility embedded objects can provide with the extended processing of the present invention.

[0190] In Fig. 10, the user can create a new entry, or modify one of the fields of an existing phone book entry to change its speed dial key, ring tone, or number. Line 5 defines a key menu, which is shown displayed, activated by the user pressing the first softkey **130**. The menu entries (lines 6-12) are bound to URLs that have escape placeholders for data from the current selection. In particular, line 6 defines the ACTION for the menu item to be a URL for the embedded phone book object that will change to the first page of the phone book entry creation process with the name already specified to be that of the current selection in the embedded phone book object. Generally, other URLs in the present invention can be activated using pieces of the selected phone book record to fill in their arguments; any of these URLs can be bound to menu entries, softkeys, or other keys on the keypad. The specific escape sequences are described below, with respect to the phone:list URL of the phone protocol.

[0191] In Fig. 11, the user can create a new entry, or go to a separate page to display all the parameters for a particular entry, and change them if she wishes (this is done via a separate screen. pbedit.html; the '@' escapes in the editurl argument to the phone:list embedded object extract all the relevant pieces of the entry for passing to pbedit.html). In addition, the a graphical title bar is used here, along with a tiled background of the wireless communication device manufacturer's logo as a border. The object to embed is specified in line 10 with a URL to the phone list object.

[0192] When the HTMLp content handler **114c** encounters an <OBJECT> tag, it requests the shell **106** to fetch the data associated with the URL given as the CODE attribute to the OBJECT tag. The shell **106** returns this data as a content stream, which must be of type "Object". In the stream is a structure that contains:

- A pointer to the object (a window to be made a child of the HTMLp page window)
- A pointer to a function HTMLpActivate can call with the string it has been given.
- A pointer to a function that will fetch the current state of the object. This is called by HTMLpClose.
- A pointer to a function that accepts the state that was fetched and restores the object to that state. This is called by HTMLpOpen when it is told the page has been displayed before.
- A pointer to a function that returns the "value" of the object as a string. This is called when the object is part of a form that is being submitted.
- A pointer to a function that accepts the "value" to which the object should set itself. The value is a string. The

function is called when the object is part of a form and extra data that have the same name as the object (as given by the NAME attribute to the OBJECT tag) were passed.

(b) Accessing Device Settings

5

[0193] The various configurable parameters of the wireless communication device **100** are accessible via the config protocol, further described below. It is desirable to provide pages that can adjust these settings using form gadgets to specify the possible values for each setting. However, to do this, it must be possible to set the initial state of these form gadgets to match the current value of the setting they're supposed to affect.

10

[0194] The form gadgets most preferably used to set the value of a device setting are the radio button, the checkbox, and the scrolling list. The radio button and checkbox are both accessed via the INPUT tag, with a TYPE attribute of either RADIO or CHECKBOX. For these input elements, it is possible in HTML 3.2 to specify a selection attribution which defines whether the input element is selected on the form. The selection attributes include CHECKED and SELECTED. The CHECKED attribute indicates that a radio button or checkbox is to be initially selected. Similarly, a scrolling list is specified by a <SELECT> tag, with <OPTION> tags inside it, any of which may have the SELECTED attribute to indicate that that option of the selection list should be initially selected.

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[0195] Normally these attributes are Boolean; if the CHECKED or SELECTED attributes exist in the source, the radio button, checkbox, or option is selected, while if they do not, it is not selected. In the present invention, however, these attributes have been extended to accept a value. The value takes the form of an expression, which, if it evaluates true, causes the item to be selected initially.

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[0196] The expression fetches data from a URL and either treats it as a Boolean value, to be checked for truth or falseness, or compares it to a string for equality or inequality.

[0197] The syntax is:

25

ATTRIBUTE=[!]url

or

30

ATTRIBUTE=ur[!]=string

[0198] ATTRIBUTE is either CHECKED or SELECTED. The URL here is to a config protocol, and takes the form "config:setting" where *setting* is the particular setting of interest which the config protocol handler **112b** will access.

35

[0199] The first syntax form treats the fetched URL data as a Boolean value, converting the text to an integer and seeing if it is 0 or non-zero. If the leading "!" is present and the value is 0, the item is selected, while if the leading "!" is absent and the value is non-zero, the item is selected. If the *url* itself contains an equal sign, it must be enclosed in parentheses.

40

[0200] The second syntax form performs a string comparison between the *string* and the data retrieved for the URL. If "!=" is given, the item is selected if the strings are not equal, while if just = is given, the item is selected if the strings are equal.

[0201] If the data returned by the URL is neither plain text nor HTML, the expression always evaluates false and the item remains unchecked.

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[0202] Fig. 12 provides an example of the use of this extension, showing both the HTMLp source, and the resulting page. Lines 9-14 specify the various configuration settings, showing the CHECKED attribute being set by an expression which is a URL to the config protocol handler. The illustrated page shows the resulting user interface for configuring these settings. In this example, the user will be presented with three radio buttons and a text input field. The user will be able to specify whether the backlight for the screen display **136** should be on only when the device is in-use, or when it's in-use or is plugged in, or not at all. In addition, the user can set the number of seconds without input after which the wireless communication device is consider to no longer be in use. These settings may be stored in the "backlight" and "backlight delay" settings, respectively. When the screen first appears, the radio button that corresponds to the current setting will be checked, and the text input field will contain the current delay.

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[0203] Generally, when an <INPUT> tag with this extended selection attribute is loaded, the HTMLp content handler **114c** passes the URL to the shell **106** to be fetched. The HTMLp content handler **114c** evaluates the fetched data according to its syntax form, as described above, and establishes the value of the selection attribute according to the evaluation of the URL data. "Including" HTML

55

[0204] "Including " is an extension to HTML that allows blocks of HTML or HTMLp code to be referenced in a page. Any included HTML is recursively resolved, so that included HTML may itself include other HTML. At present, the

HTML 4.0 provides no mechanism to include blocks of HTML from one page into another. A benefit of included HTML is that common HTML components, such as page headers or footers, navigation toolbars, and the like, which are desired to appear in a number of pages, may be easily incorporated by a single reference to the included pages.

[0205] The present invention provides a mechanism for including HTML (which also includes plain text) from any source, by giving its URL. This is used primarily to display device settings via template pages, but can also be used to reduce content size by placing elements common to multiple pages in a separate part of the content archive and including it in the other pages. The mechanism is provided by the <INC> tag, which has the following syntax:

```
<INC SRC=url DYNAMIC>
```

[0206] The SRC (source) attribute must be present, and specifies the URL whose data are to be included in the document at that point. When the <INC> tag is resolved by the HTMLp content handler **114c**, the data associated with the URL is fetched inserted at the location of the <INC> tag.

[0207] An <INC> tag may be used anywhere in a page, except from within another tag. For example, "<A HREF=<INC SRC=file:commonurl.txt>>" is not allowed.

[0208] Fig. 13 illustrates an example of the <INC> tag. In this example, the first page info.html has an <INC> tag on line 2 referencing the second file bbody.html, which itself has an <INC> tag on line 8 referencing a third file stdlogo.html. When the first page is loaded, the HTMLp content handler **114c** fully resolves all <INC> tags, and produces the resulting page, as shown. File info.html has an <INC> tag on line 13 which references the file endbody.html, and this latter file includes the </BODY> tag properly closing the <BODY> tag that appeared in a completely different file, bbody.html.

[0209] Generally, when parsing a page, as the HTMLp content handler **114c** identifies an <INC> tag, it fetches the reference URL and directly inserts the data from the file into the source of the present file, and resolves it as needed for displaying the page.

[0210] If the DYNAMIC attribute is specified for the <INC> tag, it causes the page to be rebuilt when the user returns to it, rather than using display instructions that were cached when the page was temporarily closed. In general, the DYNAMIC attribute indicates that the *url* used as the SRC refers to data that may change while the page is temporarily closed, so it must be reread and the page rebuilt to accommodate any such change.

(d) Conditional HTML

[0211] The display of pieces of a template HTMLp page can be controlled by parameters passed with the URL for the template page, either directly as arguments following a '?' in a URL for the file protocol **112d** (arguments specified in a URL for the file protocol **112d** are available as values within the file using the extra:protocol), as form data from a METHOD=NEXT form in the referring URL, or as parameters from C code in the present invention.

[0212] Conventional HTML does not allow for conditional expressions to be encoded directly in the HTML source of a page to control which elements of the page are displayed. The present invention overcomes this deficiency with the new <IF> tag. The <IF> tag allows for testing of expressions, such as parameters or device settings, to control the display of a page. The syntax is as follows:

```
<IF TEST=expression DYNAMIC>html<ELSE  
TEST=expression>html<ELSE>html</IF>
```

[0213] The *expression* in the TEST attribute is evaluated exactly like that described for the CHECKED and SELECTED attributes, above.

[0214] For example, consider the HTMLp source:

```

<IF TEST=extra:conf>
  <KEY KEY=1 LABEL=Conference ACTION=phone:conference>
5
<ELSE>
  <KEY KEY=1 LABEL="Pick Up" ACTION=phone:answer>
</IF>
10

<KEY KEY=send ACTION=phone:answer>

15
<IF TEST=config:anykey>
  <KEY KEY=default ACTION=phone:answer>
  <KEY KEY=back ACTION=phone:answer>
20
<ELSE>
  <KEY KEY=default ACTION=none>
  <KEY KEY=back ACTION=phone:ignore>
25
</IF>

```

[0215] In the first <IF> tag, TEST is evaluated with respect to extra data "conf" being passed into the page by the C code that loaded the page. This data is stored in a variable available to the HTMLp content handler **114c**. When the page is loaded, if "conf" evaluates to TRUE, then the first softkey **130** (KEY=1) is labeled "Conference" and is bound in the key binding table to the URL "phone:conference", to allow the user to activate the conference feature of the telephone. If "conf" evaluates to FALSE, then the softkey is labeled "Pick Up" instead and the key is bound to a different URL.

[0216] In the second <IF> tag, the tested data is a configuration setting of the wireless communication device, accessed by the "config:anykey" URL. Depending on the device configuration for this setting, either all keys, including the Back key, will be bound to the "phone:answer" function, or all keys but the Back key (and any other key that has a specific binding) will do nothing, while the Back key will be bound to the "phone:ignore" function.

[0217] The <IF> tag has a DYNAMIC attribute that tells the parser that the URL it uses generates dynamic data and the page should be reparsed, similar to the %[url] form used in template mode to signal that url refers to data dynamic enough to require the page to be rebuilt when it is again made visible.

(vi) Phone Number Entry Field

[0218] HTML 4.0 is designed as a general purpose language, and does not include any features that make it particularly adapted for use in a wireless communication device, particularly one capable of making telephone calls, and storing telephone numbers and associated names.

[0219] To make HTML more adapted for such a wireless communication device **100**, the present invention specifies "phonenum" and "phonename" as new values for the TYPE attribute of the <INPUT> tag. Generally, <INPUT> tag allows specification of a data input type, such as a checkbox, radio button, text, or image.

[0220] The new input type of the present invention allows the user to enter a phone number or a person's name. As the user types, the input field uses the input data to look up a matching record in a phone book data structure. Matching records are then displayed in a list below the input field in exactly the same format as is used in the phone book display. Once the matching records are displayed, the user is able to select an item in the list, and have that item be used to complete the form.

[0221] More particularly, when the input type is "phonenum," the input digits are compared against all telephone numbers in the phone book; matching telephone are displayed in a list. When the user selects one of the matching telephone numbers in the list, this causes the input field to be replaced by the full selected telephone number, with the

portion that matched the input underlined. In matching, single digits (0-9) or double digits (00-99) are matched only against the speed dial list, and display matching speed dial numbers.

[0222] When the input type is "phonename", the input characters are compared against the names in the phone book, and those entries that match are displayed, with the characters that matched drawn underlined. Matches in the first word of the name take precedence over matches in subsequent words and the list is sorted accordingly. When the user selects one of the matching names, this causes the input field to be replaced by the full matching name.

[0223] Fig. 14 illustrates an example of the HTMLp source and the resulting page. Here, line 7 specifies the phone protocol for dialing a telephone number; the input type is "phonenum". The user has first typed in "2" which is matched against the speed dial list and displays a matching name. In the next image, the user has typed in "995" which is matched against the phone book list, and displays a single matching name. In the third image, the user has selected the name, which causes the entire telephone number that matches including prepending and remaining digits to be inserted into to the input field for use in dialing.

(b) Multi-part Forms

[0224] As mentioned earlier, in typical HTML pages destined for the desktop and its large screen, a conventional form will use many input fields. If such a form were displayed on the small screen display **136** of a typical wireless communication device **100**, it would be very easy for the user to become lost in the form, because she loses the context of the form, most of which will be scrolled off the screen display **136** at any given time, or she cannot see much of the data being entered. Fig. 16 illustrates an example of a conventional HTML form which would be cumbersome to use on a screen display **136** of a wireless communication device **100**.

[0225] One solution is to break the single form into a series of forms that each gather one or two of the items required. In this case, however, conventional HTML requires the data from each form to be transmitted to the server as part of the URL that fetches the next form. The server then takes the data passed in the URL and returns a page that must be generated on-the-fly with the passed-in data from the previous forms included as "hidden" type input elements in the form in the returned page. In this manner, the data the user enters get sent up and back multiple times until the entire form has been filled in. This process is very bandwidth intensive, and time consuming, and costly.

[0226] The other drawback to breaking a form into multiple forms is what the user has to go through if she decides in the middle that she does not want to complete the form after all. In such a case, the user has to hit the "End" or "Back" key once for each of the subforms that have been filled in, since each is a separate page. If the user is in a hurry, she could easily overshoot and end up dropping out of a place she actually wanted to be in when canceling the form.

[0227] Figs. 17a and 17b illustrate a conventional multiple form method, as described above, where parameters received from a client computer in one HTML page are inserted by the server computer as HIDDEN type inputs in a next HTML page before being uploaded to the client computer. As seen in the figures, multiple pages have to be dynamically created to continually pass this data back and forth between the client and server.

[0228] This protocol for sending data back and forth between a server and a client results from a fundamental assumption of standard HTML that each transaction between a client and server is stateless, and thus, no data from previous states may be implicitly relied on to complete a current state.

[0229] The present invention overcomes these deficiencies of HTML with a new "NEXT" method for forms, and a new <TOP> tag, which are designed to take advantage of the fact that client is fully able to save its own state and use this information in determining subsequent states.

(vii) The "NEXT" Form Method

[0230] A form in an HTML page consists of one or more input elements for gathering data from the user. The data, each piece tagged with the name of the input element from which it came, is submitted to a server according to two parameters in the FORM tag: the METHOD and the ACTION. The ACTION is a URL to which the data are usually appended, while the METHOD is either GET or POST. GET is used to fetch another page based on the data, while POST is usually used to send data to finalize a transaction.

[0231] To these two methods, the present invention adds a new NEXT method. Generally, the NEXT method allows a form to be specified in multiple parts, with each part including a subset of all of the input fields of the overall form, and the data for the entire form stored in an external data structure.

[0232] The NEXT method has the following effects:

1. The method used on the ACTION URL is "GET" without any modification of the URL; the page is simply fetched from the server. GetURL is the function called for the protocol handler **112**.
2. Any form in the fetched page begins with the name/value data-set active in the form on the current page. This

includes any name/value data that was passed from a previous page. This replaces the use of "hidden" input fields, avoiding the bandwidth penalty of having to transfer the data up to the server and have it transfer the data and the page back again. Instead, the page can reside on the server without an associated CGI script, or it can reside on the device, having been downloaded with the other pages that make up the transaction when the user subscribed to the service.

[0233] Figs 18a-18b illustrate the HTMLp source and pages for a multi-part form that captures the same information as the illustrated conventional HTML pages, but presents in a significantly more useful and easy to use format for a screen display 136. The first three pages, "purchaseform.html," "addr.html," and "credit.html" all use the NEXT method in the <FORM> tag to specify the next page to be loaded to obtain additional inputs. The last page "confirm.html," uses a conventional ACTION value to specify the CGI script for processing all of the data accumulated on the multi-part form. In this manner, much lower degree of bandwidth is needed between the server and the client to obtain all of the inputs to the form and transmit them back to the server, since the client (the wireless communication device **100**) maintains the state data of the previous input pages. This state data of the name, address, credit card number, and so forth is maintained in an internal data structure of the wireless communication device **100** in its memory **126**, and thus need not be embedded in HIDDEN type input elements as in conventional HTML. This internal data structure is created as the first page is parsed by the HTMLp content handler **114c**, and updated as each new page in the multi-page form is loaded.

[0234] The <TOP> tag and "DONE" action used in the "confirm.html" page are explained in the following section.

(viii) Complex Interactions

[0235] Given that what would be a multi-element form in standard HTML displayed in a desktop browser can now be transformed into multiple pages in HTMLp, each of which contains a one- or two-element form (in order to fit on the screen display 136 comfortably), a user might easily find herself in the middle of providing data for each of the fields and decide she wishes to terminate the whole process. If all she can do is go back to the previous page, this could be a slow and tedious process to terminate the transaction.

[0236] To make termination of a multi-page form easier, the present invention allows a page to be marked as the beginning of a complex interaction a user might want to exit completely. It does this by providing the <TOP> tag:

<TOP>

at the desired location of the "top" of the interaction. Such an interaction may be a multi-part form, or any other complex group of pages.

[0237] To access the top of an interaction, a softkey **130** is defined using the <KEY> tag with an ACTION attribute of "DONE". When this softkey **130** is selected by the user, the user will return to the page that referred the user to the most recent page marked with <TOP>. This processing of the DONE value for ACTION takes place during the HTMLpActivate function, as described above.

(b) Navigation

[0238] The display of HTML on a conventional wireless communication device **100** is further hampered by the heavily-restricted keyboard and the absence of any pointing device. In a typical HTML environment, there is a scrollbar that can be clicked or dragged, a tab key to shift between fields in a form, and a mouse that can select hyperlinks included in the content should the user wish to follow them.

[0239] In a wireless communication device **100** in which the present invention advantageously operates, however, there is only the up key, down key, and possibly one of the softkeys **130** that may be relied upon to provide navigational controls. To provide a rich set of navigational abilities, the present invention provides the following features to HTMLp.

(i) Form Entries

[0240] When a page contains form elements, the Up and Down arrows are overloaded to allow moving between the form fields in the following fashion:

- If the next (for the Down arrow) or previous (for the Up arrow) field in the form is visible, then it is made the active form field. This is denoted by a graphical selection indicator; a text input element will also get a blinking text cursor.
- If the next (or previous) field in the form is not visible on-screen, the screen is scrolled so that the next (or previous) line of the page is brought on-screen. If the next (or previous) field is in the line that was brought on-screen, then it will be made the active form field. Otherwise, the current form field remains active.

[0241] As the screen display is scrolled, the current form field , is continually updated without requiring the user to directly select the field. In this manner, the user can easily switch among fields merely by scrolling, while being able to predictably read explanatory text leading up to the next field to be filled in.

[0242] In addition to this, if the first softkey **130** is not bound by the page to some other purpose, it will change its action in the key binding table as the current form field changes, as follows:

Table 1:

Softkey Navigation Defaults		
GADGET WITH FOCUS	SOFTKEY LABEL	ACTION
Text field	no label	--
Scrolling List (single selectable)	OK	Selects and generates Submit
Scrolling List (multi-selectable)	Select	Selects/de-selects item.
Popdown (closed)	Open	Opens popdown
Popdown (open)	Select	Closes popdown and makes selection
Checkbox (selected)	Clear	De-selects
Checkbox (unselected)	Select	Selects
Radio button (unselected)	Select	Selects button
Radio button (selected)	no label	--
Standard link	Select	Activates Link
Phone:Dial link	Call	Goes to Dial screen displaying the number (can also be activated with Send button).

[0243] The various actions defined in Table 1 provide for appropriate .and dynamically variable behavior of the softkey **130** depending on the type of user interface gadget that is the current form field. These actions are dynamically assigned as the user scrolls a page and changes the focus between gadgets, thereby changing the current form field. For example, if the current form field is a hyperlink, then the softkey is automatically assigned to the URL for the link, and selection of the softkey automatically fetches the hyperlink. If the form field is some type of selection device, such as a list, popdown, checkbox, or radio button, then the softkey will either select, deselect, or submit an item from the selection device, as appropriate. For example, if a scrolling list has an item preselected using the SELECTED attribute (with or without the expression evaluation feature of the present invention) then the softkey 130 is defined to deselect the item.

[0244] This functionality for page navigation is implemented in the HTMLpProcessKey function. This function is called by the shell **106** when no other entity of the current page elects to receive an input keystroke. The input to the function is a key number indicating the key of keypad **128**, and a Boolean indicating whether the key is pressed or released. Referring to Fig. 15 there is shown a flowchart of one embodiment of the HTMLpProcessKey function.

[0245] If there is a URL associated with the key, then the ProcessKey function **606** invokes 1502 the GetURL function of the shell **106**, passing the associated URL. The shell **106** will process this URL as illustrated in Fig. 5, to determine the appropriate protocol handler **112** and content handler **114** for handling the URL.

[0246] The function determines **1502** from the key number whether or not the key has been bound to some action using the <KEY> tag, or the KEY attribute of the <A> or <INPUT> tags. If so, and the key is not a softkey **130** (which is handled by the shell **106**), then that action is passed **1504** to ShellActivate when the key is released.

[0247] Otherwise, only the Up and Down keys are handled specially (**1506**); all others are passed 1508 to ShellDefaultProcessKey to receive their default handling.

[0248] The behavior of the Up and Down keys depends on whether there are selectable user interface gadgets on the page. A selectable gadget is either a form input field (from the INPUT, SELECT, TEXTAREA or OBJECT tags), or a hyperlink (if the LINKMENU tag is present). If there are no selectable gadgets on the page (**1509**), then the function makes **1514** the next line in the given direction visible.

[0249] If there are selectable gadgets on the page (**1509**), the reaction to an UP or DOWN key is as follows. If the next user interface gadget in the chosen direction is visible (**1510**), the function makes **1516** that gadget the current gadget. If the next user interface gadget is not visible, then the content area **214** is scrolled **1512** so that the next line in the given direction is visible. If this makes the next gadget visible **1513**, it is made **1516** the current gadget. If no user interface gadgets are visible, then no gadget is current.

(ii) Content-as-Menu

[0250] Content that does not contain a form can roughly be grouped into two classes: 1) informational content that is meant to be read, and 2) menu content that allows the user to select something from a list, in order to get further information or perform some action.

[0251] The scrolling and link-selection behavior needed by the user is different for each of these types of content. In informational content, the scrolling should allow the next piece of the text to be read (as that is the focus of the content), with any links being selected from a menu (the links are of secondary importance). For menu content, however, the importance is reversed: the text serves to explain the links, but it is the links themselves the user needs to see. As such, a link should always be selected and any scrolling that occurs should occur in the context of getting to the next link. Conventional HTML does not distinguish between these types of content, and provides no mechanism for altering the navigational features of the computer displaying the content to accommodate their differences.

[0252] To distinguish between these two types of content, and provide the desired navigational controls, the present invention provides a new <LINKMENU> tag. The <LINKMENU> tag can be given in the header to indicate the content is a menu of choices. The syntax is as follows:

```
<LINKMENU TARGET=name NOScroll>
```

[0253] The TARGET attribute has a value that is matched against the NAME attribute for all links on the page. The link whose name value matches the TARGET value is the link that is initially selected when the page is displayed. If the TARGET value takes the form of a URL (the first part of the value is alpha characters followed by a colon), the URL is fetched and the returned contents are compared against the NAME attributes for all links on the page.

[0254] If the NOScroll attribute is present, it requests that the display *not* scroll to make the selected link visible.

[0255] Specifying a <LINKMENU> has the following effects: First, links are not distinguished graphically (e.g. they are not underlined), as in conventional HTML. Second, the first link on the page is marked as selected (unless the TARGET attribute is given). Finally, the up and down keys set the current user interface gadget to the previous or next link that is visible, as described in the HTMLProcessKey method. The next link is defined as the one below the current one and the shortest horizontal distance away; this allows columns of links to be handled gracefully and in an expected manner. If the previous or next link is not visible, the screen scrolls a single line in the appropriate direction. If the desired link is then visible, it is selected, otherwise the current link remains active, unless it is now not visible.

[0256] If <LINKMENU> is *not* given in a page, the content is treated as follows. First, links are distinguished by underlining them. Second, if the last softkey is not bound to anything, all links in the page are gathered into a menu bound to that softkey. Finally, the up and down selectors scroll the page one text line at a time.

[0257] This functionality of the <LINKMENU> tag is effected by the HTMLp content handler 114c when the handler parses the page and sets up the key binding table and menus.

[0258] Fig. 19 illustrates an example of the second type of behavior, where <LINKMENU> is not specified. In this example, all of the links to other content including files, such as iguana.gif, and lizards/blue-tongued-iguana.html, or database data, , are automatically placed in a menu named "Links" that is bound to the second softkey **130**. This menu is displayed, as in the second image, when the softkey **130** is pressed.

[0259] Fig. 20 illustrates the first type of behavior, where <LINKMENU> is specified. Note that the links in the page, e.g., UA 909, are *not* underlined, as in conventional HTML. Rather, the Up and Down arrows will move and select these links in order.

(iii) Binding a Link to a Key

[0260] The present invention provides new attributes for the <A> tag. These attributes provide a compatible way to provide content for both a wireless communication device **100** and a desktop computer, as a standard HTML browser will ignore the attributes. These attributes are the KEY and LABEL attributes:

```
<A KEY=key LABEL=string HREF=url>
```

[0261] If specified, the KEY attribute asks that the indicated key should follow the URL specified by this for the HREF. The "back" key may not be bound in this way. This attribute thus provides a means for binding a specific key to a specific URL.

[0262] If specified, the LABEL string will be used in one of two ways:

If a KEY is also provided and is a softkey **130**, the string will be the label for the softkey **130** displayed on the screen display **136**.

If a KEY is not provided, the string will be the label used in the menu of links that is automatically built by HTMLp content handler **114c** when the LINKMENU tag is not given. In the absence of a LABEL attribute, the text of the link will be used (as much of it as will fit).

(iv) Binding Keys to Input Elements

[0263] Conventional HTML provides for SUBMIT and RESET attributes for the <INPUT> tag. However, these attributes are hardcoded to either a return key, or a mouse click on a user interface gadget.

[0264] The present invention extends the use of the SUBMIT and RESET input elements by enabling them to also be bound to particular keys, using a KEY attribute for the <INPUT> tag that specifies the desired key to be bound.

[0265] In a preferred embodiment, by default, SUBMIT elements are bound to a second softkey **130**, and RESET elements are bound to the third softkey **130**. If a device has only two softkeys **130**, RESET elements are inaccessible.

Given the simplicity of forms on these devices, however, this is not usually a problem.

[0266] A form with multiple SUBMIT elements will have all of them placed in a menu on the second softkey **130**, unless an explicit key binding is given. Multiple SUBMIT or RESET elements bound to the same key will be combined into a menu on that key.

(c) Specialized Content

[0267] The present invention also includes additional extensions to HTML to support specialized types of content or provide a way to map existing World-Wide Web practices to the smaller screen display **136** of the wireless communication devices **100**.

(i) Dialing the phone

[0268] Like other telephone type products, wireless communication devices **100** can access DTMF-based network services, or other systems that use DTMF tones to control functionality, such as voicemail systems, and the like. Accordingly, HTMLp includes a new tag that makes it very easy to generate DTMF tones when a page is fetched in order to easily interface with such systems. This is accomplished using the new <DIAL> tag:

```
<DIAL NAME =string ICON=number NOSCREENCHANGE>(n|n@t;)+</DIAL>
```

[0269] *n* is a number or special dial code (like p for pause). *@t*: specifies a duration, in tenths of seconds, if it is present. The choice between generating DTMF tones and making a new call is made based on whether a call is currently active (not on hold): if a call is active, the DTMF tones are generated.

[0270] The NAME and ICON attributes specify the party being called, to be used in the page that is displayed while the call is being placed, and in the follow-up page that allows the dialed number to easily be placed in the phone book. While the ICON attribute is also used in a call-connecting page, its primary purpose is in a call follow-up page that allows the user to store the dialed number in the phone book: phone numbers are identified by their icon in the embedded phone book object and elsewhere, and the ICON attribute specifies the icon to use, if the user does not change it when actually entering the number.

[0271] The NOSCREENCHANGE attribute indicates that the display should return to this page after the call is successful, rather than changing to be a standard call management page, such as in Fig. 22.

[0272] Any attempt by a non-privileged page to actually make a new call is confirmed with the user, to prevent malicious content from issuing unwanted phone calls.

[0273] This tag allows for a user interface page to provide a graphical instruction sheet for existing DTMF-based command trees. The user activates functions on the screen which then bring up a new page that generates the appropriate DTMF tones to execute the action the user requested, and that displays the operations available to the user in the new state. Fig. 25 illustrates an example of this type of use. The file entitled "Voice Box" is a user interface page for accessing a voice mail system. The <DIAL> tag in line 2 includes the telephone number for the voice mail system, and a user password "4416722". Lines 4-8 define the keys of the keypad 128 to activate various functions of the system. In the file entitled "Listen", the <DIAL> tag in line 2 first generates the DTMF tone corresponding to the number "5" which triggers the voice mail system to enter a playback mode. Lines 4-8 here assign respective number keys 134 to various actions, each of which is a URL to dial a specific number that generates further functions of the voice mail system. Thus, using the <DIAL> tag allows the user to navigate a voice response system's command tree in graphical

manner, while providing the correct underlying DTMF signals.

[0274] The <DIAL> is provided by the HTMLp content handler **114c** to the shell **106**, which in turn provides it to the telephone protocol handler **112g** for processing, and generation of the DTMF tones corresponding the numbers provided in the URL.

(ii) Advertising Content

[0275] Existing World-Wide Web content is largely supported by graphical advertising banners. The limited bandwidth and screen size of the screen display **136** on wireless communication devices **100** makes this sort of advertising problematic, however since conventional image-intensive advertising banners will not properly display on a wireless communication device **100**.

[0276] The present invention overcomes this limitation by providing an extension to the existing <MARQUEE> tag. This tag normally specifies text to be scrolled across the screen, but is limited to the <BODY> section of the page. Conventionally, if the <MARQUEE> tag is placed in the <HEAD> section, a conventional browser will ignore tag.

[0277] In the present invention, HTMLp content handler **114c** allows the <MARQUEE> tag to be placed in the <HEAD> section of a document. When so used, the accompanying advertising text in the <MARQUEE> tag alternates with the title of the page and any delayed help that has been specified with the <HELP> tag. This functionality is implemented by the HTMLp content handler **114c** responding to a call from the shell **106**, which is asked to notify the HTMLp content handler **114c** every other time the shell **106** would otherwise display delayed help. When notified, the HTMLp content handler **114c** instructs the shell **106** to scroll the advertising text across the title area **210**.

[0278] In summary, the HTMLp content handler **114c** and the HTMLp extensions provide numerous beneficial features and functions not present in conventional HTML.

b) The Advertising Manager

[0279] The advertising manager content handler **114a** selects an advertisement to display at idle time, deletes old advertisements or those that have been responded to or run their requisite number of times. The advertisements are defined as HTML or HTMLp pages and stored in memory **126** as part of the user interface definition files **104**. Advertisements are typically downloaded to the wireless communication device **100** by the operator on a scheduled basis. After the user responds to them, or they have been displayed a certain number of times, or if a more-important advertisement arrives, downloaded advertisements are automatically deleted.

[0280] The advertising manager content handler **114a** implements the basic content handler functions as follows:

(1) AdvertOpen

[0281] An advertisement page is never rerun, as the advertising manager content handler **114a** marks the page as temporary, and thus does not store it on the URL history stack **108**. This means that any other page that comes up (e. g. incoming call, battery low, or like) will replace the advertising page in the URL history stack **108**.

[0282] When AdvertOpen is called, it looks at the set of advertisement pages it has available and chooses one to display. It opens the file and passes the stream to the HTMLp content handler **114c** to display.

(2) AdvertClose

[0283] This function checks the advertisement page it was displaying, and if it is marked for deletion (because it has been responded to or because it has been displayed the required number of times), it deletes the advertisement page.

(3) AdvertActivate

[0284] The string is passed to the HTMLp content handler **114c** to be processed in HTMLpActivate after the current advertisement is marked for deletion since the user has responded to it.

(4) AdvertProcessKey

[0285] Any key press that is not otherwise bound in the advertisement page causes the page to be closed and the key press to be reprocessed by the page that was active before the advertisement page appeared.

c) The Call Manager

[0286] The call manager content handler **114b** is used for two purposes:

- 5 1. To display the active calls
2. To display the connection progress for an outgoing call

[0287] There is only ever one page on the URL history stack **108** that currently uses the call manager content handler **114b**, and that page is in one of these two modes. The call manager content handler **114b** implements the basic content handler functions as follows:

(1) CallManagerOpen

15 [0288] If the page is being rerun, this function makes the window it created before to display the page visible again and redisplay its contents.

[0289] If this is the first time the page is being opened, CallManagerOpen examines the stream of data for the URL to see if there is a phone number to be dialed. In the stream will be a string of the form:

20
$$\text{num}=\text{string}\&\text{name}=\text{string}\&\text{icon}=\text{n}$$

[0290] This tells the function the number to dial (with following DTMF tones, if any), the name to display for the number (if the number itself is not in the phone book), and the icon to display along with the name.

25 [0291] If there is a number to dial, the call manager content handler **114b** will enter dialing mode, using an interface provided by the telephone control module **120** and display a dialing page showing the progress in making the phone call. This page provides feedback as to which DTMF tones are being dialed, and will report errors should they arise. Figs. 21a-e illustrate an example dialing page, showing the status of the connection as "connecting," "line is busy," and so forth. In Figs. 20c-e also show the entire phone number being dialed, with a moving indicator under the present digit which is being dialed.

30 [0292] In the absence of a number to dial, the content handler **114b** CallManagerOpen function displays the list of active calls, along with interface to manipulate them. A simpler interface is presented if there is only one call active. Figs. 21a-c illustrate these interfaces. Fig. 21a shows the interface for a single active call; Fig. 21b shows the interface for multiple active calls; Fig. 21c shows the same interface as Fig. 21b but with a softkey 130 menu that allows for selection of whether to conference or hold a call.

(2) CallManagerClose

40 [0293] If the page is being closed permanently, and is removed from the URL history stack **108**, this will free up the resources it allocated to display the active calls. If there are still calls active, this function calls ShellAddIdleHook so after a certain amount of time with no user input, the list of active calls will again be displayed.

(3) CallManagerActivate

45 [0294] This function looks for the following commands that are bound to the softkeys **130**, depending on what actions are available for the selected call:

- Conference** Joins the other (on-hold) call to the current call in a multi-party call.
- 50 **Split** Removes the selected call from the multi-party call it is in.
- Hold** Places the selected call or multi-party call on hold.
- Pick Up** Activates an on-hold call or multi-party call.
- 55 **Back** Closes the call manager screen.
- Stop** Stops the current DTMF sequence and displays the list of active calls in place of the call-in-progress

screen.

(4) CallManagerProcessKey

5 **[0295]** This function handles the Up and Down keys in the multiple-call case, moving the user selection from one call to the next. The call that is selected is made the active call and the old active call is put on hold.

[0296] Number keys **134** generate DTMF tones if the active call is selected (in spite of the response to the Up and Down keys, which would seem to indicate that it is not possible to have the currently selected call not be active, it is possible for the selected call to be on-hold if the user just asked to put it on hold and has not changed the selection), else a dialer screen is brought up, and the digit is entered as the first of a number to call.

10 **[0297]** The End key terminates the current call. If the call is part of a multi-party call, it is removed from the conference before it is terminated.

[0298] The Send key brings up the dialer screen, but does not affect the current call until the user hits Send to make the second call.

15

d) The Main Content Handler

[0299] The main content handler **114d** serves largely as a front-end for the HTMLp content handler **114c** to display the main page of the device.

20

(1) MainOpen

[0300] Resets the input mode to numeric and the shift state to unshifted, so when the user starts pressing keys, they start dialing a number.

25 **[0301]** It then opens a stream to the main page, and passes the stream to the HTMLp content handler **114c** to display. A sample main page is illustrated in Fig. 22.

(2) MainClose

30 **[0302]** Calls HTMLpClose with the same arguments.

(3) MainActivate

35 **[0303]** Calls HTMLpActivate with the same arguments.

(4) MainProcessKey

[0304] If the key is End and there are calls active, this function will bring up the active call screen, so the user does not have to wait for it to appear to be able to hang up.

40 **[0305]** Any other key press is passed to HTMLpProcessKey to be processed.

7. The Protocol Handlers

45 **[0306]** In accordance with the present invention, the functionality of the wireless communication device **100** is accessed through a number of protocols and protocol handlers **112** that fetch or post data or execute a requested function in response to a URL identifying such data or function.

[0307] In a preferred embodiment, there are three main protocols for interacting with the wireless communication device **100**: phone, message, and config. A fourth protocol, the "extra" protocol, enables HTMLp template pages to be used for most of the user interface, as described with the <TEMPLATE> tag and other features.

50 **[0308]** For each protocol, the supported URLs are separated into those that return an object to be embedded in an HTML or HTMLp page, and those that display content or activate a function of the wireless communication device **100**.

a) The phone Protocol

55 **[0309]** This is the primary protocol for accessing the features of the device and the various embedded objects that are written in C, rather than HTML. It is decoded by the telephone protocol handler **112g**. These embedded objects include the phone book object, recent call list object, and the like, as described above. Each embedded object has parameters width and height. These parameters are specified in the URL for the embedded object, and define the pixel

width and height for a window to be provided by the embedded object to display its output.

[0310] Each embedded object also has a set of methods which it executes according to the URL specification.

(1) Embedded Objects

5

[0311] For each embedded object, there is described the parameters it accepts, as well as the methods that can be performed on it. These methods are strings that are bound to keys 128, hyperlinks, or softkey menu entries.

phone:dialing?width=*number*&height=*number*&storekey=*n*,*storelabel*/*editlabel*

10

[0312] Returns a stream containing an embedded object for dialing the phone. The object can look up entries in a stored phone book data structure by number or by name, and displays matches below its input field, as described above, with respect to the phonename and phonenumber attributes of the <INPUT> tag.

15

Parameters

[0313]

20

storekey Specifies which softkey 130 should be used to allow the user to edit an entry, if she has selected an entry in the match list, or to store the number or name that she has entered. The *storelabel* and *editlabel* values specified for the *storekey* parameter specify the label to be given to the softkey when it is set to perform either of those two functions.

25

Methods

[0314]

30

edit Requests that the number selected in the match list be edited.

store Requests that what the user has typed be stored in the phone book by entering the new-phone book-entry sequence with the appropriate field filled in from what the user has typed. If the current text entry mode is numeric, the entered data are taken to be the phone number; if the current text entry mode is non-numeric, it is taken to be the name.

35

[0315] Any action that contains an '@' character is also considered a method of this object. The @ escapes described for the phone:list object will also function here.

phone:list?width=*number*&height=*number*&editkey=*n*,*label*&service=*string*&data=*string*&show status

40

[0316] Returns a stream containing the phone book embedded object to display records from the phone book data structure.

Parameters

45

[0317]

editkey Specifies a softkey 130 whose label and action should be changed depending on what is selected (only phone numbers can be edited).

50

service, data Specify strings to display in the status message area 212 when a service (URL) or data (stored content) entry is selected, while *showstatus* determines whether any status message 212 is displayed (for phone number entries, the phone number is displayed).

55

Methods

[0318]

new If the list is in search mode and an entry in the match list has been selected, a new-phone book-entry se-

quence, a sequence of user interface definition files 104 that collect the name, number, and so forth, and store the result in the phone book, is entered using the name of the selected entry as the name for the new entry. If no entry in the match list is selected, the new-phone book-entry sequence is entered with what the user has typed as initial data. The data are used for the phone number if the current text-entry mode is numeric, or for the name if the current text-entry mode is not numeric.

edit A URL is generated to edit the current phone book entry, and the URL is fetched.

delete The current phone book entry is deleted, after confirming the request with the user:

[0319] Any URL that contains an @ character is also considered a method of this object, and is searched for the following escapes. If an escape is found, it is replaced by the relevant piece of data from the current selection. Once all escapes have been substituted for, the resulting URL is fetched.

Table 2:

Escapes Values	
Escape	Replaced By
@i	The record ID of the selected entry
@o	The offset of the selected phone number in the entry (0-7)
@n	The name in the selected entry
@N	The selected phone number (generates an error if the selected icon is not a phone number)
@I	The icon of the selected phone number (generates an error if the selected icon is not a phone number)
@S	The speed dial number of the selected phone number (generates an error if the selected icon is not a phone number)
@r	The ring tone for all numbers in the selected entry
@R	The ring priority for all numbers in the selected entry
@c	The category for the selected entry
@g	The group within the category for the selected entry
@@	A single '@' character.

phone:recentcall?filter=number&editkey=n,editlabel/storelabel&callkey=n,label&width=n&height=n&noempty

[0320] Returns a stream that contains an embedded object that can display the list of recently-received or -placed phone calls. Each item in the list of calls has a set of flags associated with it. The object can be told to display only items that have a certain flag set. The one flag currently defined is bit 0, which marks a call from a number where the user failed to answer the call.

Parameters

[0321] If *filter* is present, it indicates only calls of a particular type should be displayed (the sole current filter value is 1, meaning incoming calls that went unanswered). *editkey* and *callkey* specify a softkey whose label and action should be changed based on the call that has been selected. If *noempty* is present, it indicates that the screen containing the object should not be displayed if the list of calls, after filtering, is empty.

Methods

[0322]

edit If the current selection is a number that is in the phone book, this brings up the phone book edit screen for the number.

store If the current selection is not a number that is in the phone book, this brings up the new-phone book-entry sequence with the phone number set to the current selection.

call Initiates a call to the number in the current selection.

5

dismiss Closes the screen after clearing the "missed" flag (bit 0) for all items in the list.

phone:ringtone?width=*number*&height=*number*&ptrAddr=*hex*

10 **[0323]** Returns a stream that contains an embedded object that can display the list of ring tones the device can produce for an incoming call.

Parameters

15 **[0324]** If *ptrAddr* is given, the object gives the user the option of using the system-default ring. When the user has chosen a ring, its number is then placed at the memory address given by *hex*. If *ptrAddr* is not given, the object sets the system-default ring.

Methods

20

[0325]

test Plays the selected ring tone through once.

25

ok Sets the ring tone to that selected and closes the screen.

phone:speeddial?width=*number*&height=*number*&ptrAddr=*hexnumber*&Name=*string*&icon=*n*

30 **[0326]** Returns a stream containing an embedded object to display the list of speed dial locations.

30

Parameters

[0327] *ptrAddr* specifies where the object should store the selected speed dial number when the user chooses an entry. The *Name* and *icon* arguments are identical to those in phone:store, specifying the name and icon of the number being assigned a speed dial number.

35

Methods

[0328]

40

ok Sets the speed dial number to the current selection, if the current selection is not currently assigned to another number, then closes the screen. The *Name* and *icon* arguments are used in building a confirmation screen for the user.

45

clear Clears the assignment of the selected speed dial entry.

(2) Content/Command URLs

phone:active

50

[0329] Returns a stream of type "CallManager" that causes the active-call screen to display, allowing the user to manipulate any calls that may be active. Does nothing if no calls are active.

phone:answer

55

[0330] Causes any incoming phone call to be answered, returning a stream that causes the active-call screen to display. Does nothing if no incoming phone call. The referring URL is popped from the URL stack if there was an incoming phone call.

phone:conf

5 **[0331]** Causes any incoming phone call to be answered and joined with the current active phone call. Returns a stream that causes the active-call screen to display. Does nothing if no incoming phone call. The referring URL is popped from the URL history stack 108 if there was an incoming phone call.

phone:dial?num=string&name=string&icon=number&hidden

10 **[0332]** Causes a voice call to be created to the indicated *number*. If name and icon are provided, they are used in the page that displays the call progress, and in any follow-up page where the user is asked if she wishes to add the number to the phone book. If hidden is specified, the user will not see the call once it has connected (the active call screen will not be displayed). The URL returns a stream that causes the call-progress screen to be displayed.

[0333] If no arguments are given, the URL returns a stream that causes a dialer screen to be displayed, allowing the user to enter a phone number to call.

15 **[0334]** If the page issuing the request lacks sufficient privilege, the user will be asked if it is permissible to dial the phone number. For example, a received text message lacks sufficient privilege, as it might contain a call to a **900** or long-distance number that the user is not aware of.

phone:display?id=number

20

[0335] Returns a stream that displays the Data field of the specified phone book record.

phone:edit?name=string&num=string&offset=number&id=number

25

[0336] Returns a stream that causes a new/edit screen of the phone book to be displayed with the passed parameters. Offset and id are used only internally to edit an existing record (offset indicates which phone number to edit, while id is the identifier of the record to edit). Name and num, however, can be used to create a new phone book record, giving the user a chance to select an appropriate icon and otherwise edit the entry before storing it in the phone book.

30

phone:firstopen?password=string

[0337] Checks the given password *string* against that stored in the configuration settings. If it matches, the referring screen is popped and replaced by phone:main. If it does not match, the phone is turned off. This allows the power-on security screen to be an HTML page.

35

phone:ignore

40

[0338] Causes any incoming phone call to be rejected. The referring URL is popped from the URL history stack **108** if there was an incoming phone call. Does nothing if there is no incoming call. No stream is returned, so the URL that was active before the referring URL was fetched is redisplayed.

phone:indir?url=string&pop=action

45

[0339] Fetches one or more URLs (which activates their side-effects, whatever they may be) before returning the stream from the last one fetched. If the pop argument is given, it indicates that one or more URLs should be removed from the URL history stack **108** before the returned data are displayed. *action* can be one of pop, abort, or clear, to remove one URL, all the URLs in the current interaction, or all URLs from the history stack **108**.

phone:look?cat=number&sort&form=format

50

[0340] Retrieves names from the phone book that are in the category whose number is given by the *cat* argument. If the sort argument is given, the results are sorted alphabetically. The form argument specifies in what format the data are to be provided. They are always in some form of HTML (the result of this URL is an HTML stream), but the tags used vary as follows:

55

- **link:** each entry name is formatted as a link to the appropriate place: for an entry with a Service field, the HREF is the contents of the Service field, while for an entry with a Data field, the HREF will show that data. All other entries dial the first number in the entry.

- **form**: the names are formatted as <OPTION> elements of a <SELECT> list (which must surround the <INC> tag that fetches this data). The value of each option is the URL, as described for link.
- **menu**: each entry is provided as a <KEYMENU> tag in the same manner as for link. The key to use is specified by form=menu=x, where x is the key.
- **count**: produces the number of records that are in the given category.

[0341] The phone:look URL, when combined with the new <INC> tag, allows an HTML page to display a subset of the phone book in some sort of branded, graphical context. More importantly, it provides a simple way for both a service operator and for the user to manage which services are available to the user. Groups of services are stored in the phone book with a particular category. The device then has a page that uses this URL to display those entries and allow the user to select one of the services. Adding and removing services are simply a matter of adding or removing an entry in the phone book; there is no need to modify the page that displays the list of services.

phone: main

[0342] Returns a stream that causes a predefined main screen to be displayed.

phone:release?id=number

[0343] Releases the active call, or the specified call if the id argument is given. Returns no data.

phone:shortcut?num=n

[0344] Activates a shortcut function. *n* ranges from 0-9.

[0345] Shortcuts are defined by the manufacturer of the wireless communication device **100**, and are typically activated by holding down one of the softkeys **130** and then pressing one of the numeric keys **134**. They are generally available from all screens, with the exception of the power-on password screen.

[0346] For example, shortcut 1 might lock or unlock the keypad, while shortcut 2 might mute the phone's ringer, and shortcut 3 might activate or disable password protection when the wireless communication device **100** is turned on. Certain shortcuts might also be restricted on certain screens other than the power-on password screen.

phone:store?Name=string&Phone=speed=icon=string&Owner=string&Service=url&Category=number&Group=number&Ring=number&Data=type%0adata&speed=speed&icon=icon&id=id&offset=number&prio=n&pop=string

[0347] Creates, augments or edits a record in the phone book. If id and offset are specified, the selected phone number in that record is edited. Otherwise, if a record with the same Name already exists, the record is augmented, while an unmatched Name causes a new record to be created.

Parameters

[0348]

Phone The contents of this parameter vary depending on whether the "speed" and "icon" parameters are specified. If they are not specified, this parameter contains a string of the form "speed=icon=number/speed=icon=number/..." In other words, a string that specifies one or more phone numbers, giving the speed dial location and icon to associate with each. If "speed" and "icon" are specified, this parameter contains only the single phone number to store in the phone book.

Owner Specifies a password that allows the contents of the entry to be updated over the air.

Service Specifies a URL to be stored in the entry. This URL appears like a phone number in the phone book, but when the Send key is pressed, the data for the URL are fetched.

Category Allows an entry to be hidden from the normal phone book screen, but found by the phone:look URL for inclusion in an HTML page. Categories 0, 1, and 2 are displayed by the normal phone book.

Ring Specifies a ring tone (0 to 127, with 0 meaning to use the system default) to use when a call arrives from any number in this phone book record. If the high bit (32768) is set, it indicates that calls coming from any number in this phone book record should ring through, even if the device is in quiet mode. The high bit can also be set using the *prio* argument. If this is 1, the high bit will be set.

Data Allows arbitrary data to be stored in a phone book record. The data appear like a phone number in the

phone book, but when the Send key is pressed, the data are displayed. The first part of the argument value is the type of data. Typically this will be either text or HTMLp. The second part is the data itself, as a string of hex digits, two per octet to be stored.

Pop (Optional) Causes the URL that requested the phone:store URL to be removed from the URL history stack 108 according to the *string* value (*pop* ⇒ just the URL is removed, *done* ⇒ all URLs back beyond the most recent top URL are removed, and *clear* ⇒ all URLs back to the main screen are removed).

[0349] This particular command provides significant flexibility to the user. First, the DATA argument allows any data, not just telephone numbers, to be stored in the phone book. In particular, URLs, images, audio data, and any other content may be stored, creating a general purpose database in the wireless communication device **100**. For example, a user may be viewing Web content, select a URL that is displayed, and immediately store it to the phone book for later recall.

[0350] Second, the RING argument allows different ring tones to be specified for each phone book entry . This RING tone will be used when an incoming call is received from any number in that phone book entry. This allows the user to specify particular, distinct ring tones for various telephone numbers. For example, the user may specify particular ring tones for different family members, co-workers, a doctor's office or the like.

[0351] Third, the RING argument also allows for priority ringing for any phone book entry and its ring tone, by setting the high bit of the ring tone value, or specifying a non-zero PRIO argument. A conventional wireless communication device typically includes a quiet mode that silences the telephone and normally prevents it from ringing for any incoming call. With the present invention, this RING argument can specify that calls from the phone book entry are not so blocked, and allowed to ring. Thus, the user may set this priority ringing for family members and other important persons, so that even during quiet mode, telephone calls from such persons are allowed to ring.

[0352] The call manager content handler **114b** implements this feature by comparing the telephone number of each incoming telephone call with its store telephone numbers, and using the specified ring tone (if any) to select and control the ringing of the phone.

b) The message Protocol

[0353] Text messages, similar to alpha-numeric pages, can be received and viewed using the present invention. Messages are stored in a file and identified by a unique identifier. This protocol is handled by the message protocol handler **112f**.

(1) Embedded Objects

message:list?width=*number*&height=*number*&type=*type*&num=*string*&lockkey=*n*,*locklabelunlocklabel***

[0354] Returns a stream containing an embedded object that displays a list of the messages of the given type.

Parameters

[0355]

num (Optional) Indicates that only messages from the given source are to be displayed.

lockkey (Optional) Specifies which softkey **130** is to be updated based on whether the selected message is currently locked; pressing that softkey will toggle the locked state of the message. The *locklabel* and *unlocklabel* portions of the parameter specify the label to be given to the softkey **130** based on the function it is then performing.

type (Optional) Specifies what type of messages are to be displayed. Possible values are "TEXT", "FAX" or "VOICE".

Methods

[0356]

lock Locks the selected message against automatic deletion.

unlock Unlocks the selected message, allowing it to be automatically deleted.

new Begins composing a new outgoing message.

5 **open** Displays the selected message and marks it as read.

[0357] Any URL that contains an @ is also considered a method for this object. It is searched for the following escapes; if an escape is found, it is replaced by the relevant piece of data from the current selection. Once all escapes have been substituted for, the resulting URL is fetched.

10 Table 3:

Escapes for Messages	
Escape	Replaced By
@i	The record ID of the selected message
@b	The body of the selected message (URL-encoded)
@n	The phone number to call if one wishes to reply to the message by voice. For a numeric page (a message with just a phone number in it), this will be the number in the page. For all other messages, this is the phone number of the message sender.
@s	The phone number of the message sender
@@	A single '@' character

25 (2) Content/Command URLs

message:count?type=type

30 **[0358]** Returns a stream that contains the number of messages that are waiting, as text. The possible *type* values are VOICE, TEXT, or FAX. Usually this is used with the <INC> tag in implementing an inbox for all types of messages, providing a list of the types of messages the device supports, where the list enables the user to get to the individual screen for that type of message. The list can use this URL and the <INC> tag to display the number of messages available on this screen as part of the text that makes up the list. The URL can also be used in the TEST attribute of an IF tag to select a different tag based on whether there are any messages of that type available. For example, a static image could be used when there are no messages, while an animated one is used when there are messages of that type available.

message:operate?reply=&delete=&lock=&unlock=&adjust=&id=number

40 **[0359]** Performs an operation on the message whose id is specified. The possible operations (only one of which may be specified in the URL) are:

- **reply**: causes the message-composition screen to be brought up, with the destination address set to the sender of the message whose id is specified.
- 45 • **delete**: causes the message to be deleted.
- **delconfirm**: causes the message to be deleted after the user has been asked to confirm the deletion.
- **lock**: causes the message to be marked locked, which prevents it from automatically being deleted when the message store is full.
- 50 • **unlock**: causes the message to be marked unlocked, which allows it to be automatically deleted when the message store is full.

[0360] If the *adjust* argument is given, it causes the URL history stack **108** to be adjusted in the following manner:

- **reply**: no adjustment is made.
- 55 • **delete**: the referring URL is popped from the URL stack
- **lock, unlock**: a stream from the message:read URL is returned for the message, replacing the referring URL.

[0361] This URL requires sufficient privilege to operate. If the referring URL lacks the privilege, the operation is confirmed with the user.

message:read?id=number

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[0362] Returns a stream to display the message whose id is passed. The stream is for a template HTML file. The parameters that fill in that template are returned based on the contents of the message.

message:send?addr=string&body=string&newaddr=&newbody=&pop=&reply=id

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[0363] Requests that a text message be sent to the indicated address. If *addr* is missing, or *newaddr* is present, this returns a stream and parameters that allow the user to set the address for the message, while maintaining any body that was given.

[0364] If *body* is missing, or *newbody* is present, this returns a stream and parameters that allow the user to add or edit a body for the message, while maintaining any *addr* and reply that were given.

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[0365] If both *addr* and *body* are given, and both *newaddr* and *newbody* are absent, the message is sent. If *reply* is given, the corresponding message is marked as having been replied to.

[0366] If the message is sent, and *pop* is present, the referring URL is popped from the URL history stack 108.

[0367] This URL also operates with the POST operation (PutURL), where the *addr* is specified in the URL and the stream of data to put to the URL are taken to be the body of the message.

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[0368] This URL requires sufficient privilege to operate. If the referring URL lacks the privilege, the operation is confirmed with the user.

c) The config Protocol

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[0369] The third protocol for interaction with device functions is the config protocol, which is used to set and get device configuration information. This protocol is handled by the config protocol handler 112b.

[0370] The URLs that are formed with this protocol are the device settings themselves. When a URL is fetched, the current setting of the URL is converted to text and returned as a stream. When data are posted to a config protocol URL, the data are converted as necessary and the device setting is set. A config URL may address bits within a device setting, both for getting and setting. The URL then looks like this:

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config:setting.bitnumber.bitsize

[0371] If *:bitsize* is not present, 1 is assumed.

[0372] *Bitnumber* runs from 0 to 31, with 31 being the most-significant bit.

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[0373] Most settings may be fetched by any module, though some (like the wireless communication device's PIN number) may only be obtained by pages with sufficient privilege (typically HTML files that are in the ROM memory 126). No device setting may be set without sufficient privilege (again, typically by HTML files that are in the ROM memory 126).

[0374] Multiple settings can be set by posting to "config:set". The stream then contains lines of the form "*setting.bitnumber.bitsizevalue*"

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Table 4:

Configuration URLs		
URL	TYPE	FUNCTION
config:keypadlock	Boolean	Engages or disengages keypad lock, when set.
config:smspriority	int16	Rates how important incoming messages are: 0 ⇒ display all messages, 1 ⇒ display messages with the smskeyword, 2 ⇒ put all messages in the inbox
config:smskeyword	char[16]	Specifies a word to look for in incoming messages to determine if they are important enough to display.
config:ringtone	int16	Specifies a ring sequence (1-127) to use by default.
config:ringmode	int16	Specifies how to ring the phone: 0 ⇒ periodic ringing, 1 ⇒ periodic ringing + vibration, 2 ⇒ ring only once, 3 ⇒ do not ring at all.
config:setquietmode	boolean	When set, only calls from high-priority numbers will cause the phone to ring in its normal way.

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Table 4: (continued)

Configuration URLs		
URL	TYPE	FUNCTION
config:quietmode	int16	Specifies how to ring the phone for non-high priority numbers when in quiet mode. 0 ⇒ vibrate, 1 ⇒ chirp, 2 ⇒ don't do anything.
config:setpassword	boolean	When set, causes the user to be asked for a password whenever the phone is powered on.
config:password	char[4]	The password that must be entered.
config:backlight	boolean	If true, then backlight is turned on when the phone is in-use.
config:keyclicks	boolean	If true, then keystrokes generate a clicking sound appropriate to the key that was hit.
config:autosearch	boolean	If true, the phone book is searched for matches as the user dials the phone.
config:followup	boolean	If true, and a call is made to or received from a number that is not in the phone book and that hasn't been called recently, the user is asked whether to put the number in the phone book.
config:lasttime	int16	The number of seconds the last call was connected.
config:totaltime	int32	The total number of seconds that spent connected.

d) The "extra" Protocol

[0375] The "extra" protocol is used primarily with the new <INC>, <IF> and <TEMPLATE> tags to enable HTMLp templates to function as the bulk of the user interface of the present invention. This protocol is handled by the extra protocol handler 112c.

[0376] Generally, extra parameters are passed to an HTMLp template either from:

- 1) the C code of the MMI 102.
- 2) as an *arguments* string to a file URL. This takes the form "file://filename?variablename=extra_data". The extra data is stored with its variable name and used to complete the HTML for whatever page is fetching filename.
- 3) as data from a previous form that used the new METHOD=NEXT attribute to pass the form data to the next URL.

[0377] In addition, when a URL that is in an HTMLp page is fetched and it has no arguments, any parameters that were passed to the page that contains the URL being fetched are also passed to the URL that is being fetched.

[0378] The extra protocol handler 112c looks for an argument that matches the URL and converts the argument to a stream. For example, "<INC src=extra:body>" will include the "body" argument into the HTMLp stream. As another example, assume there is an HTMLp page that is used to display a message in a standard format with standard graphical elements. The message to display is given as an argument for the URL that loads the HTML page.

[0379] For example the URL

"file://message.html?message=Please+enter+a+valid+phone+number"

when given to the extra protocol handler 112 will store the text "Please enter a valid phone number" as a text string with variable name "message." This extra data will be displayed in any other page by use of the "extra:message" URL, which will output the string data. Fig. 22 illustrates this use. In this example, the extra data is retrieved by use of the <INC> tag, and results in the text string being directly incorporated into the page.

[0380] Generally, the extra protocol handler 112c is invoked as a result of the HTMLp content handler 114c parsing an "extra" URL in a HTMLp page. When so identified, the URL is passed to the extra protocol handler 112c for decoding and retrieval of the extra data, which is returned to the HTMLp content handler 114c to render into the page.

e) The builtin Protocol

[0381] The builtin protocol provides access to built-in icons and images for use in the SRC attribute of an IMG tag.

These icons and images are stored in the ROM of the memory **126**. The "builtin" text forms the protocol component of the URL, and the name of the desired icon makes up the data component of the URL. Fig. 23 illustrates a preferred set of icons, and the full URL for specifying them.

[0382] Generally, the builtin protocol handler **112a** is invoked as a result of the HTMLp content handler **114c** parsing a "builtin" URL in a HTMLp page. When so identified, the URL is passed to the builtin protocol handler **112a** for decoding and retrieval of the icon or image data from memory **126**, which is returned to the HTMLp content handler **114c** to render into the page.

C. PORTABLE COMPONENTS

[0383] Referring again to Fig. 3, the portable components **116** are a set of user interface entities and other functional components that are used to implement the user interface and storage needs of the wireless communication device **100**. The components write to the APIs provided by the portability layer **118**, and they serve as the basic implementation elements of the MMI 102 while remaining portable for use with different wireless communication devices **100**.

1. Graphics

[0384] The graphics system **224** divides the screen display **136** into sections called *windows*. Windows are arranged in a hierarchy, where child windows are wholly contained within their parent window. However, unlike other window systems, the window system of the present invention distinguishes between two types of windows: "dull" and "sprite". Rather than having every user interface component and window have its own bitmap as in conventional systems, which requires more complex bitmap handling, the graphic system **224** takes advantage of the fact that user interface components generally do not overlap. Instead, the graphics system **224** defines some windows (e.g., dialog boxes, or other windows that do overlap with other windows and need to obscure them) to have a bitmap (to be "sprite"), while the others (the "dull" windows) draw into the bitmap of their nearest ancestor that has one. This distinction reduces the amount of memory needed to store user interface components, and simplifies the process of updating the screen display **136**.

[0385] When a user interface element draws to a window, the drawing actually happens to a bitmap in memory **126**, not directly to the screen display **136**. At some point (in the top loop, actually, where the callback queue **110** is processed) all the changes to any and all of these bitmaps are transferred to the screen display **136**. This operation ensures a correct and clean update of the screen display **136**, and simplifies the underlying video driver, which need only transfer the bitmap from memory **126** to the screen display **136**.

[0386] The graphic systems **224** provides the following basic graphic primitives:

- Lines (thick or thin, arbitrary or special-cased single-pixel-thick vertical and horizontal; horizontal lines, vertical lines, and rectangles can also have a fill pattern to let them be dotted or dashed);
- Rectangles (outline or filled);
- Bitmaps (single-bit-per-pixel, drawn either as a stencil [a set bit gets drawn in a color, while a clear bit does nothing] or as an image [a set bit gets drawn in one color, while a clear bit gets drawn in another]); and
- Text.

[0387] The coordinate system of the screen display **136** is such that coordinates fall between pixels on the screen display **136**. The result is that if rectangle is drawn from (a, b) to (c, d) and another from (c, b) to (e, d), they will not overlap.

[0388] Text is drawn and manipulated using a data structure called a TextState. Text has various configurable attributes:

- Point size (preset small, medium, and large);
- Style (plain, bold, italic, underline, fixed-width and strike-through); and
- Color.

[0389] TextState also stores the drawing position, which is updated to be just after the string that was drawn, so that multiple strings may be drawn one after another without having to compute their width.

2. User Interface Gadgets

[0390] Most of the user interface of a wireless communication device **100** may be provided in the form of softkeys **130** and softkey menus. The content area **214** will generally display text, icons, and HTML forms, and the like. To

support these features, a number of user interface gadgets **226** are provided:

- **Checkbox**: used to implement both checkboxes and radio buttons (radio buttons rely on an external callback to know the other radio buttons that need to be deselected when the user selects one) Instantiated in response to `<INPUT TYPE=checkbox>` and `<INPUT TYPE=radio>` in HTML.
- **Icon**: displays a built-in icon.
- **LabelLine**: a horizontal line with an optional text label in a standard location in a standard font. Instantiated by the `<HR>` tag in HTML.
- **List**: the basis for all the various lists of items in the user interface. Specific list subclasses draw the individual items (placed by the List) and determine when the List's selection should be adjusted by a keystroke or other means.
- **Popup**: implements a popup list of strings from which the user can select one or multiple items. Each item has a string value bound to it. Instantiated by the `<SELECT>` tag in HTML when the SIZE parameter is 1.
- **ScrollBanner**: implements a single-line text banner that can scroll from right to left or from left to right at a specified speed. Instantiated by the `<MARQUEE>` tag in HTML.
- **StringList**: implements the list part of the Popup, but can also stand alone as a scrolling list. Softkey menus are implemented by a StringList. Instantiated by the `<SELECT>` tag in HTML when the SIZE parameter is not 1.
- **TextEdit**: a single-line or multi-line text editing area. Instantiated by the `<INPUT TYPE=text>` and `<INPUT TYPE=password>` tags in HTML.

[0391] These entities are created as needed by the various modules to display various graphic elements.

[0392] These various types of user interface elements are created by the HTMLp content handler **114c** when a page is parsed and in response to corresponding HTML tags. For example, an `INPUTTYPE=TEXT` tag in a page will result in a TextEdit object at the appropriate location on the screen display **136**. When the user selects the object with the Up or Down key, it is given the input focus to receive keystrokes input by the user. As such keystrokes are passed by the shell **106** to the TextEdit object.

[0393] Associated with the user interface gadgets are a couple other modules for entering and displaying text. The TextEntry module **228** accepts keystrokes and maps them to commands for text input. The commands include displaying provisional (subject to further modification based on subsequent keystrokes) characters and words, and replacement provisional characters and words. Making the last provisional character or word final, and moving the cursor or inserting symbol characters.

[0394] Any entity requiring text input registers with the TextEntry module **228** and then passes nearly all keystrokes to it, rather than interpreting the keystrokes itself. Front-end processing for various pictographic languages is handled in this module, as well.

[0395] Another module is the TextWrap module **230**, which handles arbitrary regions and wraps text and objects inside those regions. This module is primarily used in displaying HTML content, but can also be used for list entries that are allowed to wrap over multiple lines.

3. Data Store

[0396] Another element of the implementation is the data store **232**. The data store **232** is a simple "flat-file" database with the following characteristics:

- Up to **255** fields per record. Fields have both a name and a number, but only the number is used for actually accessing the data.
- All records are defined to logically have all fields. As a storage optimization, if no data have been given for a particular field for a particular record, the field for that record takes up no space.
- Each record has a unique identifier (16-bits at the moment) that is used to gain access to the record.
- Database records are not manipulated directly. Instead, functions to get and set the fields of a record are used.
- A database can have up to eight indices maintained for it. Each index has a selection routine and a comparison routine. The selection routine determines which records are part of the index, while the comparison routine is used to sort the records in the index. When the index is defined, it specifies which database fields are used by the selection and comparison routines. When a record is altered, only if one of those fields is changed will the record be repositioned in, added to, or removed from the index.
- To access a record, one of two functions is called to get a DataStoreRecord token. When an entity is done examining or manipulating the record, it calls DataStoreRecordDone.

4. File Svstems

[0397] The wireless communication device 100 has a file interface that communicates with two underlying file systems:

- A read-only filesystem that is a data structure compiled into the code.
- A flash filesystem that is spread among flash memory chips of the wireless communication device 100.

[0398] File access is via a (minimal) familiar set of functions:

- FileOpen
- FileCreate
- FileRead
- FileWrite
- FileSeek
- FileTruncate
- FileClose
- FileDelete

[0399] Each file system is defined by a structure containing routines to call for all the basic operations. The reference for an open file contains file system-specific data and a pointer to the table of routines for the file system on which the file sits. When a file is opened, the upper layer examines the name of the file to be affected and chooses the appropriate table of routines, then uses the Open routine in that table to open the file. Thereafter, access to the file is through the file reference.

D. PORTABILITY LAYER

[0400] Referring again to Fig. 3, there is shown the various modules of the portability layer 118. The portability layer 118 is designed to make it relatively simple to implement the MMI 102 with an arbitrary telephone control module 120 and real time operating system 122. It provides the following modules:

I. Call Control

[0401] The call control module 140 allows the upper layers to create and manipulate calls, generate DTMF tones, and receive notification of state changes.

[0402] The interface is asynchronous, in the sense that operations are performed on calls, but the success or failure of each operation is reported some time after the operation was requested.

Table 5:

Call Control Functions	
FUNCTION	PURPOSE
CallCreate	Attempts to begin a telephone call, given the number to dial. The call can be voice, or data, or fax.
CallCreateHidden	Like CallCreate, but signals that the call should not be visible to the user.
CallRelease	Attempts to hang up a call. If the call is part of a call group (conference), the entire group is hung up.
CallHold	Attempts to put a call (or call group) on hold.
CallResume	Attempts to take a call (or call group) off hold. If another call or call group is currently active, it is placed on hold first.
CallCombine	Attempts to join an on-hold call with the currently active call or call group to form a new or larger call group.
CallSeparate	Attempts to extract a call from a call group, making it a separate call again.

Table 5: (continued)

Call Control Functions	
FUNCTION	PURPOSE
5 CallGetInfo	Retrieves various pieces of information about an active call, such as what actions may be performed on it, its current state, to what number it's connected, the time when it connected, the time when it was put on hold, and whether it should be hidden from the user.
10 CallPickup	Attempts to answer an incoming call.
15 CallStartSequence	Marks the start of a series of call manipulation steps that depend on each other. If one of the steps fails, the rest of the steps in the sequence are not attempted.
CallEndSequence	Marks the end of a series of call manipulation steps.
CallStartDTMF	Begins generating a DTMF tone corresponding to a particular key.
CallEndDTMF	Stops generating the DTMF tone that was previously started.
CallEnumerate	Calls a function for each active call in the system.
CallDataAvailable	For a data call, returns the number of bytes available for reading.
20 CallDataRead	For a data call, reads available data.
CallDataWrite	For a data call, writes data to the network.
25 CallSetNotify	Specifies the routine to be called at the end of each call operation and when various asynchronous events occur, such as the arrival of an incoming call.

2. Message Control

[0403] The message control module 142 allows the upper layers to transmit and receive short text messages. This layer may or may not support segmentation and reassembly of larger messages.

Table 6:

Message Control Functions	
FUNCTION	PURPOSE
35 SMSCreate	Given the various parameters of a text message (destination number, body data, body format, and options), returns an SMS token for the message that can then be sent.
40 SMSCreateFromURL	Takes a string of URL-encoded arguments and uses them to create an SMS token for the message.
SMSSend	Takes an SMS token and sends the associated message. Notification function is called when the message has succeeded or failed in its attempt at sending.
SMSTDestroy	Frees the memory used by an SMS token.

3. Platform

[0404] The platform module 144 provides for platform-specific functions.

Table 7:

Platform Functions	
FUNCTION	PURPOSE
50 PlatMutexInitialize	Initializes a variable that can guarantee exclusive

Table 7: (continued)

Platform Functions	
FUNCTION	PURPOSE
	access when passed to PlatMutexGrab. While the MMI 102 is single-threaded, there are pieces of the portability layer 118 that may run on a different thread. Those parts of the upper layers that might be called from a different thread (where interrupt-handling code is also viewed as a separate thread) use this mechanism to guarantee exclusive access to data structures.
PlatMutexGrab	Gains exclusive access to whatever is governed by the mutual exclusion variable initialized by PlatMutexInitialize.
PlatMutexRelease	Releases exclusive access to whatever is governed by the mutual exclusion variable initialized by PlatMutexInitialize.
PlatMutexDestroy	Frees up any resources allocated by PlatMutexInitialize.
Plat wait ForSomething	Pauses until PlatHaveSomething is called. This provides a hook for the portability layer 118 to shut down or yield control of the processor. so the upper layers do not waste processor time unnecessarily.
PlatHaveSomething	Releases the upper layer if it is waiting in PlatWaitForSomething.
PlatRingPlay	Plays a ring tune or other sound through the system's speaker. Sounds are defined by an index, a volume level, and whether vibration should also happen. 127 sounds are defined as system sounds (keyclicks and error sounds, for example), while 127 sounds are defined as tunes for the phone ringer. Returns immediately, allowing the sound to play in the background.
PlatRingStop	Interrupts an active sound that was started with PlatRingPlay.
PlatRingGetNumberOfRings	Returns the number of phone ring tunes that are supported/defined.
PlatRingGetName	Returns the name of one of the phone ring tunes, for displaying to the user to allow her to select a default ring, or a ring for a particular person.
PlatGetPowerStatus	Retrieves the current state of the battery and AC adapter.

4. Timer

[0405] The timer module 146 provides basic timing services that allow the upper layers to receive a function call after a specified amount of time has passed.

Table 8:

Timer Functions	
FUNCTION	PURPOSE
TimerAlloc	Allocates a timer that can be used repeatedly. Sets the routine to be called when the timer expires. The routine is-called synchronously via the callback queue: it does not interrupt other operations.
TimerStart	Specifies the next timeout interval for the timer, in milliseconds. After approximately that amount of time, the routine specified in TimerAlloc is called.
TimerStop	Stops a timer from firing. If the timer has already fired, and a call to the timer routine is in the callback queue, the call is removed from the queue, so there is no need to handle getting a call after having stopped the timer.
TimerFree	Frees up an allocated timer. If the timer was running, it is also stopped.

Table 8: (continued)

Timer Functions	
FUNCTION	PURPOSE
TimerGeiSeconds	Returns a 32-bit counter of seconds. The counter does not need to be relative to anything in particular, so long as it increases steadily once each second.

5. Display

[0406] The display module 148 manages the screen display 136.

Table 9:

Display Functions	
FUNCTION	PURPOSE
DisplayDriverBlitIn	Copies part of a bitmap to a point on the display.
DisplaySetBacklight	Turns the display's backlight on or off.
DisplayDriverSetContrast	Sets the display's contrast to the specified value.
DisplayDriverGetContrast	Retrieves the current contrast for the display.

6. Flash Driver

[0407] The flash driver module 150 allows the upper layer tile system module 234 to read and write the flash memory chips on the wireless communication device 100.

Table 10:

Flash Drive Functions	
FUNCTION	PURPOSE
FlashDriverInitialize	Initializes access to the flash memory.
FlashDriverGetInfo	Returns information about the flash driver and the device it is driving. It includes: <ul style="list-style-type: none"> • The number of erase units in the device • How big each erase unit is
	<ul style="list-style-type: none"> • If the device reads and writes in pages, rather than on arbitrary byte boundaries, the driver can specify the page size. • If either the device or the driver supports error correction for written . pages, the driver can indicate this to the flash file system.
FlashDriverErase	Erases an erase unit of the device. It may happen synchronously or asynchronously, but in either case a callback function is called when the erase is complete, indicating if the erase was successful.
FlashDriverWrite	Writes a number of blocks of bytes to an erase unit in the device. If the device reads and writes in pages, the size of the blocks will always be a page size, though the driver may have to provide harmless bytes for one or more of the blocks that make up the page.
FlashDriverRead	Reads a number of bytes from an erase unit in the device.

7. Config Protocol Handler

[0408] This protocol handler 112b allows C code and HTML to get and set configuration settings of the wireless communication device 100. These settings are the ones implemented by the upper layers, and the module communicates other settings to lower-level code as needed. Because of its need to access configuration settings, the config protocol handler 112b is preferably located in the portability layer 118.

[0409] A config URL may address bits within a device setting, both for getting and setting. A config URL has the following syntax:

config:setting.bitnumber:bitsize

[0410] If *:bitsize* is not present, 1 is assumed. *Bitnumber* runs from 0 to 15, with 15 being the most-significant bit.

[0411] Most settings may be fetched by any module or page that needs them, though some configuration settings, such as the telephone's PIN number, may only be obtained by URLs with sufficient privilege (typically HTML files that are in the device's ROM). No device setting may be set without sufficient privilege (again, typically by HTML files that are in the device ROM).

[0412] The following are a set of preferred configuration URLs for invoking respective functions of the config protocol handler **112b**:

Table 11 :

Config Protocol Handler Functions	
FUNCTION	PURPOSE
ConfigGetIntValue	Retrieves an integral configuration setting.
ConfigSetIntValue	Sets an integral configuration setting.
ConfigGetStringValue	Retrieves a string configuration setting.
ConfigSetStringValue	Sets a string configuration setting.
ConfigParseSetting	Parses a string reference to a configuration setting, yielding the data type of the setting, and, for integral settings, which bits of the value to affect or fetch.
ConfigCheckPassword	Examines the arguments from a URL for a password and compares it against the password stored in the configuration settings.
ConfigConfirmPassword	Handles obtaining a password from the user and resubmitting a URL with a password attached (to be examined by ConfigCheckPassword)

[0413] In summary, the present invention provides a system, various methods, and a software product that substantially enhances the flexibility and functionality of wireless communication devices. The present invention, including the use of protocol handlers and content handlers, provides a system and software architecture in which all features and functionality of the wireless communication device may be accessed and manipulated through a markup language based user interface. The extended features of HTMLp and the HTMLp content handler specifically allow Web and other content to be easily displayed on the small screen display of a wireless communication device, and enhance the menuing, navigational features, and the form handling features of HTML. By providing access to telephone or other functionality of the wireless communication device through a markup language-based user interface, the present invention allows service operators to easily and quickly generate new user interfaces and custom feature sets for different wireless communication devices, without requiring the expertise, software development environment, or software management problems of conventional MMIs. Further, the present invention allows service operators and manufacturers to quickly and efficiently brand wireless communication devices as desired, again without requiring creation of different MMI software for each service operator.

APPENDIX A

The Shell Functions

5 The shell 106 offers many functions for the other parts of the present invention to use
to process keys, manage the URL history stack 108, and handle other data. They are described
briefly as follows:

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KEY PROCESSING FUNCTIONS	
FUNCTION	PURPOSE
ShellProcessKey	Accepts keystroke from the portability layer and passes it to the first entity in the keypad target list.
ShellGrabInput	Registers an entity as interested in receiving keystrokes. The keypad target list is processed in LIFO order. An entity is defined as a table of two routines plus a void * those routines can use for any purpose. The two routines are: ProcessKey, which actually receives the keystrokes. GrabChange, which is notified when the entity is or is not at the head of the keypad target list.
ShellReleaseInput	Unregisters an entity from the keypad target list.
ShellPreviousInput	Passes the keystroke to the entity that registered before the one calling this function. When called from a content handler's ContentProcessKey function, the shell will process the keystroke according to the system-wide defaults.

50 URL STACK MANAGEMENT

FUNCTION PURPOSE

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ShellGetURLWithDataAnd	Fetches the data associated with the URL and hands
------------------------	--

URL STACK MANAGEMENT

FUNCTION	PURPOSE
<p>5</p> <p>10</p> <p>15</p> <p>20</p> <p>25</p> <p>30</p> Flags	<p>control of the content area to the handler for the type of content that is returned by the protocol handler, placing the URL at the top of the URL stack.</p> <p>In addition to the <code>ContentStream</code> returned by the protocol handler, the content handler receives the <code>ShellExtraData</code> passed to this routine.</p> <p>The caller also passes a set of flags that contain the priority of the URL (how important it is to display the data: if the URL stack contains a URL that is of higher priority, the fetching and display of the data associated with the passed URL is delayed until the user has removed the higher-priority URL from the stack) and the privilege level at which to fetch the passed URL.</p>
<p>35</p> ShellGetURL	<p>Fetches the data associated with the URL and displays it, passing no extra data and using the priority and privilege of the URL at the top of the URL stack.</p>
<p>40</p> ShellGetURLFlags	<p>Gets the flags (priority and privilege) for the URL at the top of the URL stack.</p>
<p>45</p> <p>50</p> ShellDisplayContent	<p>This is the moral equivalent of a dialog box in the present invention. It allows you to bring up a content handler directly without having to have a protocol handler and URL involved. The content handler receives the same flags and privilege as is enjoyed by the URL that is bringing it up.</p>
<p>55</p> ShellGetURLStream	<p>Fetches the data associated with the URL without changing what's displayed in the content area.</p>

URL STACK MANAGEMENT

5	FUNCTION	PURPOSE
	ShellRerun	Refetches the data for the top URL on the URL stack and causes it to be displayed again.
10	ShellGoBack	Pops one or more URL's from the URL stack. The caller passes a parameter that says whether to simply remove the top-most URL, all URL's involved in the current interaction (see section Error! Reference source not found.) or all URL's but the very first.
15		
20	ShellGoBackString	Like ShellGoBack, but accepts a dynamically-allocated string.
25	ShellPopURL	Pops a specific URL off the URL stack.
30	ShellMarkTop	Marks the current URL as the start of a complex interaction, all components of which can be popped from the stack at once by passing the appropriate argument to ShellGoBack.
35	ShellMarkTemp	Turns on or off the "temporary" attribute of the top-most URL. When a URL is marked temporary, any attempt to fetch another URL will cause the temporary URL to be popped from the stack before the new URL is displayed.
40		
45	ShellPutURL	Stores data for the passed URL. Does not affect the URL stack.
50	ShellSetState	Records a block of state to be associated with the top-most URL on the URL stack. The content handler for the URL is responsible for freeing and altering the contents of the block; the shell merely tracks the address.
55		

URL STACK MANAGEMENT

FUNCTION	PURPOSE
	The intent is to allow the user to return to the same visual place when she pops back to this URL. The shell does not attempt to cache URL data returned by protocol handlers.
ShellGetState	Retrieves the block of state for the top-most URL, as was set by calling ShellSetState.
ShellGetExtraData	Returns the pointer to the extra data that were passed with the top-most URL.

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URL GENERATION & DECOMPOSITION

FUNCTION	PURPOSE
ShellParseURLArgs	Begin parsing the arguments that were encoded in a URL. Arguments are of the form "name=value", with multiple arguments separated by '&' characters. Arguments usually follow the first '?' in a URL.
ShellGetNextURLArg	Fetches the next argument from the argument list, using the token returned by ShellParseURLArgs.
ShellDoneWithURLArgs	Finish parsing arguments from a URL.
ShellFindURLArgs	Shorthand function that will search a URL argument string for specific arguments and return their values. Some arguments may be marked as mandatory, causing no values to be returned if not all the mandatory arguments are present.
ShellBeginURLArgs	Begin constructing a URL argument list. An initial set of name/value pairs may be given in this call.

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URL GENERATION & DECOMPOSITION	
FUNCTION	PURPOSE
ShellAppendURLArg	Adds another name/value pair to the argument list that's being built.
ShellFinishURLArgs	Returns the now-complete argument string with all name/value pairs suitably formatted and encoded.
ShellPrependURLToArgs	Specifies the URL for which these are the arguments. ShellFinishURLArgs will return the URL with the arguments attached.
ShellEncodeURLArg	Encodes a string for inclusion in a URL argument list. This is used by ShellAppendURLArg and ShellBeginURLArgs, but is also made available for general use.

CONTENT STREAM MANAGEMENT	
FUNCTION	PURPOSE
ShellCreateContentStream	Allocates a ContentStream structure for a stream of the passed type.
ShellCloseContentStream	Closes a content stream and frees the ContentStream structure.

SOFTKEY MANAGEMENT	
FUNCTION	PURPOSE
ShellDefineKeyGo	Requests that a softkey be given a particular label, and when the key is pressed, the current content handler's ContentActivate function be given the passed string.

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SOFTKEY MANAGEMENT	
FUNCTION	PURPOSE
ShellDefineKeyBack	Requests that a softkey be given a particular label, and when the key is pressed, ShellGoBack be called with the passed argument.
ShellDefineKeyMenu	Requests that a softkey be given a particular label, and when the key is pressed, it bring up a menu with the passed entries. When one of the entries is selected, the current content handler's ContentActivate function is called with the string specified for the selected entry.
ShellDefineKeyNothing	Requests that a softkey have any previous binding removed.

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MISCELLANEOUS SCREEN ELEMENTS	
FUNCTION	PURPOSE
ShellDisplayStatus	If the status message area is visible, the shell will display the passed message in that area.
ShellDisplayTitle	If the title area is visible, the shell will display the passed title in that area.
ShellSetScrollable	Lets the user know whether the content can be scrolled in either direction (up or down).
ShellSetNewMail	Show or remove the new-mail icon from the screen.
ShellEnlargeContent	Requests that the content area be enlarged to take over the indicated pieces of the screen. The takeover lasts until the next URL is displayed and is <i>not</i> automatically reestablished when the URL making the request is redisplayed.

TEXT ENTRY MODES	
FUNCTION	PURPOSE
ShellSetTextEntryMode	Changes the global text-entry mode and updates the mode indicator on the display. The shell itself does not act differently based on the mode, but it is the custodian of the current mode setting that other parts of the present invention consult.
ShellSetTextShiftState	Sets the shift state that is used by other parts of the invention. The shift state may also modify the mode indicator the shell displays.
ShellGetTextEntryMode	Fetches the current text entry mode.
ShellGetTextShiftState	Fetches the current shift state.
ShellSetModeSequence	Specifies the sequence of modes through which the shell should cycle when implementing the default processing for the "mode" key. Anywhere from one to all three modes may be specified.
ShellEnforceModeSequence	Ensure that the global mode is set to either any of the modes in the current sequence, or to the first mode in the current sequence, depending on the passed parameter.

IDLE-TIME PROCESSING	
FUNCTION	PURPOSE
ShellAddIdleHook	Requests that a function be called after a specified number of seconds have passed without any user input.
ShellRemoveIdleHook	Removes a function that was previously registered

IDLE-TIME PROCESSING	
FUNCTION	PURPOSE
	with ShellAddIdleHook.
ShellDisableIdle	Disables all idle-time processing. This may be called multiple times, but each call must be matched by a corresponding call to ShellEnableIdle.
ShellEnableIdle	Re-enables idle-time processing if there are no more outstanding calls to ShellDisableIdle.

MISCELLANEOUS FUNCTIONS	
FUNCTION	PURPOSE
ShellPowerOff	Pops all URL's off the URL stack and asks the portability layer to power off the device.
ShellStandardDialog	Brings up a full-screen dialog in a standard format. The caller can specify the message, the style of dialog desired, what to do with the softkeys, and a time without user input after which to take a default action.

Claims

1. A computer implemented method of data processing a page of data encoded in a markup language, the page including a reference to an embedded object, the method comprising:

receiving a user selection of a displayed user interface element in the page, the element associated with a URL encoded within the page, the URL having a protocol component and a data component; invoking the embedded object, and providing the URL to the embedded object for processing; and responsive to the embedded object not processing the URL, fetching content specified by the data component, or executing a command specified by the data component.

2. A computer implemented method of data processing a page of data encoded in a markup language, the method comprising:

receiving a user selection of a displayed user interface element in the page, the element associated with a command encoded within the page, the command having a protocol component and a data component; and invoking the embedded object, and providing the command to the embedded object for processing, the embedded object processing the command using an internally defined function.

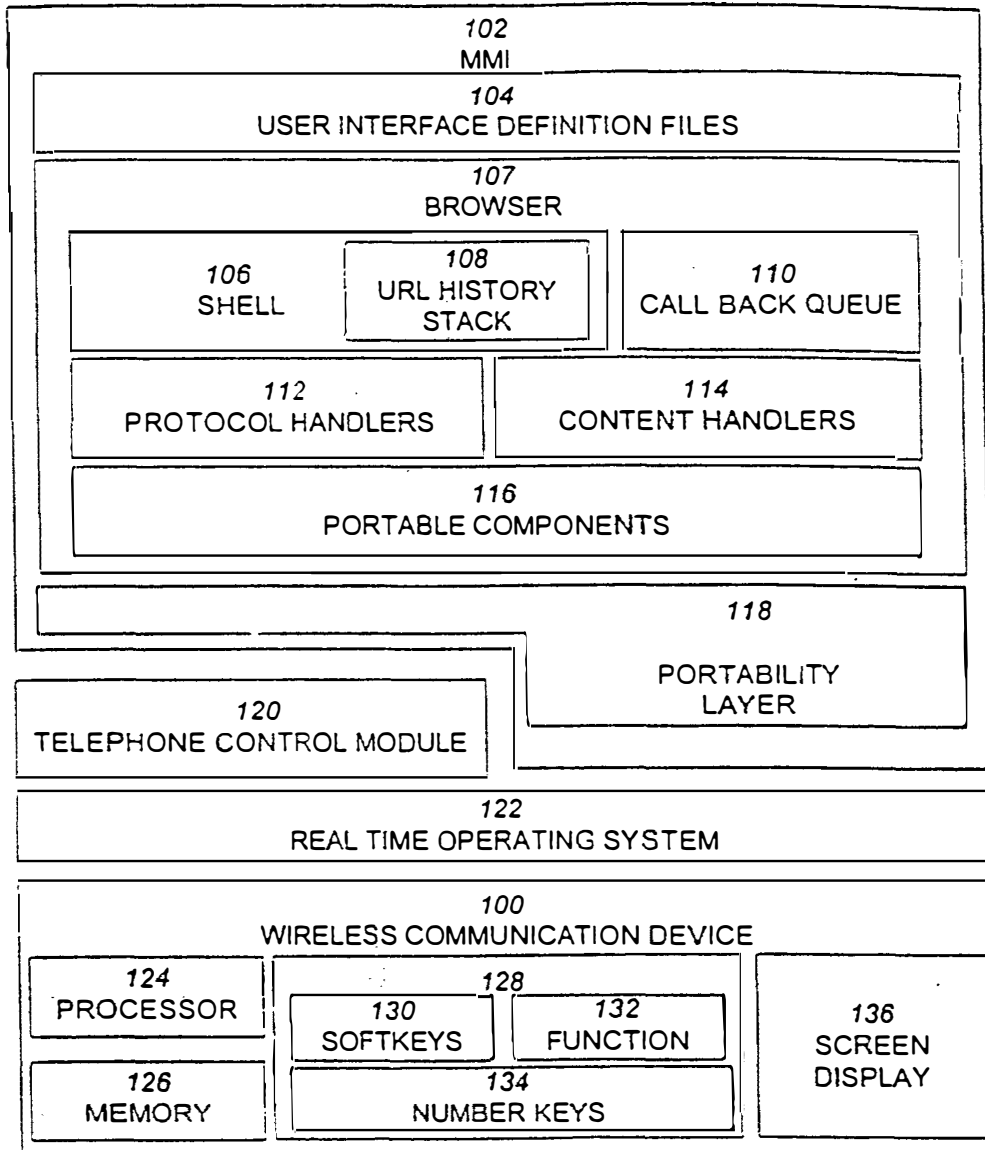


FIG. 1

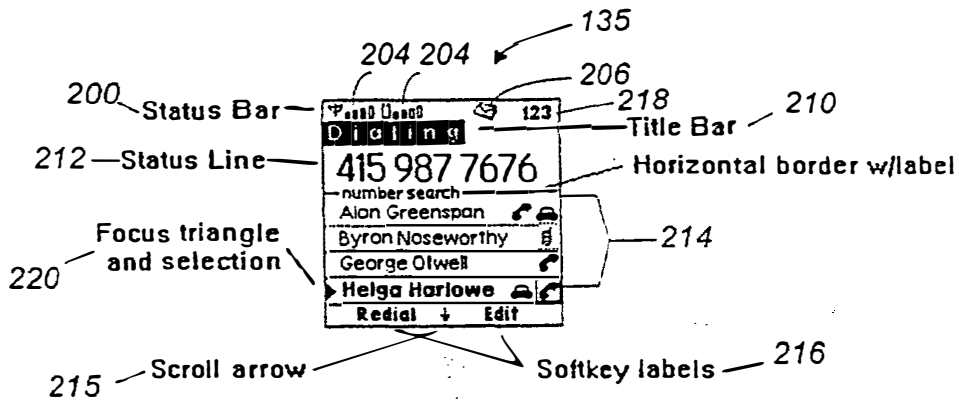


FIG. 2

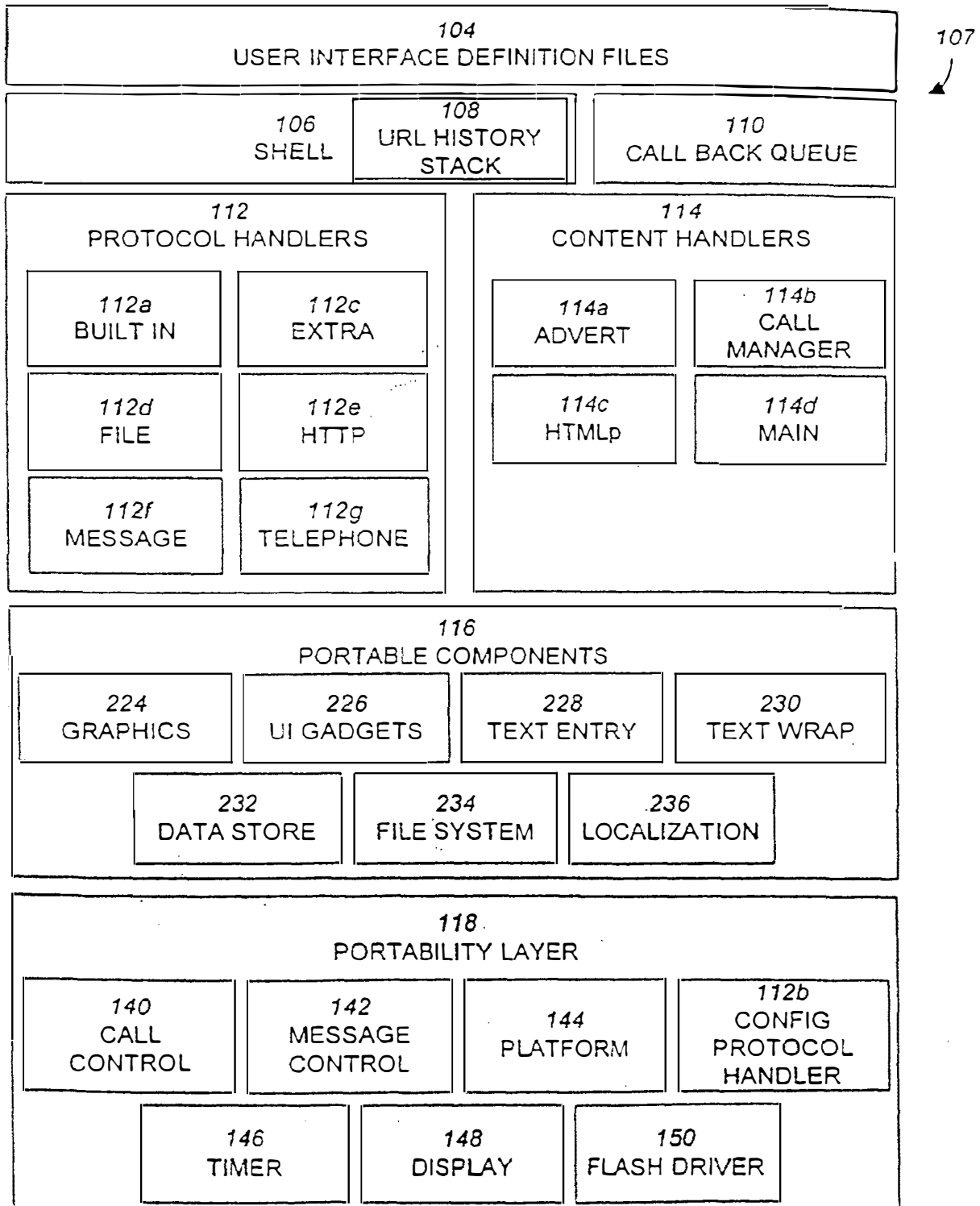


FIG. 3

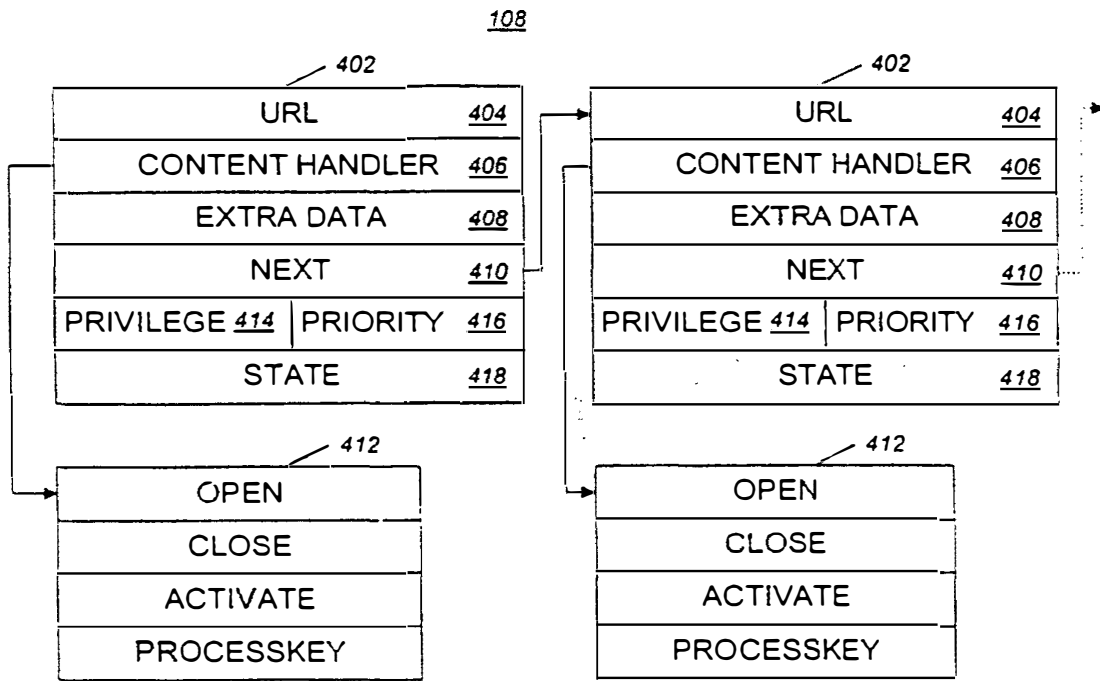


FIG. 4

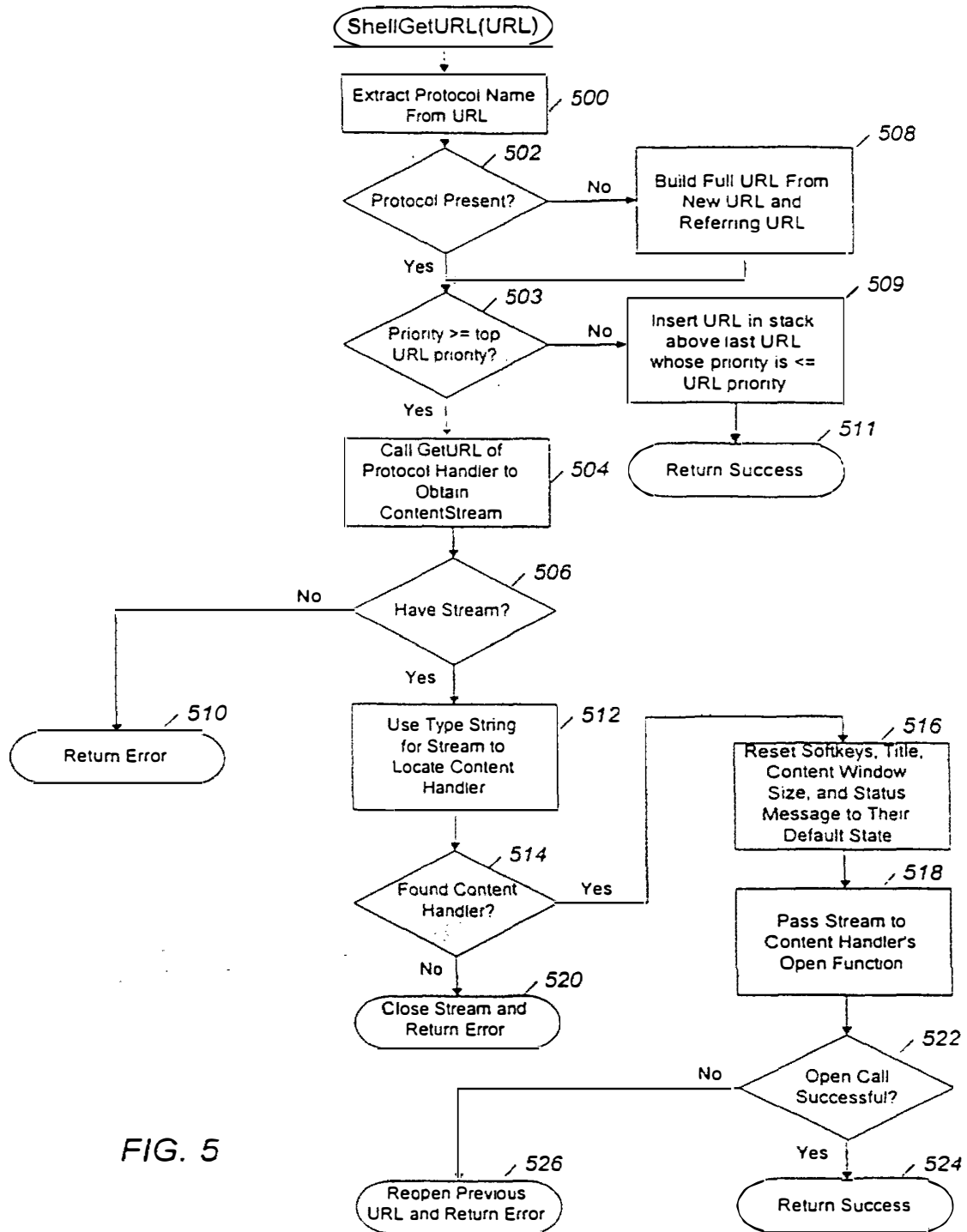


FIG. 5

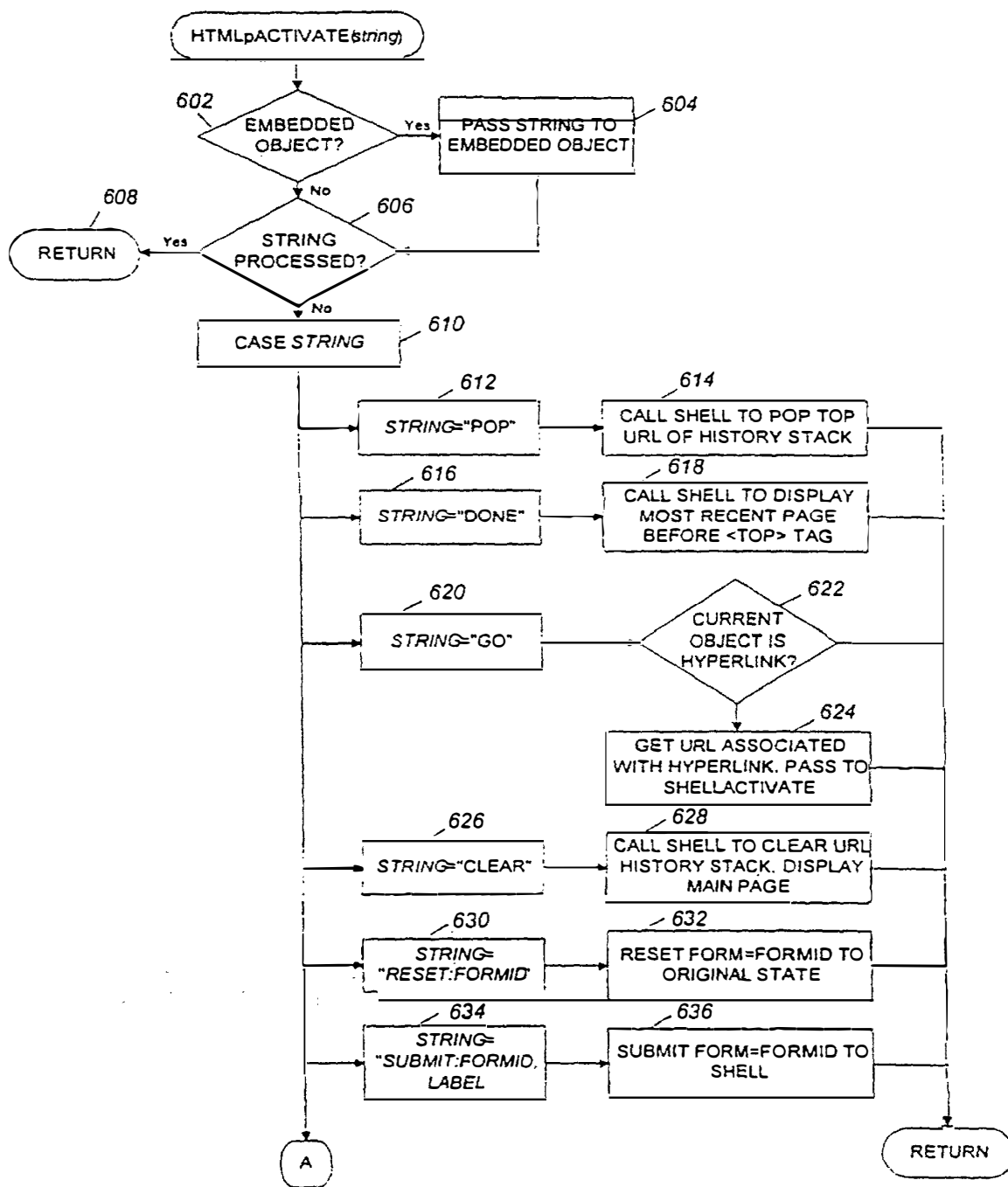


FIG. 6A

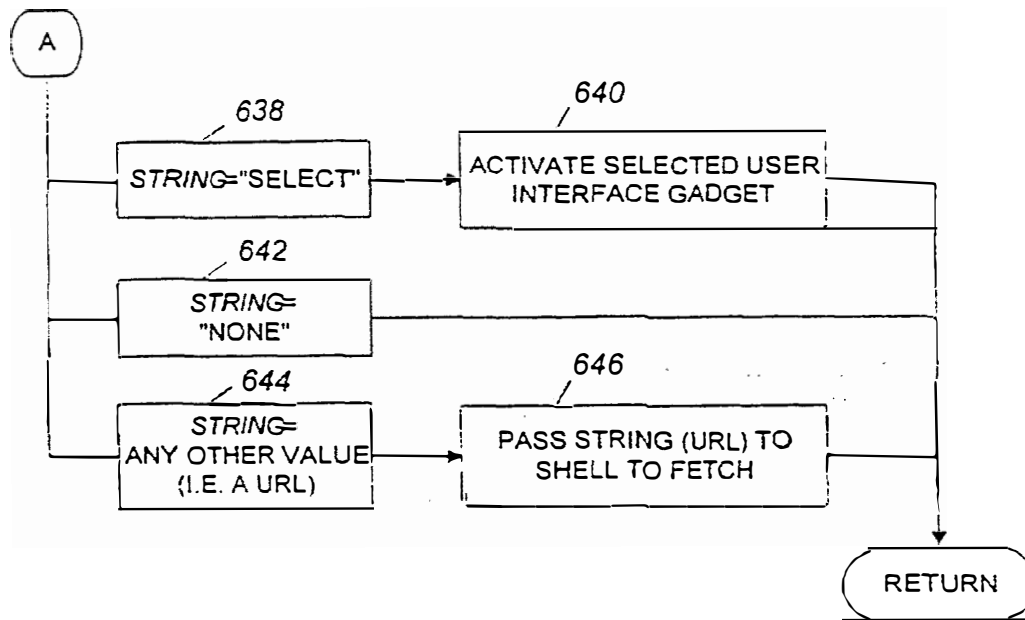


FIG. 6B

HTMLp	Result
<pre> <HTML> <HEAD> <KEY KEY=2 LABEL="PhoneBook" ACTION="file://phonbook.html"> <KEY KEY=1 LABEL="Menu" ACTION=MENU> <KEYMENU KEY=1 LABEL="Messages" ACTION=file://msgs.html> <KEYMENU KEY=1 LABEL="Recent Calls" ACTION=file://recent.html> <KEYMENU KEY=1 LABEL="Phone Settings" ACTION="file://phonsett.html"> <KEY KEY=up action="file://recent.html"> <KEY KEY=down action="file://phonbook.html"> </HEAD> <BODY>

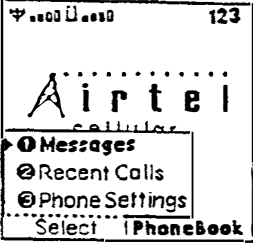
 <CENTER>
 c e l l u l a r
 s e r v i c e s </CENTER> </BODY> </HTML> </pre>	 <p>The screenshot shows a mobile phone interface. At the top, there is a signal strength indicator, a battery level indicator, and the number '123'. Below this is the 'Airtel Cellular' logo. A menu is displayed with the following options: 'Messages', 'Recent Calls', 'Phone Settings', and 'PhoneBook'. The 'PhoneBook' option is highlighted with a selection bar.</p>

FIG. 7

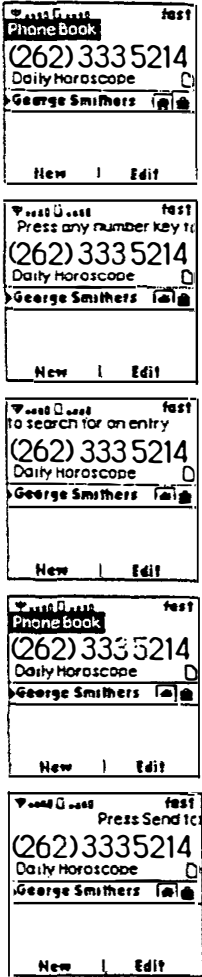
HTMLp	Result
<pre> <HTML> <HEAD> <TOP> <TITLE>Phone Book</TITLE> <KEY KEY=1 Label=New Action="new"> <KEY KEY=clear action=delete> <HELP>Press any number key to search for an entry</HELP> <HELP>Press Send to call someone</HELP> </HEAD> <BODY> <OBJECT CODE="phone:list?editkey=2&showstatus"> </BODY> </HTML> </pre>	 <p>The 'Result' column displays five sequential screenshots of a mobile phone interface. Each screenshot shows a phone book entry for 'George Smithers' with the phone number '(262) 333 5214'. The interface includes a title bar, a list of items, and 'New' and 'Edit' buttons. The screenshots show the entry being viewed, searched for, and then edited.</p>

FIG. 8

HTMLp	Result
<pre> <HTML> <HEAD> <KEY KEY=2 LABEL=Ignore ACTION=phone:ignore> <IF TEST=extra:conf> <KEY KEY=1 LABEL=Conference ACTION=phone:conference> <ELSE> <KEY KEY=1 LABEL="Pick Up" ACTION=phone:answer> </IF> <KEY KEY=send ACTION=phone:answer> <IF TEST=config:anykey> <KEY KEY=default ACTION=phone:answer> <KEY KEY=back ACTION=phone:answer> </IF> <KEY KEY=end ACTION=phone:ignore> <KEY KEY=up ACTION=phone:upvolume> <KEY KEY=down ACTION=phone:downvolume> </HEAD> <BODY > <TEMPLATE> <CENTER> %{extra:name}

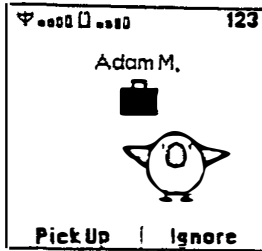
 </CENTER> </TEMPLATE> </BODY> </HTML> </pre>	

FIG. 9

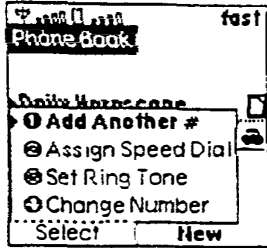
HTMLp	Result
<pre> <HTML> <HEAD> <TOP> <TITLE>Phone Book</TITLE> <KEY KEY=1 LABEL="Modify" ACTION=MENU> <KEYMENU KEY=1 LABEL="Add Another #" ACTION="phone:edit?Name=@n"> <KEYMENU KEY=1 LABEL="Assign Speed Dial" ACTION="file://pbspeed.html?id=@i&offset=@o&Name=@n&icon=@I"> <KEYMENU KEY=1 LABEL="Set Ring Tone" ACTION="file://pbring.html?id=@i&Name=@n"> <KEYMENU KEY=1 LABEL="Change Number" ACTION="file://pbrnum.html?id=@i&offset=@o&Name=@n&Phone=@N"> <KEY KEY=2 Label=New Action="new"> <KEY KEY=clear action=delete> <HELP>Press any number key to search for an entry</HELP> <HELP>Press Send to call someone</HELP> </HEAD> <BODY> <OBJECT CODE="phone:list?showstatus"> </BODY> </HTML> </pre>	

FIG. 10

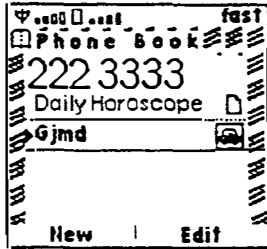
HTMLp	Result
<pre> <HTML> <HEAD> <TOP> <KEY KEY=1 Label=New Action="new"> <KEY KEY=clear action=delete> </HEAD> <BODY background="file://logo.gif"> P h o n e &nbsp;B o o k
 &nbsp;&nbsp;&nbsp;<OBJECT CODE="phone:list?editkey=2&showstatus&editurl=file://pbedit.html?id =@i&26offset=@o&26Name=@n&26speed=@S&26icon=@I&26Phone=@N&26ring=@r &26prio=@R" width=101> </BODY> </HTML> </pre>	

FIG. 11

HTMLp	Result
<pre> <HTML> <HEAD> <TITLE>Set Backlight</TITLE> </HEAD> <BODY> <TEMPLATE> <FORM METHOD=POST ACTION="config:set"> Backlight should be:
 <input type=radio name="backlight" CHECKED="config:backlight=0" value=0>On when in use
 <input type=radio name="backlight" CHECKED="config:backlight=1" value=1>On when in use or charging
 <input type=radio name="backlight" CHECKED="config:backlight=2" value=2>Off

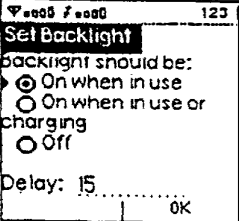
 Delay: <input type=text name="backlight delay" value="\{config:backlight delay}"> <input type=submit name=ok value=OK> </FORM> </TEMPLATE> </BODY> </HTML> </pre>	

FIG. 12

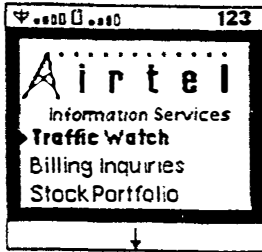
HTMLp	Result
<pre>file info.html <HTML> <INC SRC=tbody.html> <center>Information Services
</center> <FORM ACTION=phone:indir> <SELECT SIZE=3 NAME=url SIMPLE> <OPTION VALUE=http://svcs/traffic.html>Traffic Watch</OPTION> <OPTION VALUE=http://svcs/billing.html>Billing Inquiries</OPTION> <OPTION VALUE=http://svcs/portfolio.html>Stock Portfolio</OPTION> <OPTION VALUE=http://svcs/weather.html>Local Weather</OPTION> </SELECT> <INPUT TYPE=submit KEY=send> </FORM> <INC SRC=endtbody.html> </HTML></pre>	 <p>The screenshot shows a mobile phone interface with a status bar at the top displaying signal strength, a battery icon, and the number 123. Below the status bar is the Airtel logo and the text 'Information Services'. A menu is displayed with three options: 'Traffic Watch', 'Billing Inquiries', and 'Stock Portfolio'. A downward arrow is visible below the menu.</p>
<pre>file tbody.html: <! Specifies a body surrounded by a border with the operator logo at the top. The including file can add a subcaption immediately below, but left and right margin are set so text will not impinge on the border > <BODY BACKGROUND=sq-back.gif SGPROPERTIES=fixed> <BLOCKQUOTE>
 <INC SRC= stdlogo.html></pre>	
<pre>file endtbody.html: <! Closes the tags that were opened by tbody.html> </BLOCKQUOTE> </BODY></pre>	
<pre>file stdlogo.html: <! Provides the operator logo with the text flow set to receive a subcaption for the logo >
</pre>	

FIG. 13

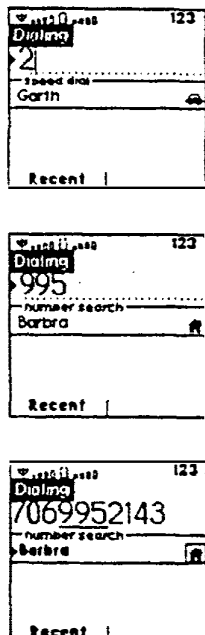
HTMLp	Result
<pre> <HTML> <HEAD><TITLE>Dialing</TITLE> <TEMP> <KEY KEY=1 Label="Recent" Action="file://recent.html"> </HEAD> <BODY> <FORM ACTION="phone:dial"> <INPUT NAME=num TYPE=phonenum> <INPUT TYPE=submit KEY=send> </FORM> </BODY> </HTML> </pre>	

FIG. 14

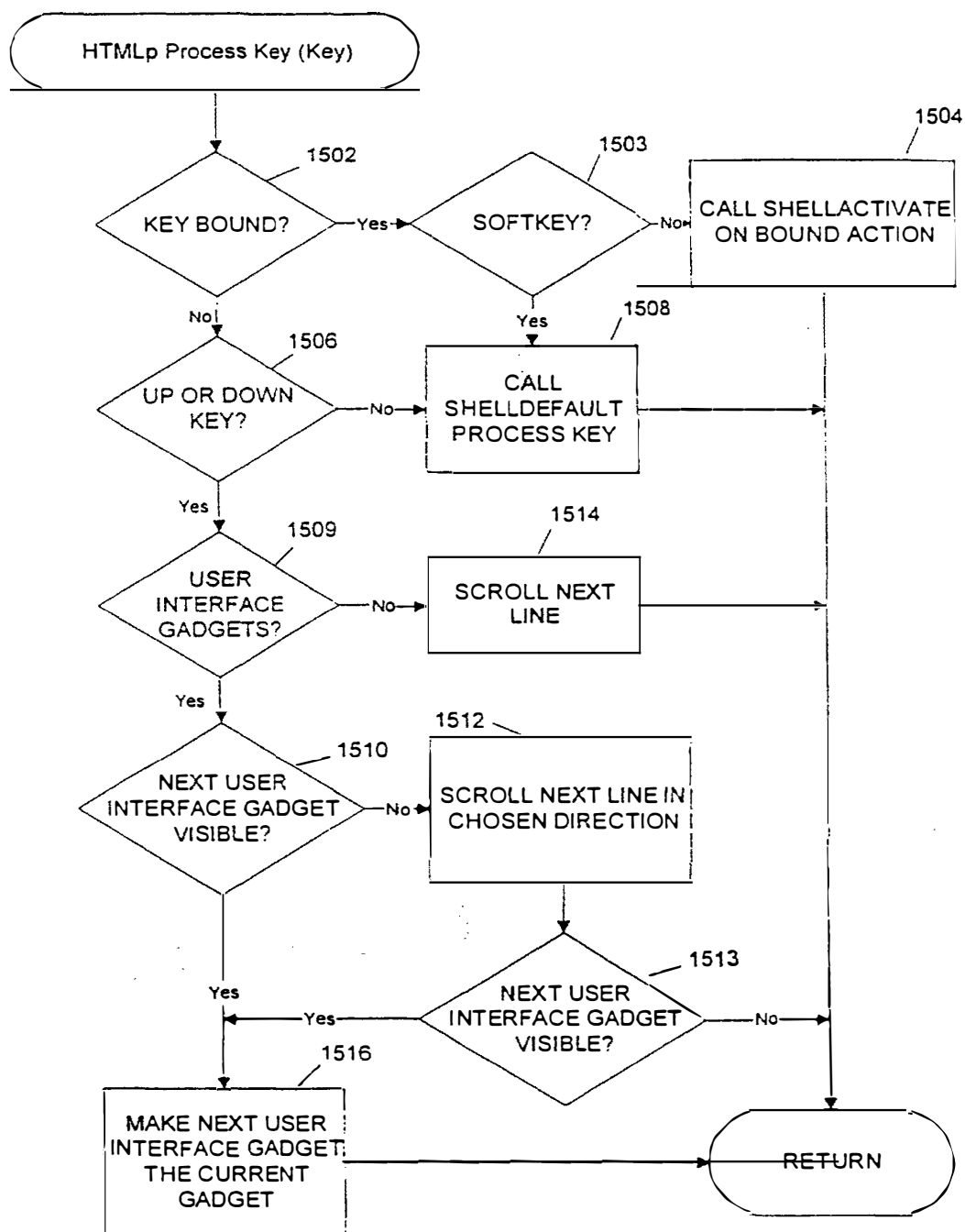


FIG. 15

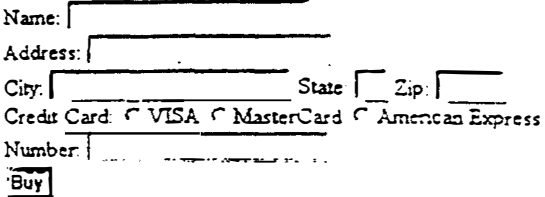
HTML	Result
<pre> <HTML> <BODY> <FORM METHOD=POST ACTION="http://cgi- bin/purchase"> Name: <INPUT TYPE=TEXT NAME=name>
 Address: <INPUT TYPE=TEXT NAME=street>
 City: <INPUT TYPE=TEXT NAME=city> State: <INPUT TYPE=TEXT NAME=state MAXLENGTH=2 SIZE=2> Zip: <INPUT TYPE=TEXT NAME=zip SIZE=5>
 Credit Card: <INPUT TYPE=RADIO NAME=cardtype VALUE=visa>VISA <INPUT TYPE=RADIO NAME=cardtype VALUE=mc>MasterCard <INPUT TYPE=RADIO NAME=cardtype VALUE=amex>American Express
 Number: <INPUT TYPE=TEXT NAME=cnumber>
 <INPUT TYPE=submit name=buy value=Buy></FORM> </BODY> </HTML> </pre>	 <p> Name: <input type="text"/> Address: <input type="text"/> City: <input type="text"/> State: <input type="text"/> Zip: <input type="text"/> Credit Card: <input type="radio"/> VISA <input type="radio"/> MasterCard <input type="radio"/> American Express Number: <input type="text"/> <input type="submit" value="Buy"/> </p>

FIG. 16
PRIOR ART

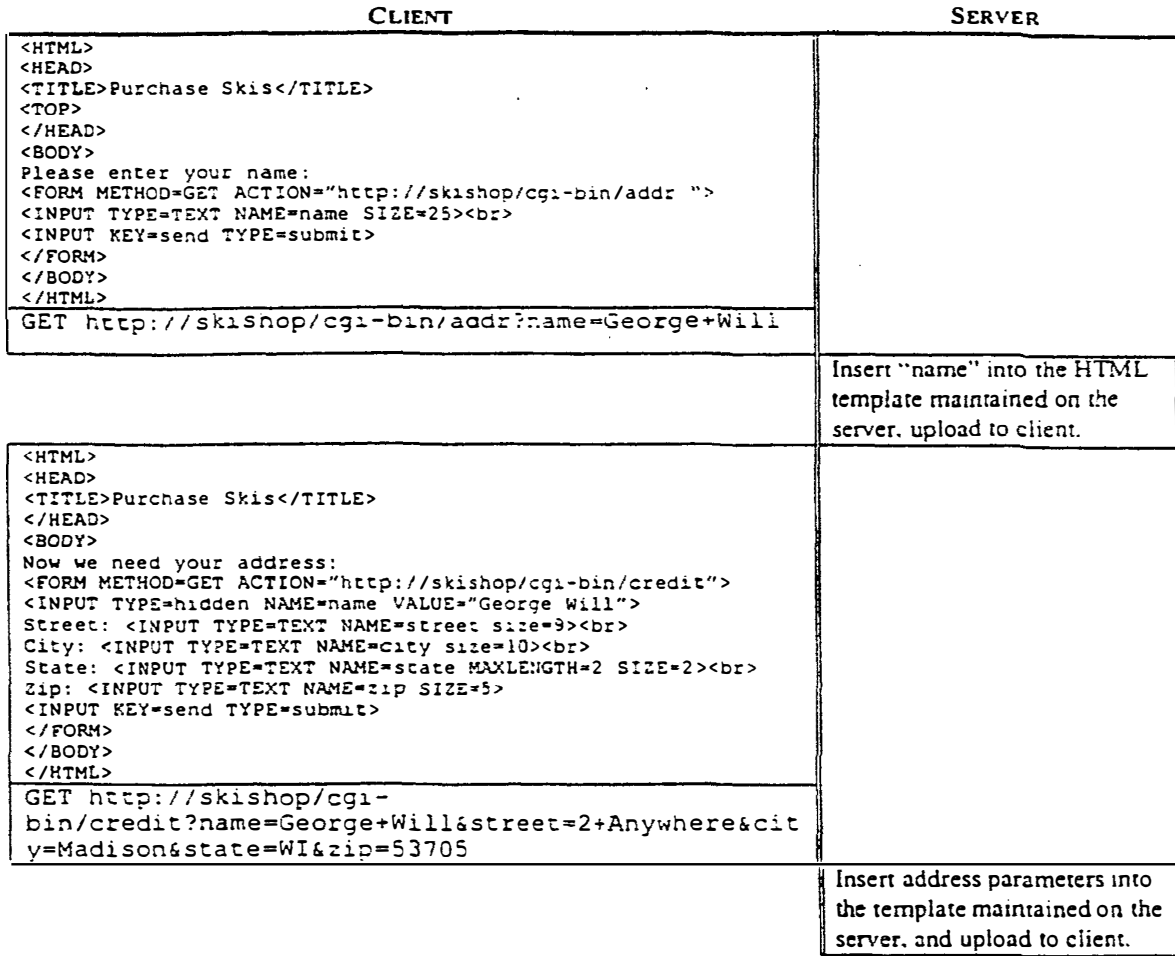


FIG. 17a
PRIOR ART

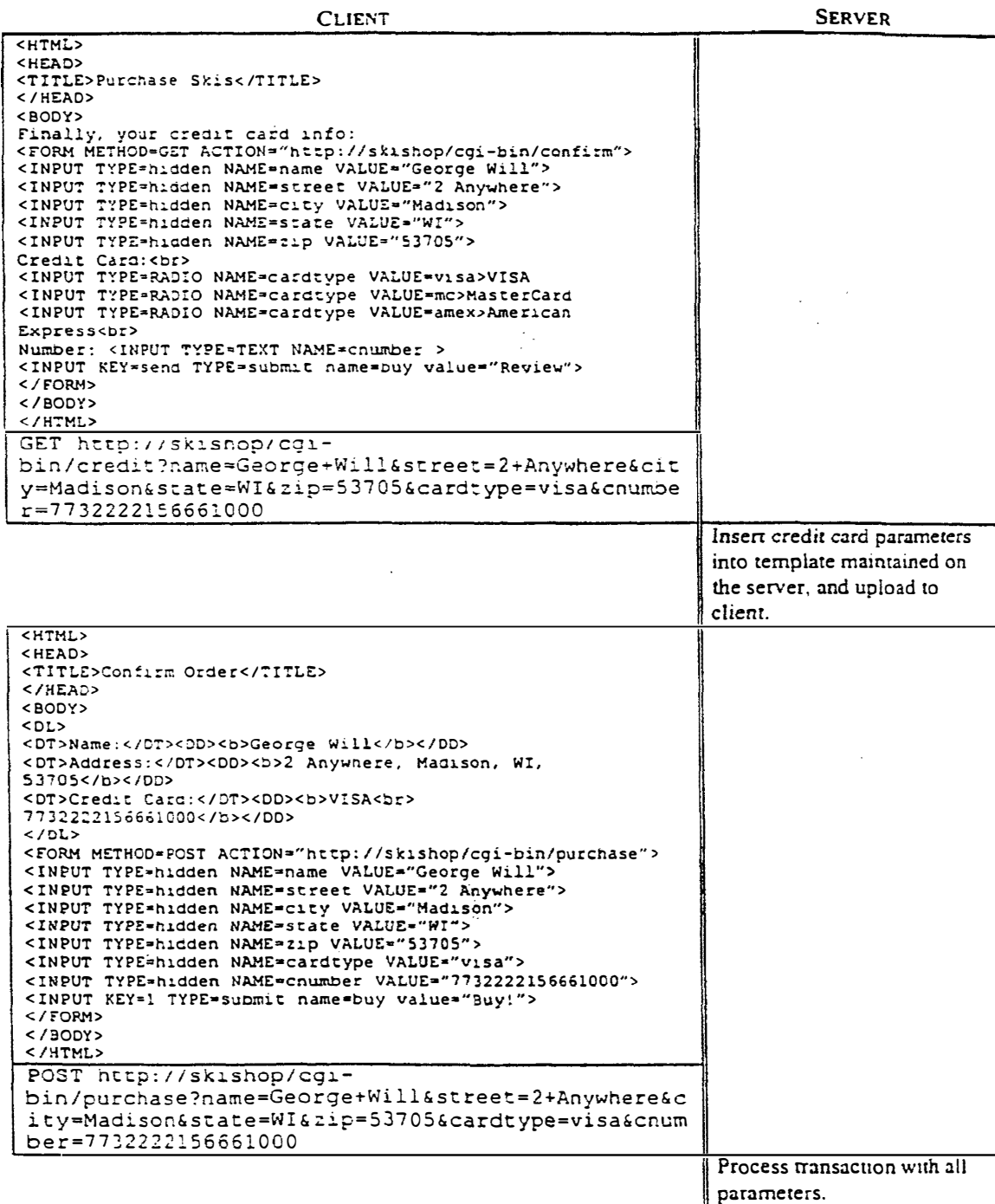


FIG. 17b
PRIOR ART

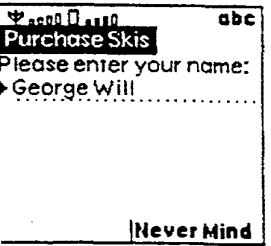
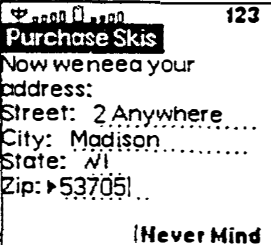
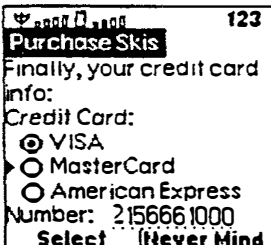
HTMLp	Result
<pre>file: purchaseform.html <HTML> <HEAD> <TITLE>Purchase Skis</TITLE> <TOP> <KEY KEY=2 LABEL="Never Mind" ACTION=done> </HEAD> <BODY> Please enter your name: <FORM METHOD=NEXT ACTION="file://addr.html"> <INPUT TYPE=TEXT NAME=name cap=name abcmodes=alpha,num SIZE=25>
 <INPUT KEY=send TYPE=submit > </FORM> </BODY> </HTML></pre>	 <p>abc Purchase Skis Please enter your name: George Will Never Mind</p>
<pre>file: addr.html <HTML> <HEAD> <TITLE>Purchase Skis</TITLE> <KEY KEY=2 LABEL="Never Mind" ACTION=done> </HEAD> <BODY> Now we need your address: <FORM METHOD=NEXT ACTION="file://credit.html"> Street: <INPUT TYPE=TEXT NAME=street cap=name abcmodes=num,alpha size=9>
 City: <INPUT TYPE=TEXT NAME=city cap=name abcmodes=alpha size=10>
 State: <INPUT TYPE=TEXT NAME=state cap=name abcmodes=alpha MAXLENGTH=2 SIZE=2>
 Zip: <INPUT TYPE=TEXT NAME=zip abcmodes=num SIZE=5> <INPUT KEY=send TYPE=submit > </FORM> </BODY> </HTML></pre>	 <p>123 Purchase Skis Now we need your address: Street: 2 Anywhere City: Madison State: WI Zip: 53705 Never Mind</p>
<pre>file: credit.html <HTML> <HEAD> <TITLE>Purchase Skis</TITLE> <KEY KEY=2 LABEL="Never Mind" ACTION=done> </HEAD> <BODY> Finally, your credit card info: <FORM METHOD=NEXT ACTION="file://confirm.html"> Credit Card:
 <INPUT TYPE=RADIO NAME=cardtype VALUE=visa>VISA <INPUT TYPE=RADIO NAME=cardtype VALUE=mc>MasterCard <INPUT TYPE=RADIO NAME=cardtype VALUE=amex>American Express
 Number: <INPUT TYPE=TEXT NAME=cnumber abcmodes=num> <INPUT KEY=send TYPE=submit name=buy value="Review"> </FORM> </BODY> </HTML></pre>	 <p>123 Purchase Skis Finally, your credit card info: Credit Card: <input checked="" type="radio"/> VISA <input type="radio"/> MasterCard <input type="radio"/> American Express Number: 2156661000 Select Never Mind</p>

FIG. 18a

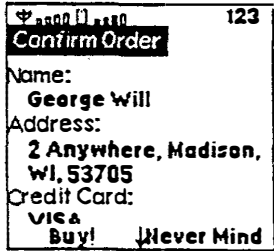
HTMLp	Result
<pre> <HTML> <HEAD> <TITLE>Confirm Order</TITLE> <KEY KEY=2 LABEL="Never Mind" ACTION=done> </HEAD> <BODY> <template> <DL> <DT>Name:</DT><DD>%(extra:name)</DD> <DT>Address:</DT><DD>%(extra:street), %(extra:city), %(extra:state), %(extra:zip)</DD> <DT>Credit Card:</DT><DD><if test=extra:cardtype=visa>VISA</if><if test=extra:cardtype=mc>MasterCard</if><if test=extra:cardtype=amex>American Express</if>
 %(extra:cnumber)</DD> </DL> </template> <FORM METHOD=POST ACTION="http://cgi-bin/purchase"> <INPUT KEY=1 TYPE=submit name=buy value="Buy!"> </FORM> </BODY> </HTML> </pre>	
<p>Final HTTP transaction sent to server:</p> <pre> POST //cgi-bin/purchase name/George Will street/2 Anywhere city/Madison state/WI zip/53705 cardtype/visa cnumber/7732222156661000 buy/Buy! </pre>	

FIG. 18b

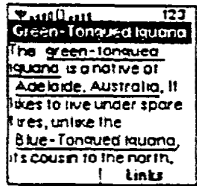
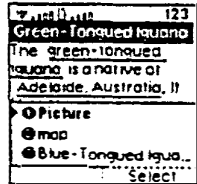
HTMLp	Result
<pre> <HEAD> <TITLE>Green-Tongued Iguana</TITLE> </HEAD> <BODY> The green-tongued iguana is a native of Adelaide, Australia. It likes to live under spare tires, unlike the Blue-Tongued Iguana, its cousin to the north. </BODY> </pre>	 

FIG. 19

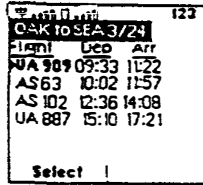
HTMLp	Result
<pre> <HEAD> <TITLE>OAK to SEA 3/24</TITLE> <LINKMENU> </HEAD> <BODY> <TABLE> <TR> <TH><U>Flight</U></TH> <TH ALIGN=CENTER><U>Dep</U></TH> <TH ALIGN=CENTER><U>Arr</U></TH> </TR> <TR> <TD>UA 909</TD> <TD ALIGN=RIGHT>09:33</TD> <TD ALIGN=RIGHT>11:22</TD> </TR> <TR> <TD>AS 63</TD> <TD ALIGN=RIGHT>10:02</TD> <TD ALIGN=RIGHT>11:57</TD> </TR> <TR> <TD>AS 102</TD> <TD ALIGN=RIGHT>12:36</TD> <TD ALIGN=RIGHT>14:08</TD> </TR> <TR> <TD>UA 887</TD> <TD ALIGN=RIGHT>15:10</TD> <TD ALIGN=RIGHT>17:21</TD> </TR> </TABLE> </BODY> </pre>	

FIG. 20

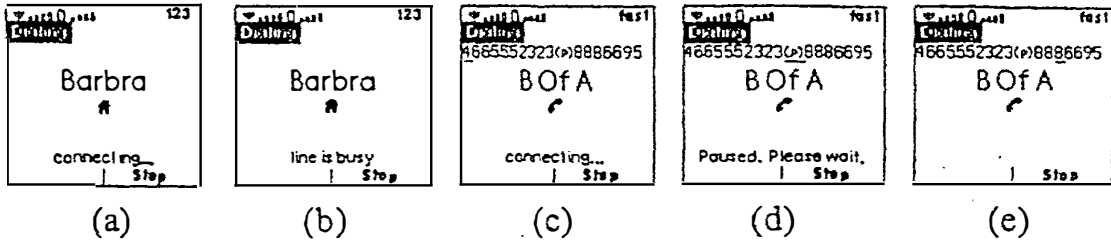


FIG. 21

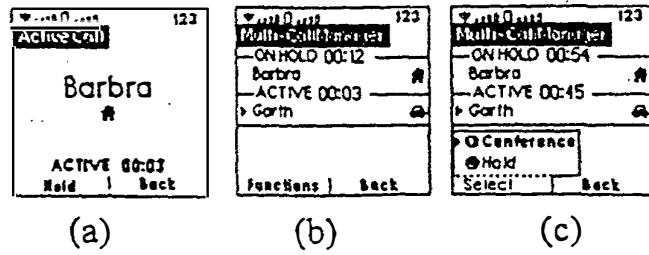


FIG. 22


HTMLp	Result
<pre> <HTML> <HEAD> <TITLE>Error!</TITLE> <KEY KEY=1 LABEL="Sorry!" ACTION=pop> </HEAD> <BODY> <CENTER>
 <INC SRC=extra:message> </CENTER> </BODY> </HTML> </pre>	

FIG. 23

KEYCAPS		MISCELLANEOUS	
builtin:key1	①	builtin:smiley	☺
builtin:key2	②	builtin:signal	⚡
builtin:key3	③		
builtin:key4	④		
builtin:key5	⑤		
builtin:key6	⑥		
builtin:key7	⑦		
builtin:key8	⑧		
builtin:key9	⑨		
builtin:key0	⑩		
PHONE NUMBER TYPES			
builtin:type0	☎	builtin:bigtype0	☎
builtin:type1	🔒	builtin:bigtype1	🔒
builtin:type2	🏠	builtin:bigtype2	🏠
builtin:type3	📞	builtin:bigtype3	📞
builtin:type4	🚗	builtin:bigtype4	🚗
builtin:type5	📺	builtin:bigtype5	📺
builtin:type6	📠	builtin:bigtype6	📠
builtin:type7	📠	builtin:bigtype7	📠

FIG. 24

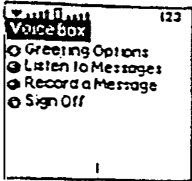

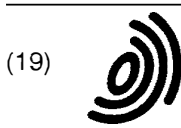
HTMLp	Result
<pre> <HEAD> <DIAL NAME="Voice Mail" NOSCREENCHANGE>8144299x#4416722</DIAL> <TITLE>Voice Box</TITLE> <KEY KEY=#5 ACTION=vmListen.htm> <KEY KEY=#4 ACTION=vmGreeting.htm> <KEY KEY=#6 ACTION=vmNew.htm> <KEY KEY=#9 ACTION=vmSignoff.htm> <KEY KEY=default ACTION=none> <TOP> </HEAD> <BODY> Greeting Options
 Listen to Messages
 Record a Message
 Sign Off
 </BODY> </pre>	
<pre> <HEAD> <DIAL>5</DIAL> <TITLE>Listen</TITLE> <KEY KEY=#2 ACTION=phone:dial?num=2> <KEY KEY=#3 ACTION=phone:dial?num=3> <KEY KEY=#5 ACTION=phone:dial?num=5> <KEY KEY=#7 ACTION=phone:dial?num=7> <KEY KEY=#9 ACTION=pop> </HEAD> <BODY> Back Up a Bit
 Start Again
 Erase
 Next Message
 Save Message
 Stop Listening
 </BODY> </pre>	

FIG. 25



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(54) A system and process for providing dynamic communication access and information awareness in an interactive peripheral display

(57) The system and method of the present invention provides peripheral awareness of information to a user. The information to be provided is either determined automatically, or specified by the user. Once the information to be provided is determined or specified, it is automatically tracked or watched via at least one conventional communications interface for accessing one or more conventional communications sources. Current information is then automatically dynamically provided in an interactive peripheral display which minimizes any potential distraction to the user. Determining or specifying, tracking or watching, and providing the information is accomplished using at least one customizable dynamic encapsulated object, a "ticket," that when paired with a "viewer," provides peripheral awareness of information to the user. Further, in one embodiment, the tickets are sharable among users, and may be copied, cut, pasted, saved, transmitted, dragged and dropped from web pages, etc., like any other electronic file using conventional techniques.

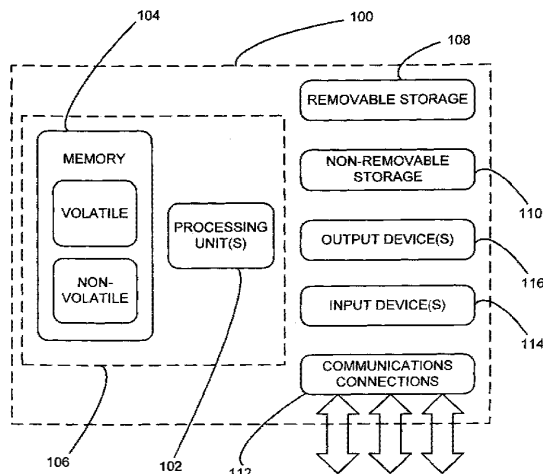


FIG. 1

Description**BACKGROUND****Technical Field:**

[0001] The present invention involves a new system and process for providing dynamic communication access and information awareness in an interactive peripheral display.

Related Art:

[0002] By way of background, in today's information saturated environments, such as the Internet, a local or remote computer network, or any combination of the Internet and such networks, it is often difficult for a user to keep track of the potentially large amounts and variety of communications and information which the user may be interested in. Such communications and information include, for example, email, instant messaging, file transfers, local weather, appointments, schedules, personal contacts, statistical information, file status, stock quotes, sports scores, local traffic, or any other type of communications or information that may be of interest to the user. This problem becomes particularly acute where the communications and/or information are dynamic, such that rapid, numerous, or large changes to the communications status or channels, or in the information of interest to the user results in out of date communications and/or information that is often relatively useless to a user.

[0003] In response to this problem, several conventional schemes have been developed to assist users in attempting to keep track of specific communications or information without requiring a user to manually search out or manually check for updates to the communications or information each time the user wants to examine the communications or information. However, such schemes are typically limited by what types of communications or information can be tracked or displayed, by the manner in which the communications or information is accessed or otherwise provided to the user, or by the inability to facilitate sharing of the communications or information between users. Further, conventional schemes that have attempted to address these problems tend to be limited by an inability to provide a single interface that allows for concurrent information retrieval, display or access in combination with communications and communication access points in a dynamic integrated environment. Consequently, users are often left with cluttered displays which provide access or interaction with either particular types of communications, or with specific information, but not with both communications and information access and interaction in an integrated environment.

[0004] Several conventional messaging type schemes have attempted to partially address some of

these problems. However, such schemes typically provide relatively large windows that take up substantial amounts of screen or display real estate. Further, such schemes, while providing some communications capabilities along with some information gathering or display capabilities, tend to separate the communications capabilities from the information capabilities via one or more tabs or the like. Consequently, particular information can not be easily shared or communicated from within the applications provided by these schemes. Further, such schemes become unwieldy as the amount of information being tracked by a user increases, and as the number of communications contacts maintained by the user increases. In particular, as the amount of contacts and/or information increases, the user is forced to scroll through large amounts of data or communications channels to find what he or she is looking for.

[0005] For example, several conventional messaging type schemes provide similar capabilities for keeping track of or watching information, such as for example stock quotes, weather, news, or other information via the Internet or some other local or remote network, or some combination thereof. Further these conventional schemes also provide for some sort of communications access such as, for example, text instant messaging, file transfer, email, etc., via one of a number of communications channels for contacts in one or more groups of contacts. Consequently, a user is able to keep track of particular information of interest, as well as to communicate with particular people or entities. Unfortunately, with these schemes, the user can not do both simultaneously. He is forced to tab between the different types of information and the communications capabilities. Therefore, the user is unable to share data observed via the different information tabs with contacts in the communications tab unless the user manually saves or copies the information, switches tabs, then manually creates a message to a particular contact, and either attaches or pastes the information to that message.

[0006] Further, because these conventional schemes tend to have a number of tabs, they require a fairly large window in order to display the information and associated controls or icons. Unfortunately, such windows tend to get buried under other application windows when the user is using other applications. Consequently, the user is often forced to interrupt his or her flow of work to switch between windows. This particular problem has been addressed by some of these schemes by providing an option to always keep the window on top. Consequently, while solving the problem of burying the messaging window, a new problem is created. Specifically, the messaging window then occludes a potentially large part of any other open application window. While it is possible to manually resize the different application windows and to move them around the screen in an attempt to give each window its own space, such manual user intervention can be both time consuming and aggravating for the typical user.

[0007] At least one conventional scheme has attempted to address some of the problems of the aforementioned schemes. For example, one conventional scheme provides an application that allows a user to customize at least one icon in a scrollable strip along one edge of a computer display device. This scheme provides iconized links to particular information sources, and uses conventional techniques to populate each customized icon with information retrieved from the information sources. However, this scheme has several important limitations.

[0008] In particular, while this scheme provides for gathering and providing information to a user, it fails to provide the level of communications capabilities offered by the aforementioned messaging schemes. For example, this scheme does not provide a means for initiating communication via an icon, so while an icon may provide a communication status, such as a number of received messages, it does not provide a means for responding to such messages. Further, this scheme does not provide for nesting or otherwise organizing groups of icons in order to aggregate multiple icons. In other words, opening the window associated with one icon does not provide access to further levels of grouped icons. Consequently, it is difficult to organize icons where a large number of icons are used. In addition, the icons of this scheme are not easily transportable. In other words, there is no real mechanism for transferring icons between users. Instead, users are required to obtain the icons from an application used for managing the icons. Other limitations of this scheme include a lack of an ability to resize the window containing the scrollable strip used for displaying the icons. Further, with this scheme, if a user adds too many items, another row or strip is automatically created within the window, even if that row has only one icon. Consequently, this scheme can potentially cause a large waste of valuable display space.

[0009] A related scheme allows a user to customize a scrolling ticker type display window to provide continuously updated scrolling information from a predefined set of available information. While useful, this scheme is even more limited than the prior scheme for several reasons. Most important among these limitations is that the set of information that is available to this scheme is predefined. Thus, if the information type and source is not listed as an option with this scheme, it is simply not available. However, users are provided with limited control over certain information options, such as, for example, specific stock symbols for stock quotes, choosing areas or topics of news to generate an automatic alert, or choosing particular cities to generate a weather report. Another limitation is that users are not able to add or edit information sources, such as by modifying the icons as described above. Further limitations of this scheme include that fact that since the ticker scrolls, there is no guarantee that all the information of interest will be visually available at any given time. Specifically,

if the information of interest to a user is not currently visible, the user must wait until the information scrolls into view. Consequently, such a scheme can become very distracting to the user as the user is forced to direct a large amount of attention to the display in order to retrieve desired information. Further, because the scrolling ticker is in constant motion, it is in itself potentially very distracting to a user as it creates a persistent motion in the user's peripheral vision. Finally, the communications capability of this scheme is virtually nonexistent in comparison to the aforementioned messaging schemes.

[0010] Still other schemes for providing custom information views or displays involve a technique known as "web scraping." In general, such schemes allow a user to specify particular portions of unique Internet Web pages, i.e., source web pages, to be displayed on a single customized web page. Consequently, while such schemes provide for information retrieval and display, they do not provide for communications capability.

[0011] For example, one web scraping scheme allows users to "clip" relevant data and content from various Internet web sites and pull it all together in one dynamic browser page, called a "view." This view is effectively a composite web page. Thus, as any of the source web pages are changed, the composite web page is automatically updated. Further, this scheme allows users to edit views in a variety of ways, such as by adding, deleting and rearranging data elements and personalizing the view with the users own inputs. In addition, this scheme provides a method for transferring views between users. However, this scheme suffers from many of the same basic limitations described above with respect to the aforementioned schemes. Such limitations include an inability to nest or organize views, or to arrange for a plurality of views to be displayed simultaneously. Also, as mentioned above, such schemes typically provide little or no communications or messaging capabilities.

[0012] Further limitations of web scraping include the fact that the views of this scheme must be opened in a window that typically takes up a substantial portion of a display device, if not the entire display device, and thus, it cannot provide an unobtrusive method for providing information to the user. In addition, typical web pages, as well as specific content of those web pages, are typically not designed to minimize the area in which information is displayed. In other words, such web pages and content are simply not designed with the idea of squeezing lots of important information into very small spaces. Consequently, the end result of web scraping is a composite web page that tends to be a very inefficient use of screen space. Further, if a portion of the web page that is scraped or otherwise clipped from an existing web page includes an animation, the web page can be very distracting if it's in the user's peripheral vision. Finally, because the web scraping technique is effectively a patchwork of distinct elements, the composite web page

resulting from such techniques is typically an unappealing jumble of disparate elements that were never visually designed to appear together on a single page.

[0013] Consequently, what is needed is new system and process for automatically providing dynamic communication access and information awareness in an interactive peripheral display without requiring a user to tab between communications channels or information types. Further, such a system and process should not require a user to choose from a predefined list of communication access points and information categories or sources, but instead should allow for creation and customization of communications access points and information sources. Such communications access points should include communications channels for contacting other entities, such as, for example, people, businesses, or organizations, along with the current availability of each of the contacts via any of a variety of contact methods, such as email, voicemail, messaging servers, telephone, etc. The information sources should include any desired information elements, such as, for example, specific information types, information categories, or information sources. In addition, this system and process should allow users to customize and aggregate or organize any desired communication channels or access points, or any desired information sources into any desired number of groups or nested groups. Also, these groups or nested groups should be capable of being expanded by the user to allow the user to view nested groups or communication access points or information elements within these groups or nested groups. Finally, this system and process should provide for sharing of pre-defined or user definable communications access points and/or information elements between users.

SUMMARY

[0014] In general, the present invention solves the aforementioned problems, as well as other problems that will become apparent from an understanding of the following description by automatically providing dynamic communication access and information awareness in an integrated interactive peripheral display. The present invention provides this capability either automatically, and/or by allowing a user to specify particular information or communications contacts of interest to that user. Customized dynamic thumbnails representing each contact and each particular information element are then automatically displayed.

[0015] These dynamic thumbnails or "items" generally comprise a combination of a "ticket" describing the information or contact of interest and a specialized "viewer" for displaying whatever information or communications contact is represented by the ticket. Further, in accordance with the present invention, in one embodiment, tickets are sharable among users via conventional techniques, and may be copied, cut, pasted, stored, saved, transferred, transmitted, emailed, dragged and

dropped from web pages, etc., like any other electronic file. The system and process of the present invention then either automatically tracks or receives the current state of the information and communications contacts described by the tickets, and dynamically provides current information as well as availability and status of the communications contacts in an interactive "peripheral awareness" interface for displaying the items. The peripheral awareness interface displays information and/or communications contacts in such a way as to minimize any potential distraction or interruption to the user.

[0016] In the context of the present invention, the concept of "peripheral awareness" is best explained by the following discussion. In general, the peripheral awareness interface of the present invention takes advantage of people's innate ability to receive information about the world around them without significantly interrupting their focal tasks. One trivial example of this innate ability of people to perceive information in a peripheral manner without interrupting their focal task is that a person might overhear a discussion in the hallway between Bob and Jane and realize that Jane has returned from her vacation. The present invention takes advantage of this ability with the peripheral awareness interface. Such peripheral awareness interfaces are always on and visible rather than being a discrete user interface event that is shown when there is a state change of some information. Thus, peripheral awareness, in accordance with the present invention does not blatantly draw the user's attention to new or updated information immediately, but instead makes it available in the periphery so that it may be observed if and when the user decides to glance that way. Further, in one embodiment, to increase the effectiveness of user notification, the peripheral awareness interface utilizes both strategies of peripheral awareness and notification, i.e., audible and/or visible alert, depending upon the time sensitivity or priority of the information. The peripheral awareness interface of the present invention provides a display area on a user's display device for displaying items as described herein.

[0017] Further, with respect to communications contacts, the system and method of the present invention provides a "person-centric interface" for interacting with the contacts. This person centric interface is designed such that people or other entities are brought to the forefront of the peripheral display so that communications with particular persons or entities may be reviewed or initiated easily, while the communications availability of such people or entities may be understood by a user by simply glancing at the peripheral display. This capability is accomplished by displaying pictures, images, icons, avatars, etc., within each item that represents a particular communications contact for visually representing the communications availability or status for each communications contact. In alternate embodiments, this person centric interface further includes contact specific information such as, for example, communication history, and communications availability, as well as commu-

nications access and interaction for particular contacts via any of a number of access points or communication channels, such as, for example, email, messaging servers, voice mail, telephone numbers, peer-to-peer file transfer, etc.

[0018] Specifying, tracking or receiving, and providing the information and communications capabilities, as noted above, is accomplished in accordance with the present invention through the use of at least one customizable dynamic encapsulated object, hereinafter referred to as a "ticket," that when paired with a "viewer," provides peripheral awareness of information of interest to a user. As noted above, the combination of a ticket and a viewer is termed an "item."

[0019] In general, a ticket is represented by a data structure such as an XML data file. Each ticket includes instructions as to what information or communications contact is to be represented by the ticket as well as pointers to particular "services" that represent any of a number of conventional means for interacting with the information or communications contacts. These services are automatically or manually selected from a predefined or user definable library of services. In particular, the different services represent shared code or functions that provide functionality for accessing, receiving, retrieving, and/or otherwise interacting with any conventional information, source of information, or communications contact. Further, it should be noted that in one embodiment multiple services are used in combination for providing complex interactions with any conventional information, source of information, or communications contact.

[0020] In the context of the present invention, one example of a "service" is the functionality necessary for monitoring an email folder by connecting to a conventional MAPI server. Another example of a service is functionality for sending or receiving email messages. Related services provide functionality for communicating with contacts or transferring information via any number of conventional methods, such as, for example instant messaging or peer-to-peer communications schemes. Another example of a service is functionality to convert a text file from one language to another. A further example of a service is functionality necessary for monitoring a database. Still another example of a service is functionality for receiving or retrieving data from a web site or a remote server. Clearly, any conventional method for interacting with any conventional information, source of information, or communications contact can be implemented as a shared service for use by one or more tickets in accordance with the present invention.

[0021] Further, as noted above, each ticket's instructions includes a pointer to one of a number of specialized viewers having the capability to display whatever type of information or communications contact is represented by the ticket. In other words, each ticket represents a combination of the information or contact that a user desires to keep track of along with a definition of how

the user desires to view that particular information as well as the ability to use any of a number of conventional means for accessing and/or interacting with the information or contact.

5 **[0022]** For example, information of interest to a user may include statistical information relating to a particular electronic file residing on a remote electronic database. Given this simple example, the user may be interested in knowing how many people have read the electronic
10 file, or whether it has been modified. Consequently, the customizable ticket includes instructions for using a "service" for linking to the remote server hosting the electronic file such that the can collect the statistical information as it becomes available. Further, the ticket includes instructions as to what data is to be displayed,
15 and which viewer is to be used to display that data. Such instructions for displaying the data may simply include instructions to display the number of people that have read the file, and/or instructions to change the color of
20 the displayed information when the file has been modified by anyone other than the user. Clearly, this example is not meant to limit what information or data may be displayed, or how the information or data is to be displayed, as many other types of statistical or other data
25 relating to such files, or to any other information of interest, can be collected and/or displayed in accordance with the present invention.

[0023] As discussed above, each ticket is paired with a "viewer" to create an "item." These viewers graphically
30 display the ticket as a resizable thumbnail or icon-sized window having the information or contact data retrieved via one or more of the services in accordance with the aforementioned ticket instructions. In particular, the viewer is capable of dynamically displaying a ticket having
35 textual, audible, or graphical information, including still or live images, or any combination of textual, audible, or graphical information. For example, one viewer type is capable of displaying contact information, i.e. a "person ticket" as described below, another is capable
40 of displaying specific email information, such as, for example, number of messages received, or number of messages from a particular source, another viewer is designed to interact with a database to provide a summary of particular information from the database in the
45 thumbnail. Further examples of viewer types include viewers capable of displaying still images, video images, a summary of communications status, the results of a database query, etc. Clearly, any type of viewer can be designed to be associated with any corresponding type
50 of information to ensure that any possible information can be displayed.

[0024] In addition to the just described benefits, other advantages of the present invention will become apparent from the detailed description which follows hereinafter when taken in conjunction with the accompanying
55 drawing figures.

DESCRIPTION OF THE DRAWINGS

[0025] The specific features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1 is a diagram depicting a general-purpose computing device constituting an exemplary system for implementing the present invention.

FIG. 2 is a general architectural diagram illustrating exemplary system components for implementing a system and process in accordance with the present invention.

FIG. 3 is a system diagram that depicts program modules employed in a system for providing peripheral awareness of contacts and information to a user via a peripheral awareness interface in accordance with the present invention.

FIG. 4A is a flow diagram illustrating an exemplary process for providing peripheral awareness of contacts and information of interest to a user via a peripheral awareness interface according to the present invention.

FIG. 4B is an exemplary screen image which illustrates a display of average user availability according to the present invention.

FIG. 5 is an exemplary block diagram that depicts an exemplary user interface for interacting with a system and process in accordance with the present invention.

FIG. 6A is an exemplary screen image illustrating a working example for automatically providing peripheral awareness of contacts and information of interest to a user via a peripheral awareness interface in accordance with the present invention.

FIG. 6B is an exemplary screen image showing the peripheral awareness interface of FIG. 6A.

FIG. 6C is an exemplary screen image illustrating a working example for automatically providing peripheral awareness of contacts and information of interest to a user via a peripheral awareness interface covering the entire display on a conventional Pocket PC in accordance with the present invention.

FIG. 7A is an exemplary screen image illustrating expansion of an "item" displayed in a peripheral awareness interface in accordance with the present invention.

FIG. 7B is an exemplary screen image illustrating expansion of a group of nested "items" in the peripheral awareness interface of FIG. 7A.

FIG. 8A is an exemplary screen image illustrating an alternate embodiment of a peripheral awareness interface showing pawns associated with person items in accordance with the present invention.

FIG. 8B is an exemplary screen image illustrating a dynamic person window accessed by selection of one of the person items of FIG. 8A.

FIG. 8C is an exemplary screen image illustrating historical communications information associated with the person represented by the person window of FIG. 8B.

FIG. 9 is an exemplary screen image illustrating expansion of a calendar item in accordance with the present invention.

FIG. 10 is an exemplary screen image illustrating expansion of an email item in accordance with the present invention.

FIG. 11A is an exemplary screen image illustrating an alternate embodiment of a peripheral awareness interface having collapsible groups of items in accordance with the present invention.

FIG. 11B is an exemplary screen image illustrating the peripheral awareness interface of FIG. 9A showing two of the groups of items in a collapsed state.

FIG. 12 is an exemplary screen image illustrating a graphically displayed downloadable ticket embedded in a web page in accordance with the present invention.

FIG. 13 is an exemplary screen image illustrating an email message with an attached ticket in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026] In the following description of the preferred embodiments of the present invention, 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 invention may be practiced. It is understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

1.0 Exemplary Operating Environment:

[0027] Figure 1 illustrates an example of a suitable computing system environment 100 on which the invention may be implemented. The invention may be described in the general context of computer-executable instructions, such as program modules, being executed by a computing device. Generally, program modules include routines, programs, objects, components, data structures, etc., that perform particular tasks or implement particular abstract data types. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote computer storage media including memory storage devices. The computing system environment 100 is only one example of a suitable computing environment and is not intended to suggest any limitation as to the scope of use or functionality of the invention. Neither should the computing environment 100 be interpreted as having any dependency or requirement relating to any one or combination of components illustrated in the exemplary operating environment 100.

[0028] With reference to FIG. 1, an exemplary system for implementing the invention includes a computing device, such as computing device 100. Examples of well known computing devices, systems, environments, and/or configurations that are suitable for use with the invention include, but are not limited to, personal computers, server computers, hand-held, laptop or mobile computer or communications devices such as cell phones, Pocket PC's and PDA's, multiprocessor systems, microprocessor-based systems, set top boxes, programmable consumer electronics, network PCs, minicomputers, mainframe computers, distributed computing environments that include any of the above systems or devices, and the like.

[0029] In its most basic configuration, computing device 100 typically includes at least one processing unit 102 and memory 104. Depending on the exact configuration and type of computing device, memory 104 may be volatile (such as RAM), non-volatile (such as ROM, flash memory, etc.) or some combination of the two. This most basic configuration, as illustrated in FIG.1 by dashed line 106, can be understood to represent any of personal computers, server computers, hand-held, laptop or mobile computer or communications devices such as cell phones, Pocket PC's and PDA's, multiprocessor systems, microprocessor-based systems, set top boxes, programmable consumer electronics, network PCs, minicomputers, mainframe computers, distributed computing environments, servers, routers, a network PC, a peer device or other common network node.

[0030] Additionally, device 100 may also have additional features/functionality. For example, device 100 may also include additional storage (removable and/or

non-removable) including, but not limited to, magnetic or optical disks or tape. Such additional storage is illustrated in FIG. 1 by removable storage 108 and non-removable storage 110. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. Memory 104, removable storage 108 and non-removable storage 110 are all examples of computer storage media. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by device 100. Any such computer storage media may be part of device 100. Device 100 may also contain communications connection(s) 112 that allow the device to communicate with other devices.

[0031] Communications connection(s) 112 is an example of communication media. Communication media typically embodies computer readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, RF, infrared and other wireless media. Combinations of the any of the above should also be included within the scope of computer readable media.

[0032] The term computer readable media as used herein includes both storage media and communication media. Device 100 may also have input device(s) 114 such as keyboard, mouse, pen, voice input device, touch input device, camera, etc. Output device(s) 116 such as a display, speakers, printer, etc. may also be included. All these devices are well known in the art and need not be discussed at length here.

[0033] The computing device 100 may operate in a networked environment using logical connections to one or more remote computing devices for retrieving and/or receiving information as described in the following sections. The remote computing devices may include, but are not limited to, personal computers, server computers, hand-held, laptop or mobile computer or communications devices such as cell phones, Pocket PC's and PDA's, multiprocessor systems, microprocessor-based systems, set top boxes, programmable consumer electronics, network PCs, minicomputers, mainframe computers, distributed computing environments, servers, routers, a network PC, a peer device or other common network node, and typically includes many or

all of the elements described above relative to the computing device 100. The communications connections 112 depicted in FIG. 1 include a local area network (LAN), a wide area network (WAN), or other wired or wireless networks. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

[0034] When used in any networking environment, the computing device 100 is typically connected to the network through a network interface or adapter, a modem, or other conventional means for establishing communications over the network. It will be appreciated that the network connections discussed here are exemplary and many other means of establishing a communications link between computing devices may be used.

[0035] The exemplary operating environment having now been discussed, the remaining part of this description will be devoted to a discussion of the system and process of the present invention, components of the present invention, exemplary program modules and processes for implementing the present invention, an exemplary user interface according to the present invention, and a working example for illustrating the present invention. In particular, the system and process of the present invention will first be described with respect to FIG. 2. FIG. 2 represents a high level general architectural diagram illustrating exemplary system components for implementing a system and process in accordance with the present invention. Exemplary program modules for implementing a system and process according to the present invention will then be described with reference to the exemplary system diagram of FIG. 3. Next, exemplary processes for automatically providing peripheral awareness of contacts and information of interest to a user via a peripheral awareness interface will be described with reference to the flow diagram of FIG. 4A. In addition, an exemplary user interface will be discussed with reference to the block diagram of FIG. 5. Finally, several working examples of the present invention will be described with reference to the exemplary screen images of FIGS. 6-13.

2.0 System Overview:

[0036] Currently, typical users have a variety of different applications, devices, and services which they use daily. However, because such technologies do not work seamlessly with one another, users are forced to adapt to each technology rather than having the different technologies either adapt to the user or work together on the user's behalf. In particular, one central idea of modern computing involves not simply working with particular applications or from particular devices, but instead working or communicating with people or other entities, i.e., contacts, and with information from any of an almost infinite number of sources. However, access to communication with people or other entities tends to be buried in one or more user interfaces or applications, while ac-

cess to particular information is also buried or spread out among a plurality of applications, user interfaces, or unrelated sources.

[0037] The present invention addresses these issues along with a host of other problems left unsolved by conventional communication and information access schemes by providing an integrated dynamic peripheral interface for providing dynamic communication access and information awareness across multiple platforms in a non-obtrusive manner, i.e. in a "peripheral awareness interface." This peripheral awareness interface provides a user with dynamically updated status, availability, and state of any number of communications contacts and of particular types or sources of information. Such communications contacts and information of interest includes, for example, when entities such as people, businesses, or organizations are free to communicate, when shared files or folders are modified, when information in a shared database or workspace changes, email status, calendars, Internet web pages, weather conditions, appointments, schedules, statistical information, stock quotes, traffic information, or any other information that may be of interest to a user. Further, in one embodiment, as discussed below, and described in further detail in Section 3.2, particular elements of the dynamic communication access and information awareness are user-accessible from any of a number of devices having Internet or other network access. Such devices include computers residing in different locations, i.e., home, office, etc., handheld devices such as palm-top or handheld computing devices, personal organizers, cell phones, or any other Internet or network enabled device.

[0038] In the context of the present invention, the concept of "peripheral awareness" is best explained by the following discussion. In general, the peripheral awareness interface of the present invention takes advantage of people's innate ability to receive information about the world around them without significantly interrupting their focal tasks. One trivial example of this innate ability of people to perceive information in a peripheral manner without interrupting their focal task is that a person might overhear a discussion in the hallway between Bob and Jane and realize that Jane has returned from her vacation. The present invention takes advantage of this ability with the peripheral awareness interface. Such peripheral awareness interfaces are always on and visible rather than being a discrete user interface event that is shown when there is a state change of some information. Thus, peripheral awareness, in accordance with the present invention does not blatantly draw the user's attention to new or updated information immediately, but instead makes it available in the periphery so that it may be observed if and when the user decides to glance that way. Further, in one embodiment, to increase the effectiveness of user notification, the peripheral awareness interface utilizes both strategies of peripheral awareness and notification, i.e., audible and/or visible alert, depending upon the time sensitivity or priority of the in-

formation.

[0039] Further, with respect to communications contacts, the system and method of the present invention provides a "person-centric interface" for interacting with communications contacts. This person centric interface is designed such that people or other entities are brought to the forefront of the peripheral awareness interface so that communications with particular persons or entities may be reviewed or initiated easily, while the communications availability of such people or entities may be understood by a user by simply glancing at the peripheral display. This capability is accomplished by displaying pictures, images, icons, avatars, etc., or some combination thereof, within each item which represents a particular communications contact. These graphical representations serve to visually represent the communications availability or status for each communications contact using conventional social queues to indicate contact availability or status.

[0040] For example, in one embodiment, a frontal close-up of an image of a person, i.e. an image of the person looking at the user, is used to indicate that the person is available for communication, while a profile image of the person, i.e., the person looking away to one side, is used to indicate that the person is busy or otherwise unavailable for communication. Consequently, merely glancing at any such image can serve to immediately inform the user whether particular contacts are available for communication. This example is but one of many possible implementations of using graphical representations for indicating communications status and availability. These concepts are described in further detail below.

[0041] In general, the present invention can be described as providing dynamic communication access and information awareness in an integrated interactive peripheral awareness display within which specified communications contacts and informational elements are dynamically tracked or received and provided to a user on an ongoing basis. In a tested embodiment, this capability is provided via at least one customizable dynamic thumbnail displayed in one or more columns in a persistent display strip along one edge of a conventional display device. Further, in additional embodiments, the thumbnails are displayed on one any portion or portions of a display, including the entire display. The embodiment wherein the entire display is covered is particularly useful where the system and method of the present invention will be used on a device having a relatively small display area, such as, for example, a handheld or palm top computing device, a cell phone, or any other electronic device having a limited display area. For example, see FIG 6C.

[0042] Each of the customizable dynamic thumbnails represents either particular communications contacts, such as, for example, particular individuals, businesses, organizations, or other entities, or particular elements of information that a user may be interested in. Such infor-

mation elements include, for example, when shared files or folders are modified, when information in a shared database or workspace changes, email status, calendars, Internet web pages, weather conditions, appointments, schedules, statistical information, stock quotes, traffic information, or any other Internet or network accessible information that may be of interest to a user.

[0043] The aforementioned dynamic thumbnails or "items" generally comprise a combination of a "ticket" describing the contact or information of interest and a specialized "viewer" for displaying whatever communications contact or information is represented by the ticket. The system and process of the present invention then uses one or more "services" to automatically interact with, track, or receive the current state of the information and/or status of the communications contacts described by each ticket. The current state of the information and the status of the communications contacts are then dynamically provided by hosting each "item" in a "container" residing within an interactive "peripheral awareness" interface for graphically and/or textually displaying the items. The peripheral awareness interface displays information and/or communications contacts in such a way as to minimize any potential distraction or interruption to the user.

[0044] In general, a ticket is represented by a data structure such as an XML data file. Each ticket includes instructions as to what information or communications contact is to be represented by the ticket as well as pointers to particular "services" that represent any of a number of conventional means for accessing and/or interacting with the information or communications contacts. These services are automatically or manually selected from a predefined or user definable library of services. In particular, the different services represent shared code or functions that provide functionality for accessing, receiving, retrieving, and/or otherwise interacting with any conventional information, source of information, or communications contact. These services are shared in the sense that they are used either alone, or in combination, and may be used simultaneously by one or more tickets. Consequently, it should be noted that in one embodiment multiple services are used in combination for providing complex interactions with any conventional information, source of information, or communications contact.

[0045] In the context of the present invention, one example of a "service" is the functionality necessary for monitoring an email folder by connecting to a conventional MAPI server. Another example of a service is functionality for sending or receiving email messages. Related services provide functionality for communicating with contacts or transferring information via any number of conventional methods, such as, for example instant messaging or peer-to-peer communications schemes. Another example of a service is functionality to convert a text file from one language to another. A further example of a service is functionality necessary for monitoring

a database. Still other examples of services include functionality for receiving or retrieving data from a web site or a remote server. Clearly, any conventional method for interacting with any conventional information, source of information, or communications contact can be implemented as a shared service for use by one or more tickets in accordance with the present invention.

[0046] Further, as noted above, each ticket's instructions includes a pointer to one of a number of specialized "viewers" having the capability to display whatever type of information or communications contact is represented by the ticket. In other words, each ticket represents a combination of the information or contact that a user desires to keep track of along with a definition of how the user desires to view that particular information or contact as well as the ability to use any of a number of conventional means, i.e., services, for accessing and interacting with the information or contact. Such access or interaction can be accomplished locally, or across local intranets, extranets, wired or wireless networks, the Internet, etc. via any conventional communications protocol.

[0047] As discussed above, each ticket is paired with a "viewer" to create an "item." These viewers graphically display the ticket as a resizable thumbnail or icon-sized window having the information or contact data retrieved via one or more of the services in accordance with the aforementioned ticket instructions. In particular, the viewer is capable of dynamically displaying a ticket having textual, audible, or graphical information, including still or live images, or any combination of textual, audible, or graphical information. For example, one viewer type is capable of displaying contact information, i.e. a "person ticket" as described below, another is capable of displaying specific email information, such as, for example, number of messages received, or number of messages from a particular source, another viewer is designed to interact with a database to provide a summary of particular information from the database in the thumbnail. Further examples of viewer types include viewers capable of displaying still images, video images, a summary of communications status, the results of a database query, etc. Clearly, any type of viewer can be designed to be associated with any corresponding type of information to ensure that any possible information can be displayed.

[0048] As noted above, the "items," i.e., the ticket/viewer pairs, are hosted by "containers" having the capability to host any number of items. These containers are described in further detail below (see Section 2.1.4), but can be thought of, at least in a general sense as a region provided on a display device where items can be placed, displayed or rendered, and within which users can interact with the items. Further, these containers provide common services for tickets and items, such as, for example, allowing tickets or items to be placed in the containers, allowing items to be moved into and out of the containers, or arranged within the containers, and

ensuring that items within containers are not covered by other application windows. Again, as noted above, particular containers are capable of hosting any number of items. Further, also as described in detail below, any number of containers may exist concurrently on a given display device. In a tested embodiment, the peripheral awareness interface described herein is represented by a container that forms a "sidebar." This sidebar can be generally described as a container hosting one or more columns of items in a persistent interactive display strip along one edge of a conventional display device.

[0049] The containers are user accessible via a peripheral awareness user interface. Users can interact with this user interface using any conventional pointing device, keyboard, etc., that is appropriate for whatever device is being used to display the items in the containers as described herein. Further, each item, whether representing a contact, an email folder, or any other information of interest, is preferably actionable. Consequently, selecting or otherwise interacting with any item via any of a number of conventional input devices, such as, for example, mouse, keyboard, stylus, touchpad, etc., serves to initiate particular actions appropriate to a given item, as described below, such as to instantiate context sensitive menus or item-specific information or tooltip type windows.

[0050] For example, assuming an email ticket for watching an email inbox folder, a summary of the number of messages received in the folder is preferably displayed in the thumbnail, i.e., the item which is being hosted by the container. Further, clicking on, or hovering a pointing device over the email item serves to bring up an email pop-up window including the contents of the email inbox folder being tracked/watched in accordance with the email ticket instructions. As described in further detail below, the user may interact with any message in this window in the same manner as if the messages with being accessed or viewed within the users' email application. In other words, given this example, the user can read the message, forward, delete, or reply to the message, or perform any other conventional messaging type action on the message from directly within the email pop-up window. This functionality is achieved either by providing an email specific viewer having the desired email functionality, or by providing a viewer that instantiates an instance of the users email program for purposes of displaying the tracked/watched inbox folder.

[0051] In addition to the overview of the invention summarized above, many additional features are described below as alternate embodiments in accordance with the present invention. Further, each of the features of the present invention that have been summarized above is discussed in greater detail in the following paragraphs.

2.1 System Components:

[0052] FIG. 2 is an exemplary architectural diagram

which illustrates basic components for implementing a peripheral awareness interface system and process in accordance with the present invention. It should be noted that the boxes and interconnections between boxes that are represented by broken or dashed lines in FIG. 2 represent alternate embodiments of the present invention, and that any or all of these alternate embodiments, as described throughout this document, may be used in combination. In general, specifying, tracking or receiving, and providing the status of communications contacts and information of interest is accomplished through the use of at least one customizable dynamic encapsulated object, hereinafter to as a "ticket," 210 that when paired with a "viewer," 220, provides peripheral awareness of information and communications contacts of interest to a user via a container 250 for implementing the peripheral awareness interface of the present invention on any conventional display device 260.

[0053] A system and process according to the present invention includes four basic components: 1) One or more tickets 210 which describe what is to be tracked or watched, where and how the data or contact information can be found, and what type of viewer 220 is appropriate for viewing whatever is to be tracked or watched; 2) Zero or more services 230 representing the means, i.e., where and how, by which information or contacts are tracked or otherwise watched; 3) One or more viewers 220 from a predefined or user definable or editable library of viewers, each viewer having the capability to display particular tickets 210 within a container 250; and 4) one or more containers 250 for hosting ticket/viewer pairs, i.e., "items" 200, the containers representing peripheral awareness interfaces residing on one or more display devices 260.

[0054] In particular, as illustrated by FIG. 2, "items" 200 comprising pairs of "tickets" 210 and "viewers" 220 optionally make use one or more "services" 230 to dynamically track, interact with, and/or watch one or more particular information sources 240. It should be noted that as described below (see Section 2.1.3) the viewers 220 comprising a portion of the items 200 may contain ActiveX® or other types of controls that directly make HTTP or other communication calls without the need for using services 230. Consequently, as noted above, the items 200 optionally use one or more "services" 230. By dynamically tracking or watching particular sources of information 240, a current status of any particular information or communications contact is provided to the user. This information or contact status is provided either graphically, textually, or via some combination thereof, by hosting one or items 200 within one or more containers 250 for providing peripheral awareness interfaces on one or more display devices 260.

2.1.1 Tickets:

[0055] In general, a ticket 210 is a combination of the information or contact that a user desires to keep track

of along with a definition of how the user desires to view that particular information or contact. The term "ticket" 210 is used herein to describe an extensible markup language (XML) structure, or similar language structure that defines the content of an item 200 within the container 250, such as a "sidebar" described in further detail below. In particular, a ticket 210 consists of two portions: one that is common to all types of items, including, for example, a control name, CLSID of an ActiveX® (or other scripting language) control associated with the ticket, a URL or file path for where to obtain the code or script control if it is not locally installed, etc.; and one that varies based on the type of the ticket, including parameters specific to that ticket type, such as, for example, what type of viewer 220 is required to display the information or contact defined by the ticket. While tickets 210 in accordance with the present invention use ActiveX® controls, it should be appreciated that many other scripting languages may be used to create controls or instructions in place of ActiveX® controls.

[0056] In particular, tickets 210 can be described as the individual controls hosted with a viewer 220 in the container or sidebar 250. These tickets 210 can be created using any one of a number of conventional programming or scripting languages, including, for example, ActiveX®, C++, Visual Basic, and DHTML plus JavaScript. However, as described below with respect to containers 250 (see Section 2.1.4), regardless of which language is used to create the tickets 210, the tickets preferably support specific interfaces or specifications required by the container so that the container can successfully manage the items 200 comprised of the ticket/viewer pairs.

[0057] Exemplary ticket 210 types include, for example, communications contact tickets (i.e., person tickets) as described in further detail below in Section 5.0, email tickets, calendar or scheduling tickets, file system or file folder tickets for watching particular directories or files, stock tickets for watching information relative to particular stocks, database tickets for watching particular databases or parts or summaries of such databases, web page tickets for watching Internet or network web pages or portions thereof, weather tickets for watching or tracking weather information, traffic tickets for watching traffic information for particular locations, etc. Clearly, any type of contact or information which is accessible via the Internet or any other network or communications method may have an associated ticket 210 for watching or tracking that contact or information.

[0058] For example, particular information of interest to a user may be statistical information relating to a particular electronic file. Given this trivial example, the user may be interested in knowing how many people have read the electronic file, or whether it has been modified. Consequently, the customizable ticket 210 for watching or tracking the electronic file that the user is interested in includes instructions for using one or more of the services 230 for linking or connecting to the electronic file,

i.e., one of the information sources 240, via any of a number of conventional electronic communications methods. Further, where the electronic file of interest resides locally, on the user's own computer, for example, the ticket 210 may include instructions for accessing, watching or tracking the file information directly without requiring the use of a service 230.

[0059] Either way, in accordance with the aforementioned example, the ticket 210 includes instructions for using conventional electronic communications methods for dynamically collecting statistical information relative to the electronic file as it becomes available. Further, as described above, the ticket 210 also includes instructions for how to display particular information, as well as what type of viewer 220 is to be used for displaying that information within the container 250. One example of such instructions includes instructions to display the number of people that have read the file, and/or instructions to change the color of the displayed information when the file has been modified by anyone other than the user. Additionally, as described in further detail below, in one embodiment, such display instructions are user configurable so that a user can display the desired information in a format of the user's choice.

[0060] Another useful feature of tickets 210 is that, in one embodiment, tickets are shareable between users. Consequently, tickets 210 may be shared via email, or via any other means for transferring electronic files. For example, tickets 210 may be copied, cut, pasted, stored, saved, transferred, transmitted, etc., like any other electronic file using conventional techniques. In a related embodiment, tickets 210 can be posted on web sites then copied and pasted or dragged and dropped to the container 250, or to any other location on the display device 260. As described in further detail below (see Section 4.0), in one embodiment, pasting or dragging and dropping tickets 210 onto the display device 260 serves to automatically call up a wizard or similar application window for providing the user with a choice of either instantiating an instance of a container 250 for hosting an item 200 comprising that ticket 210 and an associated viewer 220, or simply copying the ticket as any other electronic file.

[0061] Further, also as described in further detail below, tickets 210 can be stored in user profiles or databases or any other computer readable media to be accessed via any of the user's Internet or network enabled devices, or shared by colleagues, customers, friends and family, etc. of the user by simply copying or manually or automatically transmitting the ticket or tickets to whatever computing device a user wishes the ticket to be hosted on. In addition, users can manage the tickets 210 such as by adding, editing, or deleting tickets via a user interface as described below.

2.1.2 Services:

[0062] As noted above, services are automatically or

manually selected from a predefined or user definable library of services. As noted above, zero or more "services" 230 are used for interacting with particular communications contacts or information of interest. Current information or status is automatically either retrieved or received, i.e., either by "pulling" or "pushing" such information, from any one or more of a number of conventional communications sources 240 by using the functionality associated with one or more services 230. By way of example, such information sources include local file servers, email servers, MAPI servers, file transfer services, electronic databases, electronic files, instant messaging or other peer-to-peer communications schemes, or any other possible source of electronic data. However, as noted above, services 230 are not limited to merely providing communications to one or more sources of information.

[0063] In particular, the different services 230 represent shared code or functions that provide functionality for accessing, receiving, retrieving, and/or otherwise interacting with any conventional information, source of information, or communications contact. These services 230 are shared in the sense that they are used either alone, or in combination, and may be used simultaneously by one or more tickets. Consequently, it should be noted that in one embodiment multiple services 230 are used in combination for providing complex interactions with any conventional information, source of information, or communications contact.

[0064] Consequently, as described above, in the context of the present invention, one example of a "service" 230 is the functionality necessary for monitoring an email folder by connecting to a conventional MAPI server. Another example of a service 230 is functionality for sending or receiving email messages. Related services 230 provide functionality for communicating with contacts or transferring information via any number of conventional methods, such as, for example instant messaging or peer-to-peer communications schemes. Another example of a service 230 is functionality to convert a text file from one language to another. A further example of a service 230 is functionality necessary for monitoring a database. Still other examples of services 230 include functionality for receiving or retrieving data from a web site or a remote server. Clearly, any conventional method for interacting with any conventional information, source of information, or communications contact can be implemented as a shared service 230 for use by one or more tickets 210 in accordance with the present invention.

[0065] Consequently due to the wide variety of possible information sources 240, in combination with the virtually limitless types of information available, each ticket 210 independently specifies which services 230, if any, i.e., which particular methods, protocols, communications channels or devices, are to be used for connecting with, and/or interacting with, the information source or sources 240. For example, different communications

methods, such as those described above, are required for obtaining information about each of a local file system, connecting to a corporate database, getting people's status information from a messaging service such as that provided by MSN™, and getting secure financial data from a user's bank's Internet web site. Consequently, the service 230 associated with each of these exemplary data types requires different methods of communication for downloading and/or interacting with the requisite data. Again, as noted above, the services 230 can be any conventional method or protocol for completing communications between two or more electronic devices.

[0066] Consequently, with respect to the services 230, it is clear that the infrastructure of the present invention must consider how items 200, i.e., ticket viewer pairs (210/220), communicate or interact with a particular information source or sources 240 so that such items can successfully retrieve, receive, or interact with information from any such sources. Additionally, in one embodiment, particular services 230 may be used by more than one item 200, thereby minimizing any required bandwidth. For example, where two or more items 230 must access the same database, i.e., multiple MAPI connections to an email store, or make an Internet connection to either retrieve or receive data, a single connection may be sufficient to provide for multiple tickets. In other words, wherever possible, the load is aggregated to avoid duplicative communications connections so as to limit any unnecessary use of bandwidth.

2.1.3 Viewers:

[0067] As discussed above, each of the tickets 210 is paired with a "viewer" 220. These viewers 220 graphically and/or textually display the ticket 210 within the container 250 as a resizable thumbnail or icon-sized window that includes the information retrieved in accordance with the aforementioned ticket instructions. In particular, the viewer 220 is capable of dynamically displaying a ticket 210 having textual, audible, or graphical information, including still or live images, or any combination of textual, audible, or graphical information.

[0068] As noted above, each ticket 210 includes instructions as to which viewer is to be used for displaying the communications contact or information represented by the ticket. For example, one viewer type is capable of displaying contact information, i.e. a "person ticket" as described herein, another is capable of displaying specific email information, such as, for example, a number of messages received, or a number of messages from a particular source or contact, another viewer is designed to interact with a database to provide a summary of particular information from the database in the thumbnail. Further examples of viewer types include viewers capable of displaying still images or video, of processing and displaying the results of a database query, of displaying and interacting with email, extracting

and displaying particular elements of a web page, etc. Thus, in one embodiment, the viewer 220 is actually one of a set or library of specialized viewers that are each designed to display particular types of data, contacts, or information. However, in another embodiment, the viewer 220 is implemented as a "multi-viewer" which is in essence an aggregation of individual viewers. These "multi-viewers" are useful for displaying information relating to an aggregation or grouping of tickets 210 in a single thumbnail type view within the container 250. Note that both the concept of groups or aggregations of tickets, and the use of multi-viewers are discussed below in Section 6.0 with reference to FIG. 11A and 11B in the context of a working example. In either embodiment, the viewer(s) 220 are capable of displaying any corresponding type or types of data, communications contacts, or other information within the container 250.

[0069] The viewer 220 typically includes the following functions: first, the viewer shows the most relevant states of the contact or information being observed in accordance with the ticket 210 instructions (e.g., the most current information, and/or the most important parts of the information that can be displayed within the ticket thumbnail); and second the viewer automatically displays the information within the thumbnail in such a way as to maximize the use of the space allotted to the thumbnail. Further, as noted below, the container 250, and the thumbnail contained therein is resizable in one embodiment. Consequently, in one embodiment, as the thumbnail is resized, the viewer automatically detects the size or available area of the thumbnail and dynamically provides whatever information can fit into the thumbnail on a priority basis, i.e., the most important parts of the information are displayed first, with less important information being displayed as space permits.

[0070] For example, where a container 250 having a stock quote item 200, i.e. a stock quote ticket/viewer pair (210/220), is resized, either more or less information relating to particular stock trades will be displayed. In particular, assume that the most important information that the stock item is designed to provide is a current stock price, day high and low, and trade volume, with the current stock price being most important, and trade volume being least important. Given these assumptions, if the as the container is reduced in size from a point where the thumbnail includes each of the aforementioned information elements, i.e., price, range, and volume, the thumbnail will be reduced in size, and the trade volume information will be removed from the thumbnail as the size of the thumbnail is decreased. As the size of the thumbnail is further decreased, the price range information of the stock will be removed from the thumbnail.

[0071] Clearly, in view of this trivial example, many levels of information can be associated with any given item 200 such that as the thumbnail representing that item is either enlarged or reduced in size, as described above, information will either be automatically added or removed, space permitting.

[0072] Further, in the spirit of providing peripheral awareness as described herein, one embodiment of the viewer 220 is capable of automatically changing the appearance of graphically displayed tickets 210 over time in order to unobtrusively alert a user as to changing information or communications state or status. For example, in one embodiment, where a ticket 210 has new or current information, retrieved from one or more information sources 240 via one or more services 230, that new or current information can be represented in color, or in gray scale, by using high contrast or brightness levels, or by using any conventional type or style of shading or transparency. However, as time passes, and the information becomes less current, the graphically represented ticket 210 may slowly fade to gray scale, or alternately, the contrast or brightness levels may slowly fade to indicate aging of the information. This ability to indicate aging of information applies equally to "disconnected operations," as described below in Section 7.1 where connections to one or more information sources is either degraded or disconnected. In other embodiments, the viewer 220 may also provide audible alerts, visible alerts, or any desired combination of audible and visible alerts. In related embodiments, the user may discontinue or otherwise edit or change individual alerts or types of alerts via the user interface described below.

2.1.4 Containers:

[0073] Simply stated, the container 250 hosts peripheral-awareness items 200, i.e., ticket/viewer pairs (210/220). In accordance with the present invention, the container 250 is implemented in one embodiment as a persistent "sidebar" for displaying items 200 along either a portion of the display device 260, or the entire display device. This sidebar is persistent in the sense that it is always on top, while limiting the available display area on the display device 260 with respect to other open applications or windows such that it doesn't obscure portions of any other application windows. However, in other embodiments, the container 250 is not persistent, i.e., it can be covered by one or more application windows, nor does it limit the available display area. Further, in another embodiment, a mixture of both persistent and non-persistent containers 250 may simultaneously reside on a given display 260. In still another embodiment, a conventional "auto-hide" function is associated with one or more containers 250, such that a particular container is not visible until a user moves a pointing device near one edge of a display device 260. In this embodiment, the container 250 is shown when the user moves the pointing an edge of the display 260 where the container resides. The container 250 is then automatically removed from the display when the user moves the mouse away from the container.

[0074] As described above, the items 200 represent ticket/viewer pairs (210/220). Consequently, the items 200 include ActiveX® or other scripting language con-

trols which include the instructions as to what information or communications contact is to be tracked, acquired, etc., along with a specialized viewer 220 for displaying that information or communications contact in whatever manner is instructed by the ticket 210. In general, the container 250 specifies the screen area used for displaying items 200 on the display device 260, allows items 200 to be grouped, aggregated, and manipulated spatially via a user interface, as described below. Further, the container is capable of intercepting certain types of events, such as, for example, user interaction with the items, and of passing those events to the ticket 210 controls as appropriate.

[0075] There are many ways of implementing the container 250, such as by the use of various conventional scripting languages. For example, in a working embodiment of the present invention, a container/sidebar is implemented via a dynamic scalable window composed of DHTML and JScript with the assistance of a core ActiveX® control. Consequently, in one embodiment, the sidebar uses conventional web browser-based techniques to support dynamic object creation, hosting, and manipulation. This serves to eliminate the need for extensive and complex proprietary code development each time a third party desires to implement a ticket 210 for use with the system and method of the present invention.

[0076] Further, in another embodiment, the container/sidebar 250 requires that the aforementioned container controls support predefined interfaces so that each container can manage the items 200 as required by predefined guidelines specified for a user interface as described below. Implementing such guidelines serves to bring consistency to an end-user experience, while ensuring that all tickets 210 will work with any device capable of displaying such tickets when combined with the appropriate viewer 220. Consequently, support of such predefined interfaces serves to ensure compatibility with any third party tickets 210, regardless of the source of those tickets. In other words, the container 250 is designed in such a way as to support all tickets 210 provided to the container, from whatever source, so long as predefined guidelines are followed.

[0077] For example, one set of exemplary rules for implementing the tickets 210 is that: 1) the tickets should indicate how much display area or screen real estate they require; 2) the tickets should provide a configuration user interface; 3) the tickets should provide a pop-up window for accessing detailed information, i.e. an "enhanced tooltip," as described below in Section 3.1; and 4) the tickets should also allow the container or sidebar 250 to pass them their context data, i.e. the information of interest.

3.0 System Architecture:

[0078] It should be noted that the boxes and interconnections between boxes that are represented by broken

or dashed lines in FIG. 3 represent alternate embodiments of the present invention, and that any or all of these alternate embodiments, as described throughout this document, may be used in combination. In general, a system and method according to the present invention uses the program modules illustrated in FIG. 3 for providing peripheral awareness of information and contacts. The program modules of FIG. 3, when considered with respect to the architectural diagram of FIG. 2, illustrate an exemplary system and process for implementing the present invention.

[0079] In general, information or contacts of interest to a particular user are identified either automatically by one or more computer program applications in response to user interaction with such application programs, or by the user via a user interface module 310. Once the information or contacts of interest have been identified, tickets representing the information or contacts of interest are created or modified via a ticket manager module 320. In one embodiment, creation or modification of the tickets is accomplished based upon user interaction with the ticket manager module via the user interface module 310. In either embodiment, the tickets are then paired with viewers, as described above, to create items 200.

[0080] In another embodiment, creation or modification of tickets via the ticket manager module 320 is automatic once the information or contacts have been identified. Further, in related embodiment, tickets are timed, such that they show up at predetermined or user definable times, for predefined or user definable periods of time. For example, where a user purchases an airline ticket via the Internet, or schedules a flight in his or her calendar or scheduling program, the ticket manager module 320 can automatically create one or more timed tickets that are automatically displayed within a predetermined time of the flight departure time. Such tickets can include many types of information of interest to the user, such as, for example, the current flight schedule, i.e., whether it is on time or delayed, the weather at the flight destination, etc. As the time for the scheduled flight passes, the items representing the timed tickets are automatically removed from the display. In addition, it should be noted that while the automatically created ticket described in this example is a timed ticket, there is no requirement that automatically created tickets be timed.

[0081] Once the ticket has been created, paired with a viewer and placed into a container, either manually, or automatically, the system and process of the present invention then automatically tracks or receives the current state of the items 200 via an information and communication module 330 which, in essence, uses one or more of the previously described services for accessing and/or interacting with one or more information sources. Updated information and contact data is then dynamically returned by the information and communication module 330 to the items 200. The items 200 are then hosted by one or more containers 250 which are in turn displayed

on the display device 260. Finally, in one embodiment, an alert module 350 provides for visible or audible alerts or notification, or some combination of visible and audible alerts or notification for alerting the user to particular information or contacts, or otherwise indicating a change in the content, status, or age, i.e., how recent or current, for particular information or contacts.

3.1 User Interface Module:

[0082] The user interface module 310 is capable of performing several functions using any of a number of conventional input devices, such as, for example, keyboards, pointing devices, voice activated controls, or any other conventional method for interacting with electronic devices such as computers, PDA's, cell phones, personal organizers, etc. These functions will be introduced in the following paragraphs, and will be explained in greater detail with respect to the exemplary user interface described below in Section 5.

[0083] In particular, as noted above, one function provided by the user interface module 310 is the capability for the user to specify particular information or contacts of interest via the user interface module. In addition, the user interface module 310 provides for user interaction with items 200 hosted in containers 250 displayed on the display device 260. Such interaction serves to call up actionable expanded information or contact windows, namely "enhanced tooltip windows," that provide further levels of detail beyond that provided by the iconized ticket thumbnail represented by the item 200 hosted in the container 250.

[0084] In particular, "enhanced tooltips" can best be described as a large, actionable HTML, ActiveX®, or other script or code based window having extended information. The tooltips are actionable in the sense that, in one embodiment, if a user clicks on or otherwise selects particular information or elements within the tooltip, the tooltip will automatically link to more detailed information for the particular information or contact represented by the item 200. Further, in one embodiment, tooltips may be nested, such that is a user hovers a mouse or other computer pointing device over the particular information or elements within a first tooltip, a second tooltip will pop up with further extended information relating to the particular information or elements within the first or "parent" tooltip. Clearly, any number of levels of nesting may be applied when implementing nested tooltips.

[0085] Further, users are also provided with the capability to interact directly with the containers 250 via the user interface module 310. For example user interaction with the containers 250 allows the user control over container properties, such as, for example, container size and position, grouping and aggregation of items within the container, and arrangement or organization of items within the container. Groups or aggregations of items are basically user-defined collections of items within the

container or sidebar 250. Grouping can be accomplished in any of a number of ways. First, grouping can be accomplished by simply dragging and dropping one or more tickets onto an existing ticket or group within the container or sidebar 250. When one ticket is dropped onto another, a group is automatically created having both tickets. One a ticket is dropped onto an existing group, the ticket is simply added to the group. Further, one group can be dragged and dropped onto another group. The result is a nested group as described below. Further, tickets and groups can be managed or created via a ticket manager module 320. From an structural perspective, in one embodiment, item groups, or aggregations of items, are simply treated as a container having one or more items embedded within another container (see the discussion relating to FIG. 7B below).

[0086] The embedding described above, both with respect to item groups, and enhanced tooltips, can consist of any number of desired levels of embedding or grouping. Each embedded container 250 or sidebar has an associated DHTML table or similar script that contains the individual controls. Like the top-level container 250, the embedded container also handles events (e.g., drag and drop) that are passed to it by the control, and it may choose to handle these events itself or pass them on to its parent container. Further, as the user selects or otherwise activates an item 200 having either a sub-group of items, or a group of one or more embedded containers, that sub-group, or the embedded containers, are automatically opened so that the items or other containers 250 within the group and the information or contacts that they contain are visible and accessible to the user.

[0087] The container 250 is scalable via the user interface module 310 using conventional techniques similar to that for resizing any display window, i.e. grab an edge or corner with a pointing device and resize the window, or in this case, the container. As noted above, the container/sidebar 250 described above contains multiple ticket/viewer combinations represented as thumbnails. The viewers associated with each thumbnail automatically scale to accommodate the tickets displayed by the viewer. Consequently, the viewer associated with each ticket automatically scales the thumbnails to fill the available space within the container 250 as the container is resized. This is preferably accomplished in one embodiment by automatically dividing the container into strips, or columns of thumbnails as needed where placing all of the thumbnails in a single strip would result in thumbnails below a predefined minimum size threshold. Additionally, in one embodiment, to ensure a minimum legibility of thumbnails, there is a minimum size below which thumbnails will not be reduced when downsizing the container 250.

[0088] Additionally, in one embodiment, the user interface module 310 provides the user with the capability to directly interact with the services provided to the tickets via the information and communication module 330. In particular, in this embodiment, the user may select,

copy, create, or edit particular services. Consequently, individual services can be created or customized via the user interface module 310 in order to allow item 200 interactions with unique or non-standard information sources or contacts. However, in a working embodiment of the present invention, the capability to directly interact with the services, such as for creating or editing services as described above, is limited to developers or third party programmers to avoid potential user error that could interfere with proper functionality of any services.

[0089] Finally, in another embodiment, the user interface module provides user access to the alert module 350. This access allows the user to customize particular alerts, to turn on or associate alerts with particular tickets, or to turn off or delete alerts associated with particular tickets.

3.2 Ticket Manager Module:

[0090] As noted above, the ticket manager module 320 is used for creating, grouping, or modifying particular tickets once the information or contacts of interest have been identified. As noted, tickets may be created by the ticket manager module 320 either automatically, or manually. Further, as described in further detail below, tickets can be created by the ticket manager module 320 via the user interface module 310 through user actions such as dragging and dropping of links, URL's, names, files, file paths, applications, etc., into a container 250. In addition, in one embodiment, the ticket manager module 320 provides a library of predefined tickets for user selection, modification, or sharing. For example, in one embodiment, a ticket database for individual users is pre-populated with a set of exemplary, fully functional tickets that a user can select from in creating a personal profile of tickets. Such tickets may include, for example, generic person tickets, weather conditions, generic appointment profiles, schedules, statistical information, stock quotes, traffic information, or any other information that may be of interest to a user. Once tickets have been identified, created, modified, etc. the ticket manager module 320 pairs each ticket with an appropriately identified viewer to create the aforementioned items 200.

[0091] In another embodiment, the tickets are preferably stored in an Internet or network accessible database. Consequently, users can manage the tickets via the ticket manager module 320, such as by adding, editing, or deleting tickets from the database via the user interface module 310. Additionally, because tickets 350 are sharable in one embodiment, as described above, tickets may be created by third parties and provided to users via any of the methods described above, such as email attachments or via draggable icons in a third party web page. Such third party tickets may include any information elements desired by the third party, such as, for example, advertising information or tracking information for customer or user orders. As with user created

tickets, or tickets provided via the ticket library or database, third party tickets are managed via the ticket manager module 320 as with any other ticket.

[0092] In a related embodiment, specific tickets that show up on particular devices are automatically determined by the ticket manager module 320 based either on past patterns of use for each device, or by explicitly specifying particular tickets to be used with particular devices via the user interface module 310 and the ticket manager module. For example, tickets relating to communication with entities such as particular individuals, corporations, organizations or businesses, might be used or accessed by the user only from the user's cell phone or PDA, but not from the user's office computer. Thus, the ticket manager module will provide such tickets only to the user's cell phone or PDA display, but not to the user's office computer, even though all of the tickets of the user's personal profile are stored in the same network or Internet accessible database. This embodiment serves to reduce the potential clutter of tickets having little or no utility with respect to particular devices or particular locations.

3.3 Information and Communication Module:

[0093] The information and communication module 330 makes use of the previously described services (230 of FIG. 2) for dynamically accessing and interacting with one or more conventional communications sources to dynamically provide current information, including communications status, etc., as described above. Also as described above, this current information is then automatically and dynamically provided in an interactive peripheral display on the conventional display device 260 in such a way as to minimize any potential distraction or interruption to the user. In addition, in further embodiments, as described above, the information and communication module 330 provides a library of predefined services for developer, third party, or user selection or modification. Once services have been either modified or created, they are available for use by the tickets comprising a part of the items 200 as discussed above.

3.4 Exemplary Functions for Implementing a Working Example of the Present Invention:

[0094] It should be appreciated by those skilled in the art, that many types of COM interfaces, functions or types of functions can be used to provide the capabilities and functionality described herein. In view of this note, a working example of the present invention, as described in Section 6.0 is implemented using three main interface functions, hereafter termed "Ticket-Interface," "Ticket-Interface-File" and "Tooltip-Interface," additional functionality is also based on standard COM interfaces to support ActiveX® containment and a viewer "Property Page" which represents properties for each viewer. In accordance with this working example, the main dis-

play surface for tickets is an ActiveX® container with prescribed interaction and implementation behavior between container and viewer ActiveX® servers, realized by deriving the ActiveX® servers interface contract from Ticket-Interface. Derivation from Ticket-Interface provides size negotiation, ticket file storage accessibility, and interaction support services such as tooltip control, context menus, wizard support, etc. Ticket viewer context data and configuration support is provided through Ticket-Interface-File, exposing an interface for a viewer to access and manipulate its XML ticket file which the container has assigned, and to enable standardized access for a viewer's Property Page user interface to the associated ticket file. Finally Tooltip-Interface ensures a consistent tooltip user experience across ticket viewers and exposes advanced tooltip functionality and behavior for and between the container and each viewer.

[0095] Ticket-Interface and "Ticket-Interface-Events" are the primary pair of COM interfaces between the container and viewer server which provides an interface to each viewer. Ticket-Interface member calls are generated by the container either requesting behavior of, or passing data to the viewer server. Ticket-Interface-Events event calls are generated by the viewer server in response to user interface events so as to notify the container for any prescribed behavior that should occur.

[0096] In particular, Ticket-Interface-File and Ticket-Interface-File-Events are the pair of COM interfaces that glues a single source of XML data between a viewer, its Property Page, and its container and graphical manifestation. The container sources the XML for the ticket viewer, loads it into a Ticket-Interface-File interface and passes the reference to the ActiveX® viewer. If a viewer requests it's Property Page to be displayed, the same interface reference is passed by the Wizard manager to the COM interfaces, with changes to the XML data committed to the source. Any changes made to XML tags fire a "Field-Change" function (see discussion of particular functions below) indicating the tag that was changed and its new and old data values, so the viewer can adjust accordingly. In this way the viewer and its Property Page are isolated from the location and manifestation of their XML data, and can therefore be situationally and seamlessly changed by the container implementation.

3.4.1 Exemplary Function Examples:

[0097] The following paragraphs provide an overview for each of the interface member functions used by the aforementioned COM interfaces for implementing the working example described in Section 6.0.

[0098] **"Put-Ticket-File" Function** - As a container processes a list of ticket files for each of its viewers, it encapsulates the XML ticket file using an Ticket-Interface-File COM interface and passes it to a viewer control using the Put-Ticket-File function so the viewer can access its context and configuration data. This same in-

terface reference is also used by the viewer's Property Page to configure its behavior and operate on the same XML set as the viewer and a container storage model. In this way the viewer is isolated from how or where its ticket file has been sourced.

[0099] "Get-Ticket-File" Function - When a new viewer is about to be created the container calls this function in order to get the viewer's default configuration value template, as a Ticket-Interface-File interface, before passing it to a container "Wizard" manager and viewer's Property Page.

[0100] "Source" Function - Source is an alternative property based embodiment to set a viewer's Ticket-Interface-File's data content. This property is used when the container is used in a scripted environment and not responsible for managing the location of the Ticket files.

[0101] "Get-Source" Function - Get-Source is an alternative property based embodiment to get a viewer's Ticket-Interface-File's location. This property is used when the container is used in a scripted environment and not responsible for managing the location of the Ticket files.

[0102] "Get-Width-From-Height" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its desired height given a width that the container will render it in.

[0103] "Get-Height-From-Width" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its desired width given a height that the container will render it in.

[0104] "Get-Best-Height" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its ideal Height that it would like to render its contents within.

[0105] "Get-Best-Width" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its ideal Width that it would like to render its contents within.

[0106] "Get-Min-Width" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its minimum Width that it can render its contents within.

[0107] "Get-Min-Height" Function - Dependent on the current layout mode of the container this member is called to request from the viewer, its minimum Height that it can render its contents within.

[0108] "Show-Details" Function - When a container has determined that a viewer should display its view with the highest level of detail, this member function is called.

[0109] "Show-Tooltip" Function - When a container has determined that a viewer should display its tooltip this member function is called. The viewer would determine how large to display the tooltip, call an "Activate" function on its Tooltip-Interface interface that it has obtained for it.

[0110] "Hide-Tooltip" Function - When a container has determined that a viewer should hide its tooltip this member function is called. The viewer would call the Ac-

tivate function on its Tooltip-Interface interface that it has obtained for it.

[0111] "Context-Menu" Function - When a container has determined that a viewer should display its context menu this member function is called.

[0112] "Get-Property-Page" Function - When the container needs to display the Property Page for a given viewer, this property function call returns the program ID's for a viewers Property Page interfaces. In this way the container Wizard manager can instantiate the relevant dialogs according to the COM specification.

[0113] "Get-Start-Page" Function - After a call to the "Get-Property-Page" function the viewer can determine which of its Property Page should be displayed initially when the Wizard is invoked. For example, in this way a different user interface can be presented to the user based on whether this is a modification to an existing viewer instance, or a new one.

[0114] "Get-Next-Page" Function - During the Wizard's navigation of a viewer's Property Page, the viewer can determine which Property Page should be displayed when a Next button is pressed, based on the current state of its Ticket-Interface-File data contents. For example, based on a set of radio buttons different user interface may be required for each state.

[0115] "Get-Back-Page" Function - During the Wizard's navigation of a viewer's Property Page, the viewer can determine which Property Page should be displayed when the Back button is pressed, based on the current state of its Ticket-Interface-File data contents. For example, based on a set of radio buttons different user interface may be required for each state.

[0116] "Finish" Function - Given that the ordering of Property Page could be arbitrary and that a Finish button can be enabled choosing default values for other user interfaces, this property call is invoked by the Wizard manager to determine whether the Finish button should be enabled given the current state of the Ticket-Interface-File data contents.

[0117] "Do-Ticket-Interface" Function - A viewer can optionally provide functionality through the Do-Ticket-Interface member function, this is particularly useful in scripted environments to invoke additional user interface or perform actions. The author of a viewer would publish the verbs and their parameters that are exposed.

[0118] "Double Click" Function - The viewer should fire the Double Click event when it has been double clicked with the mouse. This is usually interpreted by the container to call the Show-Details function.

[0119] "Mouse Action" Function - The viewer should fire the mouse events when mouse messages occur. This enables the container to make decisions about tooltip control, context menu display etc.

[0120] "Resize" Function - If a viewer wishes to display more information in its thumbnail it can fire this event so that the container can rearrange the surface to try and accommodate the real estate change request.

[0121] "Remove" Function - A viewer can request to be permanently removed from the container by firing this event, usually in response to a Remove context menu selection.

[0122] "Request" Function - A viewer can request the container to display its Property Page by firing this event, usually in response to a Properties context menu selection.

[0123] "Verb" Function - A container can optionally provide functionality through the Verb member function. The author of a container would publish the verbs and their parameters that are exposed.

[0124] "Load" Function - Loads a given XML source file into the XMLDOM document that Ticket-Interface-File encapsulates. Once the file has been loaded each XML tag is signaled invoking a Field-Change function event so that the viewer can act accordingly.

[0125] "Put-XML" Function - Loads given XML source text into the XMLDOM document that Ticket-Interface-File encapsulates. Once the text has been loaded each XML tag is signaled invoking a Field-Change function event so that the viewer can act accordingly.

[0126] "Get-XML" Function - Returns the XML text to the caller, that XMLDOM document that Ticket-Interface-File encapsulates.

[0127] "Get-Field" Function - Returns a specified XML tag's contents to the caller.

[0128] "Put-Field Function - Sets a specified XML tag's contents, the change invokes a Field-Change function event so that the viewer can act accordingly.

[0129] "Get-URL" Function - Returns a source location for the XML document to the caller.

[0130] "Duplicate" Function - Returns a duplicate copy of the XML data encapsulated in a new Ticket-Interface-File interface. Any changes made to the copied interface are transient until a "Save" function is invoked specifying a new source.

[0131] "Save" Function - Commits the XML data to its source, using either the loaded source reference or a new source reference.

[0132] "Signal" Function - Causes the invocation of a Field-Change function for each XML tag in the document.

[0133] "Remove-Field" Function - Causes the removal of a specified XML tag from the document.

[0134] "Field-Change" Function - This event is fired when the contents of a specific XML tag has been changed, specifying the tag path, the old and new values of the tag contents.

3.4.2 Exemplary Tooltip Function Examples:

[0135] The following functions are related to tooltips. Further, as noted above, it should be appreciated by those skilled in the art, that many other COM interfaces, functions or types of functions can be used to provide the capabilities and functionality described herein. The Tooltip-Interface function ensures a consistent tooltip

experience across differently authored viewers, such as tooltip placement, framing and visibility control, in addition to offering other advanced features. Specifically, the following member functions are used to provide the tooltip functionality described herein.

[0136] "Create-Tooltip" Function - Called by a viewer, creates and returns a Tooltip-Interface interface instance for use by the viewer.

[0137] "Create" Function - Causes the actual creation of the tooltip window and binding it to the viewer to which it belongs, specifying style flags and a Win32 window callback procedure so that the viewer can implement its tooltip functionality.

[0138] "Update-Size" Function - Changes the size of a tooltip while it is in the visible state. Ordinarily the Activate function specifies the size of the tooltip when it is displayed.

[0139] "Activate" Function - Controls the visibility of the viewer's tooltip based on the state of the Activate parameter. If the tooltip is being made visible the width and height parameter specify the size of the tooltip.

[0140] "Tooltip-Sibling" Function - This function adds a popup window to the list of windows that specify the viewer's tooltip bounding rectangles. This ensures that movement into a Tooltip's sibling windows doesn't cause the tooltip to actually be dismissed.

[0141] "Remove-Sibling" Function - This function removes a popup window from the list of windows that specify the viewer's tooltip bounding rectangles (see above).

4.0 Operation:

[0142] The above-described program modules, in view of the above described system components and architecture, are employed to provide peripheral awareness of information of interest to a user via a peripheral awareness interface using the exemplary process that will now be described. This process is depicted in the flow diagram of FIG. 4A as a series of actions that illustrates an exemplary method for implementing the present invention. It should be noted that the boxes and interconnections between boxes that are represented by broken or dashed lines in FIG. 4A represent alternate embodiments of the present invention, and that any or all of these alternate embodiments, as described throughout this document, may be used in combination.

[0143] In general, the system and process of the present invention is started by first specifying information of interest 400, either automatically, or via the user interface. Next, a ticket is selected, or created 405 for the information of interest 400, and including a pointer to an appropriate viewer, as described above. Further, in one embodiment, the user is provided with a personal profile or database 415 for storing tickets. One or more of the tickets stored in the personal profile 415 preferably automatically show up in containers on particular devices when such containers are started or initialized.

This personal profile 415 is essentially a user specific database of tickets. Further, in a related embodiment, the personal profile 415 containing a user's tickets is automatically maintained in a network or Internet accessible database such that whatever information the user decides to track or watch will not only show up on the user's office computer display device, but also on the user's other computing devices, the user's PDA, the user's cell phone, or any other of the user's network or Internet enabled devices having a display device. Either way, once the tickets have been selected, created, or retrieved, 400 or 410, they may be shared 420, as described above, or alternately, they may be stored, copied, or edited 425 for current or later use. Further, once tickets have been created or edited, they may be stored 430 in the user profile 415 for either current or subsequent use.

[0144] One additional method for automatically creating tickets involves either pasting or dragging and dropping 235 links, files, contacts, etc., into or onto a container. In one embodiment, generic logic within the container automatically analyzes what was pasted or dropped 235 into the container and automatically creates an appropriate ticket for tracking and/or watching that information or contact, as well as automatically assigning an appropriate viewer for displaying the information or contact. For example, where the user drags and drops 235 a file, folder, or directory to a container 250, a ticket is automatically created, and an appropriate viewer is automatically selected, so that the user can watch the contents of the file, folder or directory. In addition, because tickets are customizable, the user can modify the automatically created ticket to provide for a custom view of the contents of the file, folder, or directory represented by the automatically created ticket.

[0145] However the tickets are created, retrieved, specified, etc, once identified, each tickets instructions and controls are used to either retrieve or receive the information of interest via one or more services 440 from one or more information sources as described above. Next, once the information has been retrieved or received, the items (i.e., ticket/viewer pairs) are dynamically displayed 445 as thumbnails, as described above, either individually, in the sidebar, or as grouped thumbnails as described above. In addition, new tickets may be dragged and dropped 450 either to the user's display, to the sidebar, or to particular groups of aggregated tickets as described above. In any event, once these tickets have been dragged and dropped 450 as indicated, they are immediately displayed 445 in the manner described above. Note that as described above, where tickets are dropped onto the display device, outside of a container, the user is provided with an option as to whether the ticket should be displayed in a container, or merely copied as an electronic file.

[0146] Further, although the peripheral display is designed to minimize user distraction as described above, circumstances sometimes exist where the user is noti-

fied or alerted 455 of high priority information or of a status change of the information. Such alerts 455 can take the form of audible or visual alerts, or some combination thereof, as described above. For example, where a ticket is designed to monitor the current price of a particular stock, the ticket can further include a capability to automatically alert the user when the stock reaches a certain target price. Such an alert may include a visible alert, an audible alert, an alert via an automatically generated email which provides the current stock price, or any other type of audible, visible, or textual alert.

[0147] In still another embodiment, also as described above, the ticket thumbnails are aged 460 to indicate the relative time since information was retrieved. In particular, as time passes, the thumbnails can be faded, color may be changed to grayscale, the brightness and/or contrast of the thumbnails may be reduced, or the shading may be changed in order to indicate the relative age of the data represented by the ticket thumbnail. This aging 460 of information applies equally to "disconnected operations," as described below in Section 7.1 where connections to one or more information sources is either degraded or disconnected such that the data provided by a ticket is not current. Further, in another embodiment, tickets are timed 465, such that they show up at predetermined or user definable times, for predefined or user definable periods of time. For example, where the user has a schedule based ticket, a ticket representing a scheduled meeting can be set to appear at a given time prior to the meeting in order to remind the user of the meeting, or to provide other pertinent information relative to the meeting. In further embodiments, again as described above, items within the container may be aggregated or nested 470. In addition, the containers themselves may be moved, nested, linked, or otherwise aggregated 475.

4.1 Person Centric Interface:

[0148] As noted above, the tickets can represent communications contacts, i.e., people or other entities. In the context of the present invention, such tickets are referred to as "person tickets." Such person tickets are explained in further detail below in Section 5.0. Information and data, associated with such communications contacts may include, for example, current communications, communication history, communications availability, or communication channels for specific entities. Such information and data is provided in a "person-centric interface" 480 by providing viewers appropriate for displaying such contact tickets in a manner to provide peripheral awareness as described above. Given this person-centric interface 480, the people or other entities are brought to the forefront of the peripheral display. Further, as described below in Section 5.0, by clicking on a face or other image representing a person ticket, a "person window" is automatically opened. As described below, the person window is similar to an enhanced tooltip

in that it is a window that provides extended information and actionable elements relating to the particular contact represented by the person ticket.

[0149] Consequently, communications access channels and/or status 485 with particular persons or entities via one or more of the services in combination with one or more of the information sources may be reviewed or initiated easily, while a general communications availability of such people or entities may be understood by a user by simply glancing at the peripheral display. For example, as described above, different images, graphics, avatars, etc., may be used to indicate various social queues for illustrating availability status. In addition, again as discussed above, in one embodiment, this person centric interface provides a communications status 485 via any of a number of communications channels for each of the displayed entities. Further, in another embodiment, a "best available" communications channel for communicating with a particular contact can be automatically selected based on a determination of which channel is most likely to be successfully used for communicating with the contact, or on which will provide the best or "richest" communications with the contact.

[0150] In addition, in one embodiment, the services associated with communications contacts either tracks or receives the communications availability of entities or contacts of interest to the user. Consequently, in this embodiment, a historical view, pattern, or average of the times that an entity is available for communications is provided via the person-centric peripheral awareness interface. For example, in one embodiment, where the information that a user desires to be tracked or watched represents a particular entity, over time, patterns of communication availability or average communication availability times are automatically determined 490 in accordance with the ticket instructions. For example, this embodiment can be used to determine the time when a person or contact normally begins work, takes breaks, goes to lunch, or leaves for the day. Such determinations can be made using any of a number of conventional techniques, including, for example, simply monitoring the user's keyboard usage to determine whether the user is present in his office.

[0151] Such information can be useful to a user in planning times to initiate communications with an entity, or in keeping track of the availability of an entity. In such an embodiment, conventional techniques are used to compute average availability over time. Similarly, in a related embodiment, in determining patterns of availability, conventional expert systems, including, for example, probabilistic models, such as systems using machine learning techniques, are used to predict the availability of an entity based on historical patterns of availability. In these embodiments, predicted, historical or average availability 490 is provided to the user via the display device 260 either as a visual, graphical or textual display, or some combination thereof.

[0152] In further related embodiments, the predicted,

historical or average availability 490 of multiple entities is provided via the display device 260 as a side-by-side comparison in a visual, graphical or textual display. A working example of the communications availability 490 of multiple users is provided in the screen image of FIG. 4B. This screen image is one example of a "person window." In particular, as illustrated by FIG. 4B, the current availability 491 of a contact of interest 492 is provided in a window which also includes a current schedule 493 of the contact in a side-by-side comparison with the current schedule 494 of the user 495. Further, this screen image also illustrates the average availability 496 of the contact 492 as well as the average availability 497 of the user 495. The average availability, 496 and 497, of the contact 492 and the user 495, respectively, are graphically represented along the right hand edge of the schedule 493 and 494 of the contact and user.

[0153] In particular, this average availability 496 and 497 is provided as an area chart that provides average availability trends over time, with a wider area indicating greater average availability, and a narrower area indicating lesser average availability. For example, the graphical representation of the average availability of the contact 492 indicates that the contact is typically not available from about 1:15 pm until about 2:45 pm each day. Similarly, the graphical representation of the average availability of the user 495 indicates that the user is typically not available from about 12:00 noon until about 1:00 pm each day. Further, the graphical representation of the average availability of the user 495 indicates that the user is typically not available for a short period around 3:00 pm each day. It should be noted, that the exemplary screen image discussed above is merely one example of many methods for providing contact availability information. As noted above, such methods include visual, graphical or textual displays of availability.

5.0 Exemplary User Interface:

[0154] In a computing environment, there are many possibilities for arrangement and placement of the peripheral awareness display described herein. Such possibilities include, for example, a display along one edge, or on any other part of a display or monitor, including the entire monitor, a Windows® sidebar, a portion of a second monitor, a display of a conventional Pocket PC docked near a user's computer, a display of a handheld device such as, for example, a PDA, a cell phone, a handheld or palmtop computer, or similar device, or even via a physical icon, such as, for example, a doll that turns it head to one side when a person or entity which it represents is either available or unavailable for communication.

[0155] One advantage of using a sidebar type container for hosting items is that it works for users with a single monitor or display, it remains in the user's periphery, it's always available at a glance (in one embodiment, maximizing an application window doesn't cover

it), and it takes up a relatively small amount of screen space. The sidebar may be either single column or multi-column as needed, so as to host all of the items specified by the user. Further, in one embodiment, the width and/or height of the sidebar is user adjustable via the user interface. In another embodiment, multiple sidebars may be instantiated via the user interface, each sidebar being either the same or different sizes. However, as discussed above, the items or iconized tickets need not be displayed within a sidebar having multiple items, and can instead be free floating and individually displayed.

[0156] The sidebar is populated with items that provide peripheral awareness to the user. Each of these items provides a visualization of the state of the underlying object(s) or information that it represents. As described above, the sidebar can include a large variety of items and visualizations, i.e. displayed tickets. For example, a sidebar can include items for monitoring an email inbox, an appointment calendar, availability of people that the user wants to communicate with, a database for work assigned to the user, whether there are any changes to a document of interest to the user, whether there are changes in a particular folder or directory, response status of an invitation to a party, status of an online auction, the order status of an item purchased over the Internet, or any other item representing information of interest as described above. As described above, it should be noted that the types of items being watched or monitored in accordance with the instructions of the tickets include generic items such as an email inbox, or the communication status of one or more people, custom items authored to monitor any sort of local or remote data, such as a local or remote database, or specific elements within such databases, and custom items authored by third parties, such as, for example, order status tickets, party invitation tickets, advertisement tickets, and shipment tracking tickets, etc.

[0157] As noted above, items with the container may be arranged or rearranged. Arranging items within the sidebar is accomplished in one embodiment by dragging and dropping existing items within the sidebar to whatever location is desired by the user. In a related embodiment, items within the sidebar are automatically arranged in order of priority. This priority is preferably assigned by the user, but in further embodiments, the priority is automatically determined based upon the information type or the age of the information (i.e., how current the information is) for any given item. In still another related embodiment, the positioning of particular items within a container may be assigned a fixed or locked position, either manually or automatically, such that locked items will always maintain a consistent location within the sidebar, regardless of how other items with the container are arranged or rearranged. This embodiment is particularly useful for ensuring that a user does not waste time looking for an item that resides in a place other than where the user expects it to be.

[0158] In one embodiment, items or tickets are dis-

played in a single ticket container, in what can be described, at least in a behavioral sense, as a single-ticket sidebar. Consequently, a ticket can be displayed alone on a computer display device, and can be moved around the display device like any other window or icon using conventional techniques. An additional benefit of this capability is that in one embodiment, a ticket can be embedded in an electronic document, such as, for example, a word processor file or a presentation file. The behavior of an embedded ticket is the same as that described herein for a standalone ticket, or in other words, for the behavior described for tickets displayed within the sidebar.

[0159] In one embodiment, single displayed tickets can be moved using a conventional computer pointing device. In a related embodiment, where one or more displayed tickets are moved such that they come into contact with another displayed ticket, the displayed tickets automatically snap together to form a larger sidebar or container which is then treated as a single sidebar or container as described above. Further, in another related embodiment, where multiple displayed tickets are snapped together, they are automatically moved into either an existing container, or into a newly instantiated container not having any other items or tickets. In additional embodiments, tickets that have been snapped together may also be pulled apart, and tickets existing in containers may be removed or copied from the container and moved or pasted to the computer display device, or to an electronic document as described above.

[0160] As mentioned previously, one type of information that is provided for by the tickets of the aforementioned peripheral awareness interface is information about people, especially as it facilitates communication and coordination. Consequently, tickets for communicating with people use images or pictures of faces to represent the people embodied by the ticket. Further, the image or picture of a face for a particular person automatically changes as the communications availability or status changes. In general, availability can be represented as a social state, which, in turn, is represented in one embodiment by the social cue of eye contact. Thus, one exemplary method for using tickets to indicate a person's communication availability status is to use a frontal close-up when the person is available, and a profile when the person is busy. In other words, a person looking towards the user is available, while a person looking away is not. However, it should be appreciated that any type of images or pictures for representing availability may be used in place of the exemplary images described above.

[0161] Further, as with any other ticket, selecting the ticket, such as, for example, by clicking on the face represented on the displayed ticket automatically opens a window, i.e., a "person window" similar to the enhanced tooltips described above. This person window includes further information about the person or entity, as well as action buttons for initiating communication via any of a

number of conventional communications channels, i.e. email, voice mail, instant messaging (IM), cell phone, telephone, mail, etc. Clearly, the concept of communicating with a person can be extended to communication with any other entity such as an organization or a business, with any appropriate pictures or images being used to represent communications availability status for the entity. See, for example, FIG. 8B, which is discussed below in Section 6.0.

[0162] In one embodiment, in addition to the information about initiating communication with a person or other entity, the window opened by selecting a person ticket also includes a history of communications with that person. Such communications include, for example, email, IM sessions, phone calls, coauthored documents, meetings in the past and the future, etc. In other words, the window opened by selecting a person ticket includes a communication log that is basically a chronological record of messages that the user sent to the particular person, that the person sent back, and that any third person sent to both. See, for example, FIG. 8C, which is discussed below in Section 6.0. Further related embodiments include more detailed information about the person such as, for example, free/busy calendar information, historical information about when a person is typically available, and information about when the person has been available today so far. Consequently, as described above, such information is used in alternate embodiments to provide historical, average, or predicted availability. See, for example, FIG. 4B, which is discussed above in Section 4.1.

[0163] Information about a person's availability or state can be obtained from any conventional system such as, for example, MSN® Messenger®, however in more extensive embodiments, the tickets representing a person include instructions for gathering additional data about the state of a person using simple sensors such as desktop cameras and microphones integrated with the person's computer. It should be appreciated that there are many other conventional methods for determining the availability of a person, such as for example, using conventional techniques to determine whether a person's cell phone is in use, or moving between stationary cell sites, thereby indicating that the person is either already talking to someone, or traveling. Another example for determining the availability of a person involves using conventional techniques for determining whether the person is using a computer keyboard or pointing device.

[0164] While items provide peripheral awareness of the state of an object or of particular information of interest, they also provide access to more focused interaction with that object or information. Specifically, items provide two types of action: drilling down to get more information, i.e., selecting an item and opening the item as described above (i.e. enhanced tooltips, person window, nested items, etc.), and interacting with the source object or information being monitored by the ticket. For

example, in one embodiment, hovering the mouse or computer pointing device over an item provides a large, actionable HTML tooltip with extended information, while double-clicking an item takes the user to the source item.

[0165] As described above, such tooltips are actionable in the sense that if a user clicks on or otherwise selects particular information or elements within the tooltip, in one embodiment, the tooltip will automatically link to more detailed information for the particular information or elements. Further, in one embodiment, tooltips may be nested, such that if a user hovers a mouse or other computer pointing device over the particular information or elements within a first tooltip, a second tooltip will pop up with extended information relating to the particular information or elements within the first tooltip. Clearly, any number of levels of nesting may be applied when implementing nesting tooltips. Similarly, double-clicking a person item or ticket brings up the aforementioned "person window", double-clicking an item watching for changes in a folder brings up the folder, and double-clicking an email inbox item brings up the user's email inbox. Additionally, in another embodiment, right-clicking an item provides an extensive menu of these and additional commands such as, for example, editing, deleting, or adding additional items. Similarly, in another embodiment, a "ticket manager" for allowing the user to use any of the aforementioned actions or commands, is provided for managing items or tickets either displayed in the sidebar, or contained in a ticket database, respectively.

[0166] One method for creating new items is to drag and drop objects onto a container or sidebar. For example, if a user wants to watch a particular folder or directory, that folder is simply dragged to the sidebar; if the user wants to watch a person, the user simply drags and drops an address book entry from a conventional electronic address book to the sidebar; or if the user sees an item on a web page that the user wants to watch, the user drags and drops it to the sidebar. Alternatively, in one embodiment, the user can right-click any file, any person's name, any proper noun, any database, etc., accessible via the user's computing device to open a context menu that includes a "Watch This Item" option, or the like. Further, in one embodiment, a wizard or other conventional automatic assistance program or application is provided in order to assist the user in automatically creating, modifying, or deleting items on the sidebar or in the container.

[0167] Finally, as discussed previously, in one embodiment, items can be placed into groups on the sidebar. In another embodiment, these groups can be aggregated by collapsing them. In other words, information from each of the items in a single group is combined and displayed in a single thumbnail. When the group is opened by selecting the thumbnail representing that group, any items forming the group can be viewed or selected individually, as described above. Further, such

aggregated groups are useful for increasing usable space on the sidebar and for reducing visual complexity when a user is not interested in low-level details of particular items within such groups.

[0168] The user interface described above can be represented by the exemplary block diagram of FIG. 5. It should be noted that the boxes and interconnections between boxes that are represented by broken or dashed lines in FIG. 5 represent alternate embodiments of the present invention, and that any or all of these alternate embodiments, as described throughout this document, may be used in combination.

[0169] In particular, in accordance with the preceding discussion, FIG. 5 illustrates an exemplary user interface for interacting with a system and method according to the present invention is implemented on a display device 260 using conventional techniques. The user interface includes at least one sidebar 505 or container 510 for displaying iconized tickets, including timed tickets, or items 515, 520 and/or 525 as described above. As noted above, multiple sidebars or containers, 505 or 510, may be instantiated on the display device 260. Each sidebar or container, 505 or 510, can either have the same or different items, 515 and 520, as described above. Further, also as described above, sidebars or containers may be nested or aggregated, i.e., sidebars 505 and 530. Further, any desired number of levels of nesting is provided by a system and method in accordance with the present invention. Also, the sidebars 505 or containers 510 may be individually resized either automatically, or via the user interface. As described above, resizing the sidebar 505 or container 510 serves to automatically resize any items 515, 520 or 525, displayed therein. Additionally, the sidebars 505 or containers 510 may be moved within the display device 260 as described above.

[0170] Interaction with the sidebar 505, container 510, and items 515, 520 or 525, is provided via one of several exemplary user interface functions. Specifically, in one embodiment as described above, the ticket wizard 535 or similar application for automatically assisting the user in creating, selecting, modifying, or deleting tickets is provided. Similarly, in another embodiment, the ticket manager 540 is provided to allow a user to manually select, create, modify, or delete tickets. In addition, in further embodiments, the user interface of the present invention provides capabilities for allowing the user to directly interact with the sidebar 505, container 510, or items 515, 520 or 525, by simply dragging and dropping, copying, cutting, pasting, deleting, or creating new sidebars, containers, or items 545. One simple example of using such capabilities is that a new item is automatically created within the sidebar 505 by simply dragging and dropping a link to an item of interest to the sidebar. As described above, this can include dragging and dropping a folder, file, or address book entry from any desired source application to the sidebar 505.

[0171] Each item, 515, 520 or 525, as well as each

sidebar 505 or container 510, has an associated context sensitive menu 550, as described above, which is implemented using conventional techniques for allowing a user to directly interact with the sidebars, containers, and items. Several methods exist for accessing each context sensitive menu 550, such as, for example, by right-clicking an item, 515, 520 or 525, the sidebar 505 or the container 510, or by hovering a computer pointing device above one of the items, the sidebar, or the container. In a further related embodiment, enhanced tooltips 555 are provided for each item 515, 520, or 525, as well as for each sidebar 505 or 530, or container 510. Also as described above, these enhanced tooltips 555 may be nested 560 to any desired level of nesting.

[0172] Further, where items 515, 520 or 525 represent a person or other entity, as described above, the iconized ticket is preferably represented by a graphical image representing the current availability of the entity. Further, a person window 565, also as described above, is provided for each item 515, 520 or 525 representing an entity. The person window is useful for providing further information about the person or entity, as well as action buttons for initiating communication via any of a number of conventional communications channels or access points 570, i.e. email, voice mail, instant messaging (IM), cell phone, telephone, mail, etc. In addition, in another embodiment, the person window 565 includes a communications availability function 575 that is useful for providing historical, average, or predicted availability for particular entities.

[0173] Finally, in one embodiment, the enhanced tooltip windows 555, or nested tooltip windows 560 are persistent until closed. For example, such tooltips, 555 or 560, can be grabbed using a conventional pointing device and moved to any desired location of the display device 260. Such "persistent" tooltips then stay visible until manually closed by the user.

6.0 Working Example:

[0174] As illustrated by the exemplary screen images of FIG. 4B, and FIGS. 6-13, a working example according to the present invention is embodied in a system and process that automatically provides peripheral awareness of information of interest to a user via the peripheral awareness interface as described herein.

[0175] In particular, as illustrated by the exemplary screen image of FIG. 6A, a container/sidebar 600 having items 605 (i.e., ticket thumbnails) is provided on the right edge of the display. As discussed above, this sidebar 600 may be provided on any edge of the display device, the entire display device, or may simply float, i.e. be placed anywhere on the display device. Further, the sidebar can be dragged around the display device and resized by the user using conventional techniques. FIG. 6B is a larger view of a top portion of the sidebar 600 of FIG. 6A. Note that this sidebar 600 includes three faces 610, 615, and 620, i.e. the person centric interface de-

scribed above. In order to facilitate peripheral awareness of the communications availability or status, the ticket thumbnails for communicating with people use images or pictures of faces to represent the people embodied by the ticket. Further, the image or picture of a face for a particular person automatically changes as the communications availability or status changes.

[0176] Availability in this working example is represented as a social state, which, as discussed above, can be represented by the social cue of eye contact. Thus, one exemplary method for using tickets to indicate a person's communication availability status is to use a frontal close-up when the person is available, and a profile when the person is busy. In other words, a person looking towards the user is available, while a person looking away is not. However, it should be appreciated that any type of image or picture for representing availability may be used in place of the two exemplary images described above. Thus, as illustrated by the sidebar 600 of FIG. 6B, the entity represented by thumbnail 610 is available, while the entities represented by thumbnails 615 and 620 are busy, as they are looking away in the image.

[0177] Further, as illustrated by the image of FIG. 6C, a container/sidebar 600 having items 605 (i.e., ticket thumbnails) may cover the entire display. As noted above, this embodiment is particularly useful when using devices having relatively small displays, such as, for example a hand held device like the Pocket PC 630 illustrated by FIG. 6C. User interaction with tickets on such handheld devices is similar to that described above for tickets displayed on other conventional devices. Also as noted above, such hand held devices may be placed or docked near a desktop or other computer and used for the purpose of displaying and interacting with tickets so as to minimize any potential use of a primary display screen on the desktop or other computer.

[0178] FIG. 7A illustrates the concept of "enhanced tooltips" as described above. In particular, when the user either selects or hovers the computer pointing device over the thumbnail for weather, detailed information regarding the weather 710 automatically pops up. FIG. 7B illustrates the concept of nested tickets. In particular, as illustrated by FIG. 7B, the MM1 Code ticket thumbnail 720 summarizes bugs and errors for three nested sub-items, 725, 730, and 735. Consequently, when the user either selects or hovers the computer pointing device over the thumbnail for the MM1 Code ticket thumbnail 720, the nested sidebar containing the three sub-items, 725, 730, and 735 pops up. The user is then free to access any of these nested items, 725, 730, and 735. Further, any or all of these nested items, 725, 730, and 735, may have further levels of nested sub-sub items which are user accessible in the same manner as the parent sidebar ticket thumbnail 720.

[0179] FIG. 8A is an exemplary screen image illustrating an alternate embodiment of a peripheral awareness interface 800 showing pawns 805 associated with person items 810, 815 and 820 in accordance with the

present invention. Note that in this embodiment, the pawns 805 are provided in addition to the images of the person for each person item 810, 815 and 820. The use of pawns serves as an additional indicator of communications status or availability where a non-standard or ambiguous image is used for representing a particular contact. FIG. 8B is an exemplary screen image illustrating a dynamic person window or "enhanced tooltip" person window 825 accessed by selection of one of the person items 815 of FIG. 8A. Note that the "enhanced tooltip" window opened by selection of the person item 820 provides a short summary of new messages 825 and 830 sent from the person represented by the person item 820. Note also the availability via any of five individual communications channels 840, including a short message, email, voice mail, telephone call, or in person availability. Also note that a time 845 since the person represented by the person item 820 was last available is provided for each communication channel 840.

[0180] Further, FIG. 8C, is an exemplary screen image illustrating historical communications information associated with the person represented by the person window of FIG. 8B. This historical communications window 855 is automatically opened in one embodiment by selecting the image of the person in the enhanced tooltip person window 825. This historical communications window 855 includes a summary to all past communications with the person represented by the person item 825 of FIG. 8A.

[0181] FIG. 9 and FIG. 10 represent further examples of different types of tickets. For example, FIG. 9 illustrates a calendar/scheduling type ticket item 900 within a sidebar/container 910. User selection of the calendar ticket/item 900 serves to expand/open an enhanced tooltip window that includes further details of the calendar/schedule represented by the calendar/schedule item. Similarly, FIG. 10 represents an email type ticket/item 1010 within another container/sidebar 1000. User selection of the email ticket/item 1000 serves to expand/open an enhanced tooltip email window 1020 which allows user interaction with received email as from within a typical email application.

[0182] FIG. 11A and FIG. 11B represent alternate embodiments a peripheral awareness interface 1100 having collapsible groups of aggregated items 1110, 1120, 1130, 1140, and 1150 in accordance with the present invention. In particular, user selection of such a collapsible group, 1110, 1120, 1130, 1140, and 1150, when expanded serves to collapse the group, as illustrated by the difference between FIG. 11A and FIG. 11B. In particular, in FIG. 11A, a "Bugs" group 1110 and a "Traffic" group 1150 each include several sub-items. User selection of both the "Bugs" group 1110 and the "Traffic" group 1150 serve to collapse those groups, thereby freeing space within the container/sidebar 1100 as illustrated in FIG. 11B. Further, because such groups can include multiple types of tickets, a multi-viewer, i.e., an aggregation of individual viewers, is used to display a sum-

mary of the information for each of the aggregated tickets in a single thumbnail view. In particular, it can be seen in FIG. 11B that the graphical representation of the "Bugs" group 1110 includes the number 370 along the right side of the graphical representation. This number represents a summary of the bug numbers represented by the sub-items, or aggregated tickets, illustrated in FIG. 11A.

[0183] FIG. 12 is a screen image that illustrates an exemplary use of a ticket 1200 embedded in a web page 1210. In this example, the ticket 1200 is represented by a graphical icon. As described above, the user can simply drag and drop the icon to either the user's sidebar, or the user's display. Note that as described above, where tickets are dropped onto the display device, outside of a container, the user is provided with an option as to whether the ticket should be displayed in a container, or merely copied as an electronic file. Further, the user can copy and paste the ticket icon 1200 to a computer readable storage medium for later use or transfer to another user or another computer. This exemplary ticket icon 800 will then keep track of the auction item represented by the web page 810, in the manner described above.

[0184] FIG. 13 is an exemplary screen image showing an email message 1300 with an attached ticket 1310. As illustrated by the screen image FIG. 13, this example of the utility of third party tickets includes a custom designed ticket for tracking order status via the Internet. For example, in one embodiment, where a user orders an item over the Internet, the ticket 1310 is automatically created by the vendor web site that includes instructions for interfacing with a vendor order status database to provide order status information, along with instructions as to how this information should be displayed in the thumbnail. As described above, this ticket 1310 is then provided to the user via any of the aforementioned methods, such as for example, via email, or simply via dragging and dropping the graphical representation of the ticket from the vendor web site to the user's display device or to a container or sidebar displayed on the user's display device. Thus, referring to the screen image of FIG. 13, the user can simply place this status ticket 1310 on his computer display, or in the container/sidebar. Thereafter, when the user wants to check the status of the order, all the user has to do is glance at the ticket thumbnail provided by the vendor, or select the ticket via the computer pointing device as described above, to open a detailed information window, i.e. the aforementioned enhanced tooltip window, relating to the status of the order.

[0185] Similarly, such third party tickets can be used to create dynamic advertisements that can be provided to users as described above, via any of the transmission methods provided above. These advertisements can then be placed on the user's desktop or in the sidebar/container, either automatically or by the user. Further, in a related embodiment, third party tickets such as adver-

tisements also include instructions for reporting their use to a central server for collecting statistical information of the use of such third party tickets. One advantage of compiling such statistical information is that a ticket use fee can be charged to third party vendors of tickets based on the number of users, length of time used, or purchasing habits of user's viewing or otherwise using the third party tickets.

7.0 Additional Embodiments:

[0186] In addition to the embodiments described above, several further embodiments have been implemented to further increase the functionality and usability of a peripheral awareness interface in accordance with the present invention. In particular, such embodiments include information caching services, disconnected operations, and selective item visibility.

7.1 Information Caching Services and Disconnected Operations:

[0187] In one embodiment, the system and process of the present invention automatically acts to increase the utility of the peripheral awareness interface by caching information and contact data via a caching service. Thus, in a "disconnected operations" embodiment, where Internet or network connectivity has been degraded or terminated, cached data for each item will continue to be displayed via items hosted in one or more containers. However, such cached data is preferably aged, as described above in Section 4.0, to show the passage of time from the point that the data was initially gathered or observed so that the user is aware of how current the data is.

[0188] In a related embodiment, contact items will show only those items wherein communication is still possible following degradation or termination of Internet or network access. Thus, for example, in this embodiment, where all Internet or network type communications services, such as, for example, email, peer-to-peer messaging, etc., are no longer possible, the contact item will still continue list available communications channels, such as a telephone number, while hiding or removing non-available communications channels such as an email channel.

7.2 Item Visibility:

[0189] In a further embodiment, a visibility bit or switch is associated with each item, such that it can be either visibly displayed or hidden from view. When hidden from view, the item still continues to track or watch information or contacts as described above. Consequently, this embodiment is particularly useful where a user does not desire to display particular items within the container, but does want the information or contact represented by the item to be tracked or watched. Thus, the user can

toggle the visibility bit at any time to see the current status of the information or contact. In a related embodiment, the visibility bit or switch associated with the item is timed such that the information or contact is tracked or watched in the background, and the item automatically becomes visible at a predetermined time. In a further related embodiment, both the time when an item becomes visible and a duration for which it remains visible are both user adjustable via the user interface.

[0190] In still another related embodiment, a software "agent" is used to determine an appropriate time to display hidden items based on particular user actions. For example, where the agent observes the user purchasing an object via the Internet, the agent can automatically display a shipment tracking item as soon as the user receives email confirmation of shipment from the vendor from which the object was purchased. Another example of this capability is provided by the following discussion. As noted previously, where a user purchases an airline ticket via the Internet or via some other type of local or remote network, or schedules a flight in his or her calendar or scheduling program, a timed ticket may be automatically created, then displayed within a predetermined time of the flight departure time. Such tickets can include many types of information of interest to the user, such as, for example, the current flight schedule, i.e., whether it is on time or delayed, the weather at the flight destination, etc. As the time for the scheduled flight passes, the items representing the timed tickets are automatically removed from the display.

[0191] The foregoing description of the invention has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teaching. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

Claims

1. A system for automatically providing peripheral awareness of information of interest to a first user, comprising:

representing the information of interest with at least one ticket, each ticket comprising a customizable dynamic encapsulated object;
 using at least one viewer for defining how the information of interest represented by each ticket is displayed;
 pairing at least one viewer with each ticket; and
 hosting at least one ticket/viewer pairs in at least one container on a display device, wherein each ticket/viewer pair is represented by a thumbnail displayed in one of the containers.

2. The system of claim 1 further comprising using more or more services for automatically and dynamically tracking a current state of the information of interest.

3. The system of claim 1 wherein the displayed thumbnail dynamically displays the current state of the information of interest on the display device.

4. The system of claim 1 wherein each ticket is shareable.

5. The system of claim 1 wherein each container is resizable and wherein the thumbnails hosted in any container are automatically resized after resizing that container.

6. The system of claim 1 wherein at least two tickets are aggregated into at least one group.

7. The system of claim 6 wherein the group is displayed as a group thumbnail within the container.

8. The system of claim 7 wherein a multi-viewer is paired with the group, and wherein the multi-viewer is capable of displaying a summary within the thumbnail of the information represented by the tickets comprising the group.

9. The system of claim 6 wherein the group is expandable to show the tickets within the group.

10. The system of claim 6 wherein at least two groups are aggregated into a nested group.

11. The system of claim 10 wherein a multi-viewer is paired with the group, and wherein the multi-viewer is capable of displaying a summary within the thumbnail of the information represented by the tickets comprising the group.

12. The system of claim 6 wherein any number of groups are aggregated into any number of levels of recursively nested groups.

13. The system of claim 12 wherein the recursively nested groups are recursively expandable.

14. The system of claim 10 wherein the nested group is expandable to show the groups within the nested group.

15. The system of claim 7 wherein the groups within the nested group are expandable to show the tickets within the groups.

16. The system of claim 1 wherein at least one of the containers are persistent such that the persistent

- containers are not coverable by other application windows such that the persistent containers are always visible.
17. The system of claim 4 wherein ticket are sharable between the first user and the at least one additional user by sending at least one ticket as an email attachment.
18. The system of claim 1 wherein each ticket is shareable between the first user and the at least one additional user by saving each ticket to a computer readable medium, and providing the computer readable medium to the at least one additional user.
19. The system of claim 1 wherein at least one ticket is provided to any user by dragging and dropping at least one ticket from a remote web site to at least one user display device.
20. The system of claim 19 wherein a ticket dropped within a container is automatically paired with a compatible viewer, and wherein the information represented by the dropped ticket is automatically displayed as a thumbnail within the container.
21. The system of claim 1 wherein an actionable tooltip window is provided in response to selecting a thumbnail.
22. The system of claim 1 wherein the information of interest is a contact.
23. The system of claim 22 wherein the thumbnail provides a graphical indication of an availability status of the contact.
24. The system of claim 22 wherein a person window is provided in response to selecting a thumbnail representing the contact.
25. The system of claim 24 wherein the person window provides communications availability status of the contact via at least one communications channel.
26. The system of claim 25 further comprising a user interface for initiating communications via at least one of the communications channels.
27. The system of claim 24 wherein the person window provides a representation of a historical availability of the contact.
28. The system of claim 1 further comprising a capability to arrange thumbnails within the container.
29. The system of claim 28 wherein the thumbnails are arranged automatically.
30. The system of claim 28 wherein the thumbnails are arranged via a user interface.
31. The system of claim 5 wherein the thumbnail dynamically displays a summary of the current state of the information of interest on the display device, and wherein additional information is provided when the size of the thumbnail is increased.
32. The system of claim 5 wherein the thumbnail dynamically displays a summary of the current state of the information of interest on the display device, and wherein less information is provided when the size of the thumbnail is decreased.
33. The system of claim 1 wherein a ticket is automatically created by dragging and dropping any electronic file onto a container.
34. The system of claim 1 wherein each ticket is represented by an XML data structure.
35. The system of claim 1 wherein each ticket further includes a visibility flag, and wherein particular thumbnails are only displayed when the visibility flag is set for the associated ticket.
36. The system of claim 1 wherein at least one thumbnail is automatically displayed at a predetermined time in response to at least one scheduled event for a user.
37. A method for providing dynamic objects for automatically providing dynamically updated information to a user, comprising:
 creating at least one ticket having a definition of information to be tracked and a definition of how the tracked information is to be displayed;
 automatically transferring at least one ticket to a user computing device;
 automatically tracking the information defined by each ticket from the user computing device via a communications interface;
 dynamically retrieving the tracked information; and
 providing the retrieved information to the user.
38. The method of claim 37 further comprising automatically reporting ticket use statistics to a remote server for providing a ticket subscription service wherein subscribers are charged a fee for user use of tickets.
39. The method of claim 37 wherein automatically transferring at least one ticket to a user computing device comprises sending at least one ticket to the user as an email attachment.

40. The method of claim 37 wherein automatically transferring at least one ticket to a user computing device comprises dragging an iconized representation of at least one ticket from a remote web page and dropping each iconized representation of tickets on a user display of the user computing device.
41. The method of claim 37 wherein automatically transferring at least one ticket to a user computing device comprises providing at least one ticket to the user computing device on a computer readable storage medium.
42. The method of claim 37 wherein each ticket is sharable between at least two users.
43. The method of claim 37 wherein at least one ticket is automatically transferred to the user computing device from a remote database.
44. The method of claim 37 wherein the tracked information is automatically cached.
45. The method of claim 44 wherein the cached information is displayed until updated information is retrieved.
46. The method of claim 45 wherein an appearance of the cached information is automatically changed over time to indicate a relative age of the information.
47. A computer-readable medium having computer executable instructions for automatically tracking the availability of at least one entity, said computer executable instructions comprising:
- creating at least one dynamic encapsulated object for tracking the availability of each entity; tracking the availability of each entity over time via at least one communications pathway, and compiling the tracked information for each entity over time; dynamically providing a real-time availability status for each entity based on the tracked availability information; and providing a historical availability for each entity based on the compiled availability information.
48. The computer-readable medium of claim 47 wherein providing a real-time availability status each entity comprises displaying a visual representation of each entities availability status as an icon on a user display device.
49. The computer-readable medium of claim 48 wherein each icon is displayed within a peripheral strip on the user display device.
50. The computer-readable medium of claim 48 wherein at least two icons are combined into at least one group having at least two icons each.
51. The computer-readable medium of claim 48 wherein each group is dynamically represented by an individual icon that is dynamically updated based on data provided by the icons inside the group.
52. The computer-readable medium of claim 47 wherein at least two dynamic encapsulated objects are combined into at least one group.
53. The computer-readable medium of claim 52 wherein each group is displayed as an individual icon within a persistent display strip on at least one display device.
54. The computer-readable medium of claim 50 wherein the peripheral strip covers the entire display device.
55. The computer-readable medium of claim 50 wherein the peripheral strip is movable about the display device.
56. The computer-readable medium of claim 47 wherein each dynamic encapsulated object is sharable between at least two users.
57. The computer-readable medium of claim 53 wherein the individual icon representing each group is sharable.
58. A system for automatically providing peripheral awareness of information of interest, comprising:
- representing the information of interest with at least one ticket, each ticket comprising a customizable dynamic encapsulated object; using at least one viewer for defining how the information of interest represented by each ticket is displayed; pairing at least one viewer with each ticket; hosting at least one ticket/viewer pairs in at least one container on a display device, wherein each ticket/viewer pair is represented by a thumbnail displayed in one of the containers; interacting with the information of interest by using at least one service for each ticket; and providing the information of interest in an interactive persistent display.
59. The system of claim 58 wherein the services represent functionality for any of interacting with, accessing, receiving and retrieving the information of interest.

- 60. The system of claim 58 wherein each service is sharable by more than one ticket, and wherein more than one ticket can use one or more services simultaneously. 5

- 61. The system of claim 58 wherein more than one service is combined for use by one or more tickets for interacting with the information of interest.

- 62. A system for automatically providing peripheral awareness of information of interest to a user, comprising: 10
 - representing the information of interest with at least one ticket, each ticket comprising a customizable dynamic encapsulated object; 15
 - using at least one viewer for defining how the information of interest represented by each ticket is displayed;
 - pairing at least one viewer with each ticket; and 20
 - hosting at least one ticket/viewer pairs in at least one container on a display device, wherein each ticket/viewer pair is represented by a thumbnail;
 - displaying each thumbnail in one of the containers; and 25
 - providing at least one actionable tooltip window in response to selection of any thumbnail.

- 63. The system of claim 62 wherein the information of interest is a contact. 30

- 64. The system of claim 63 wherein the tooltip window includes at least one communication access point for the contact. 35

- 65. The system of claim 64 further comprising automatically identifying a best available communication access point for the contact. 40

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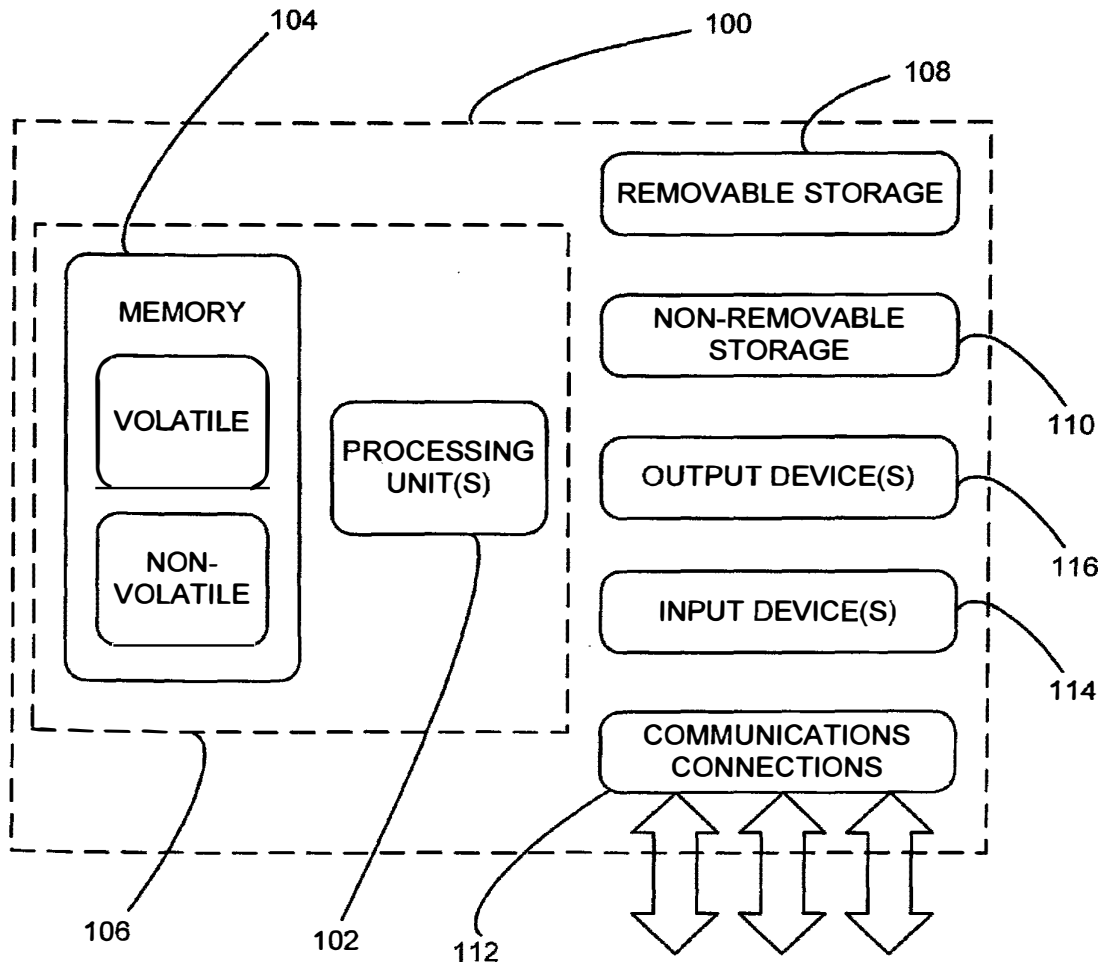


FIG. 1

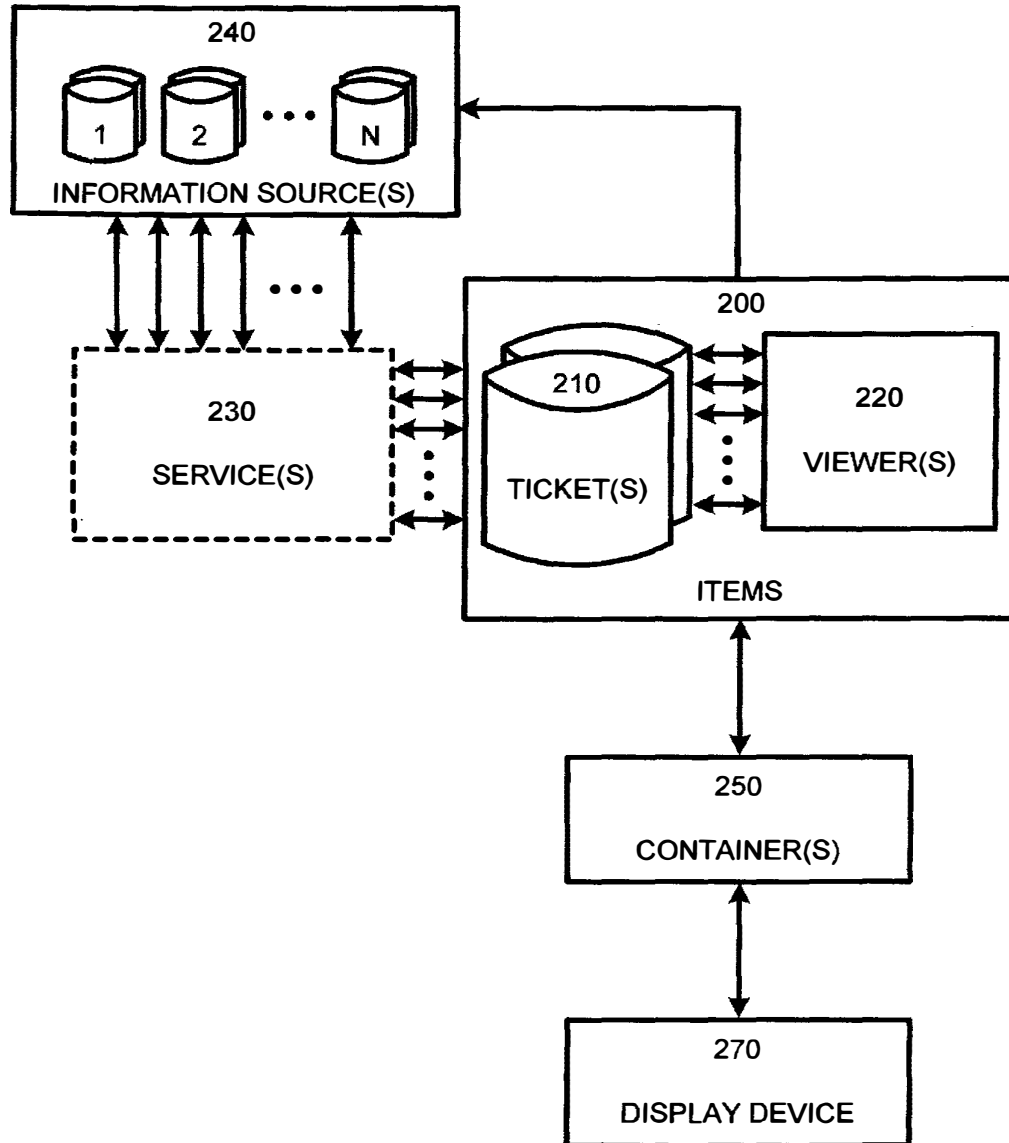


FIG. 2

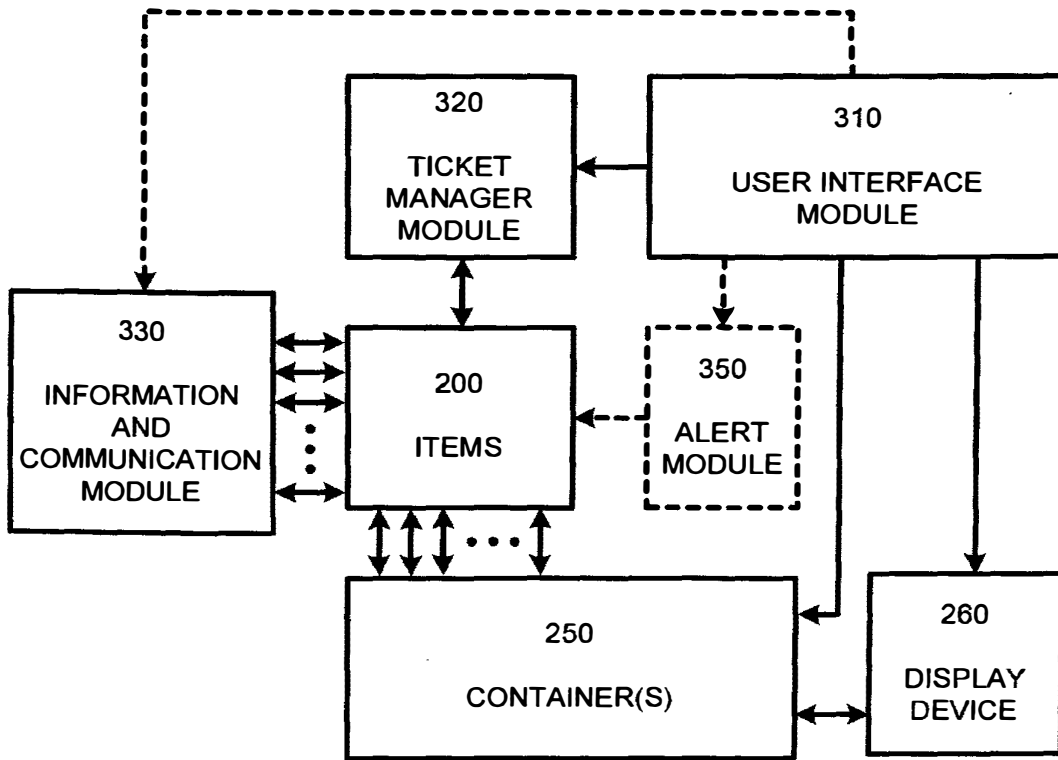


FIG. 3

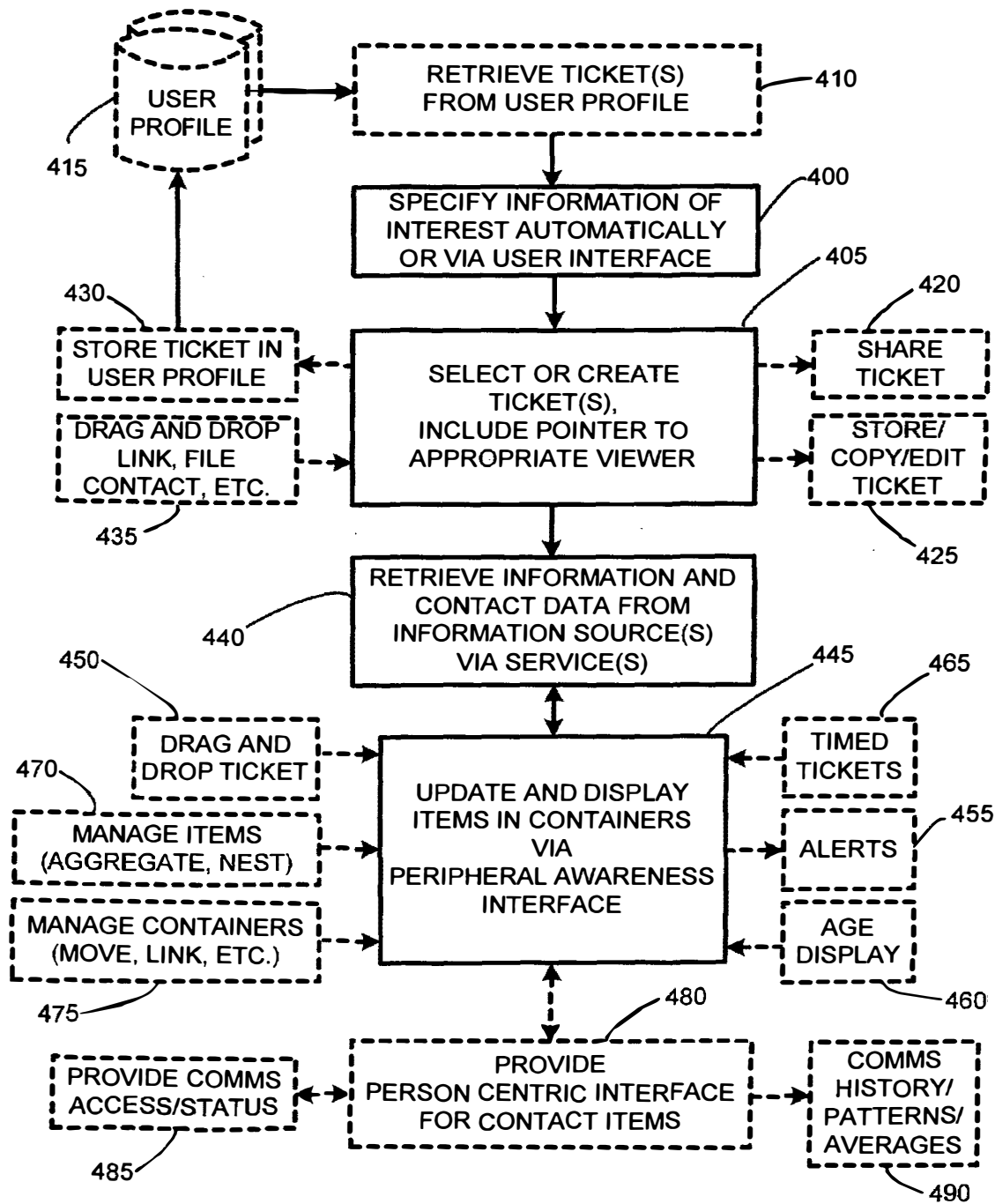


FIG. 4A

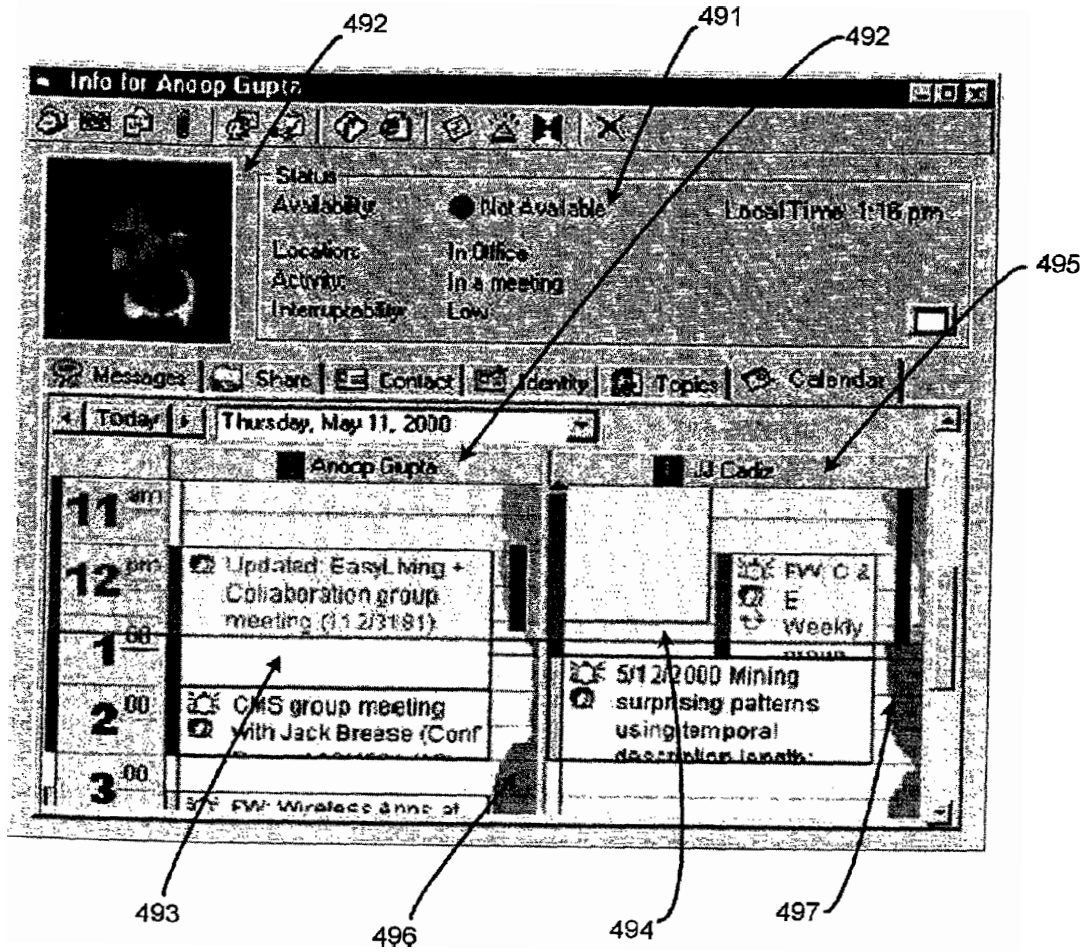


FIG. 4B

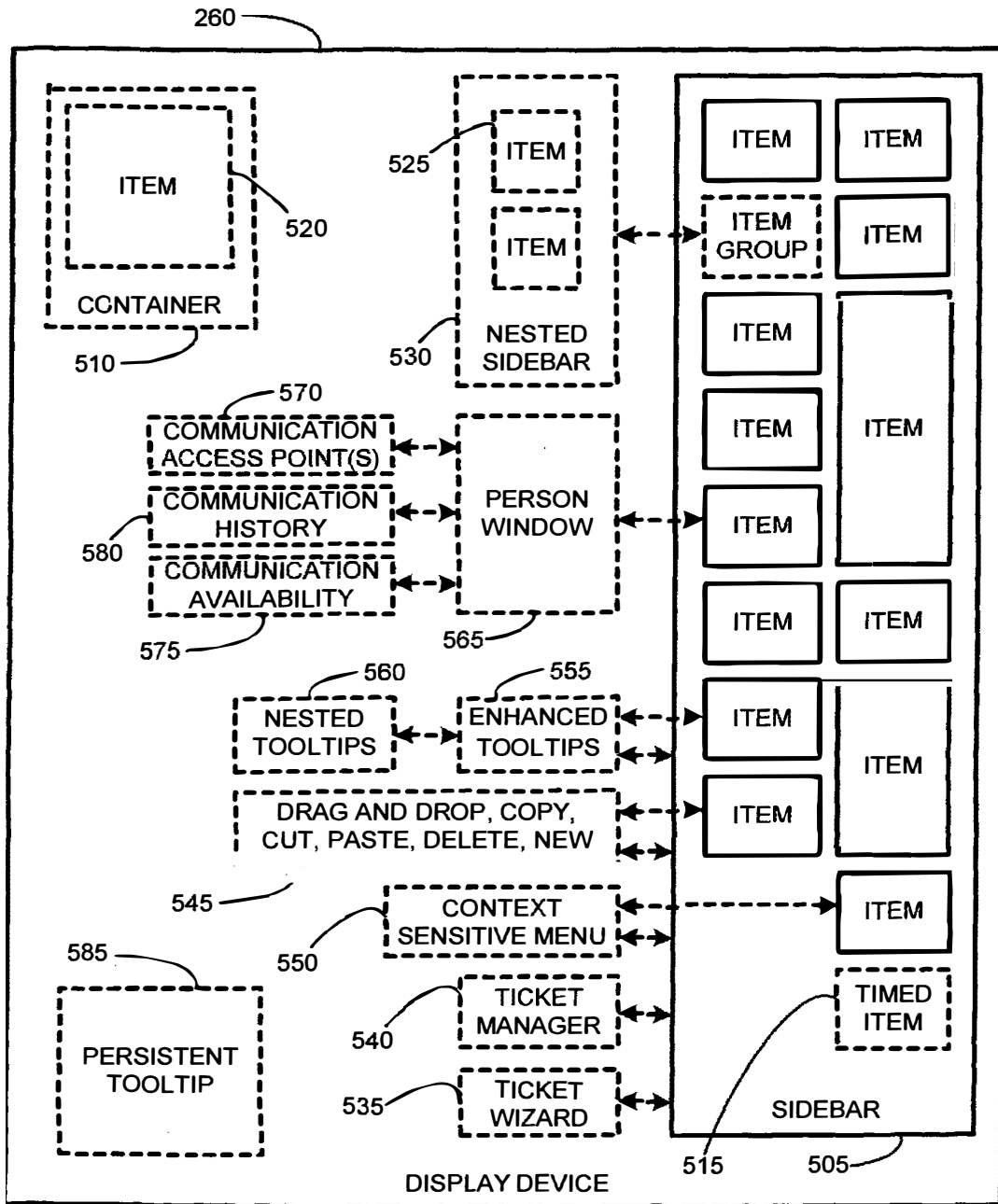


FIG. 5

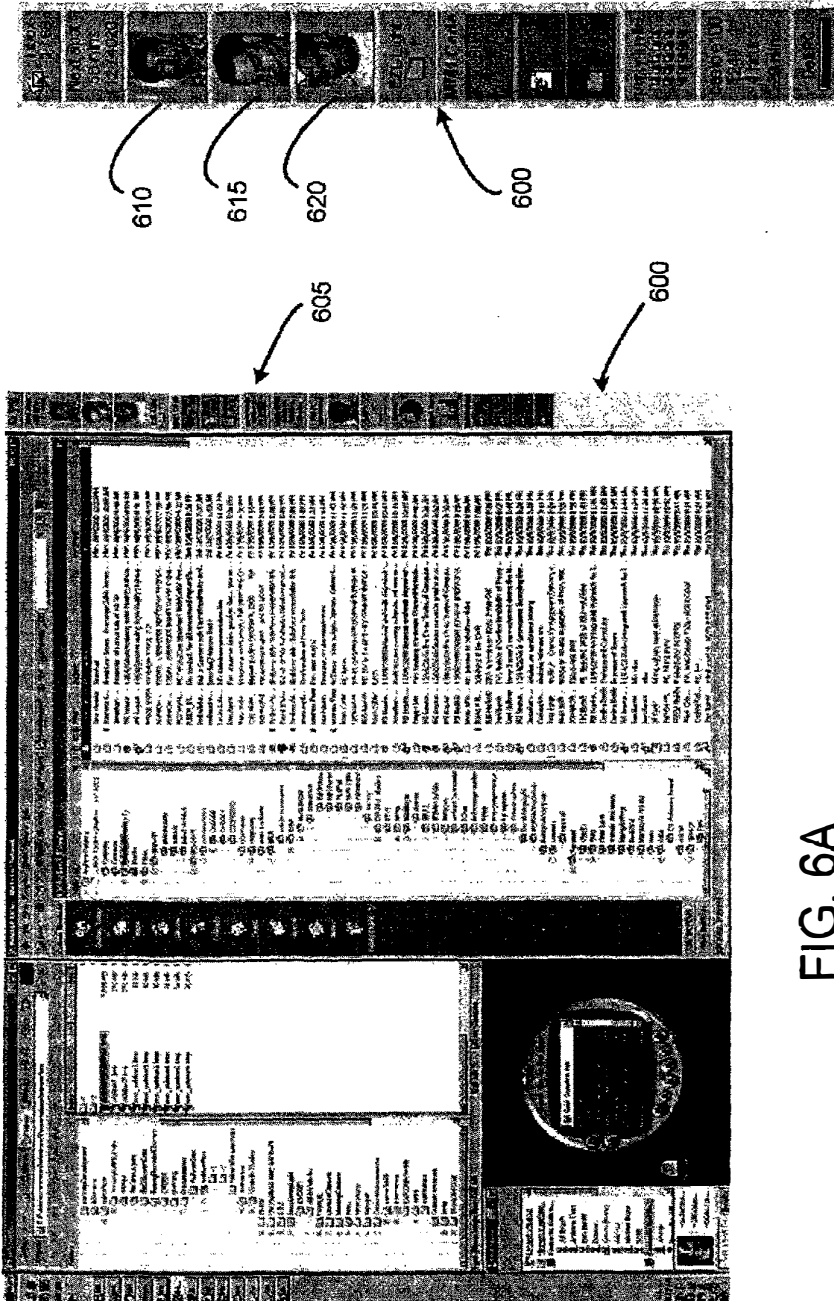


FIG. 6B

FIG. 6A

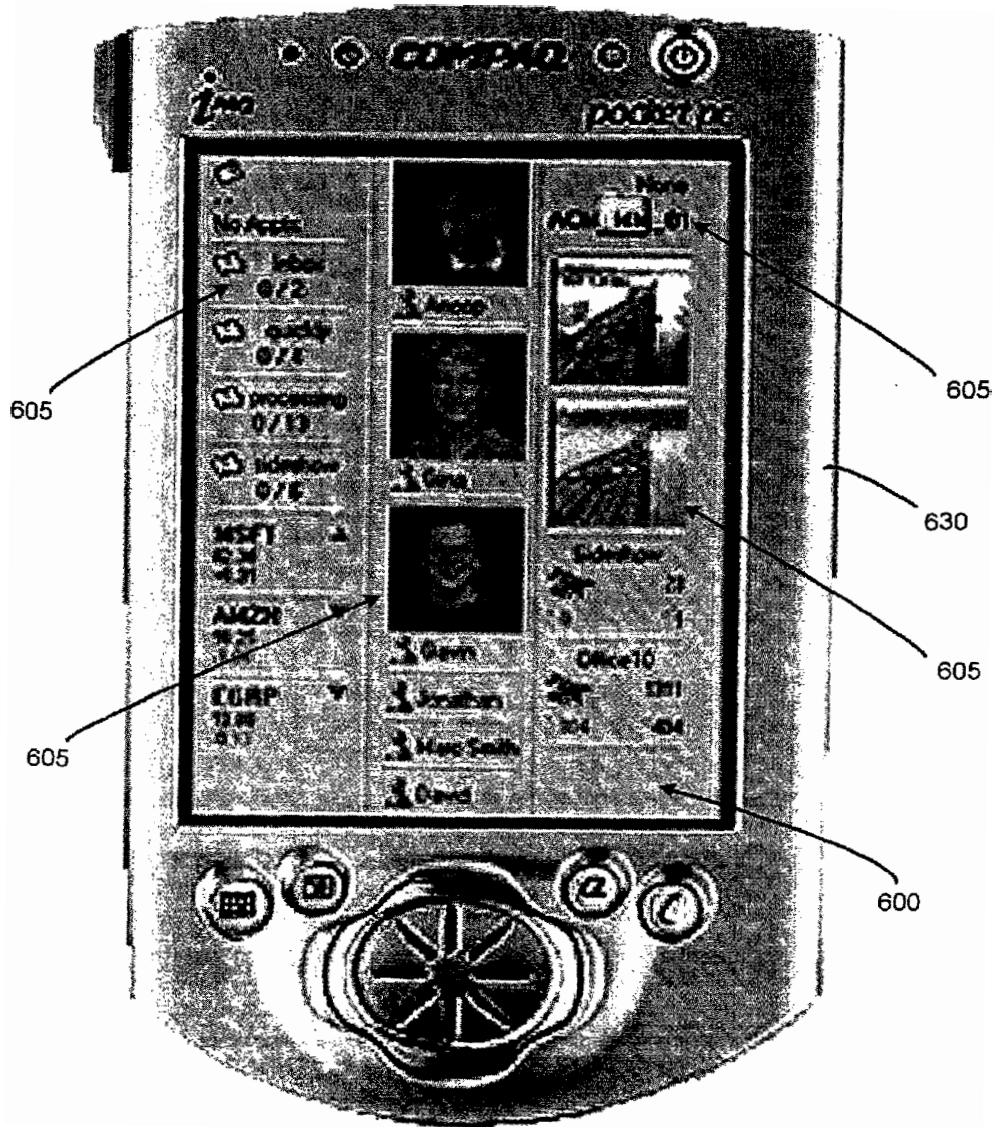


FIG. 6C

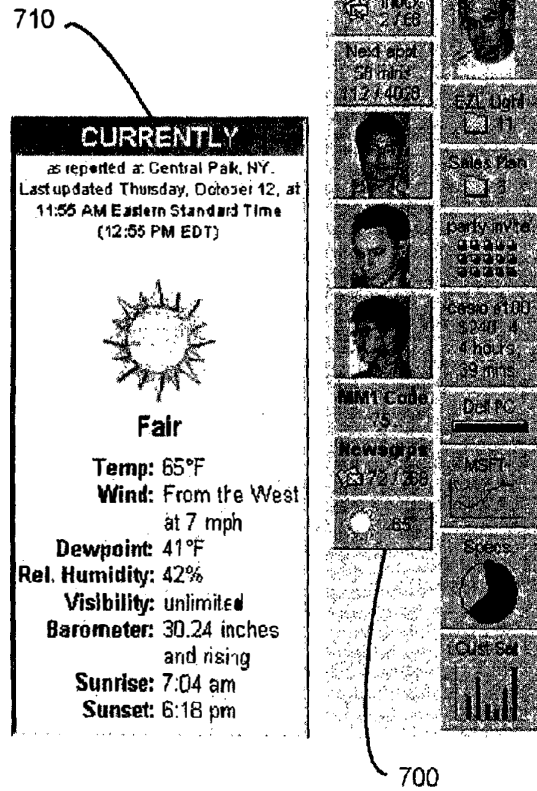


FIG. 7A

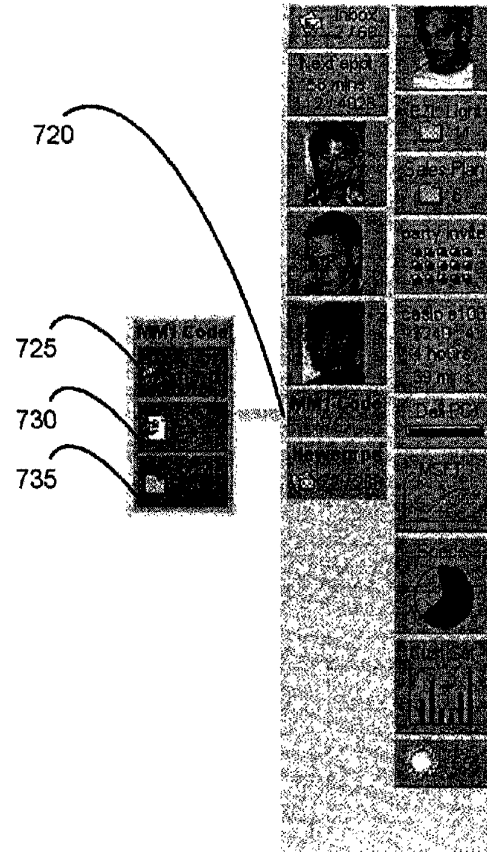


FIG. 7B

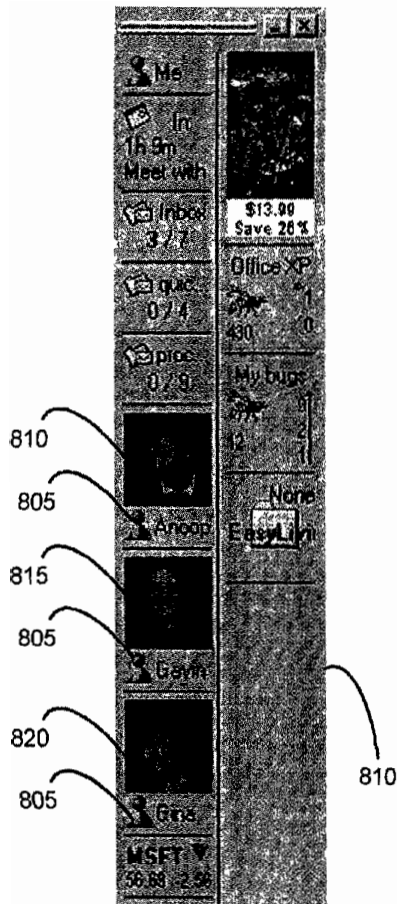


FIG. 8A

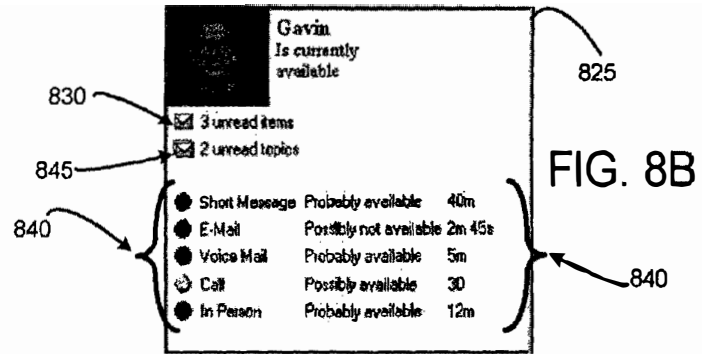


FIG. 8B

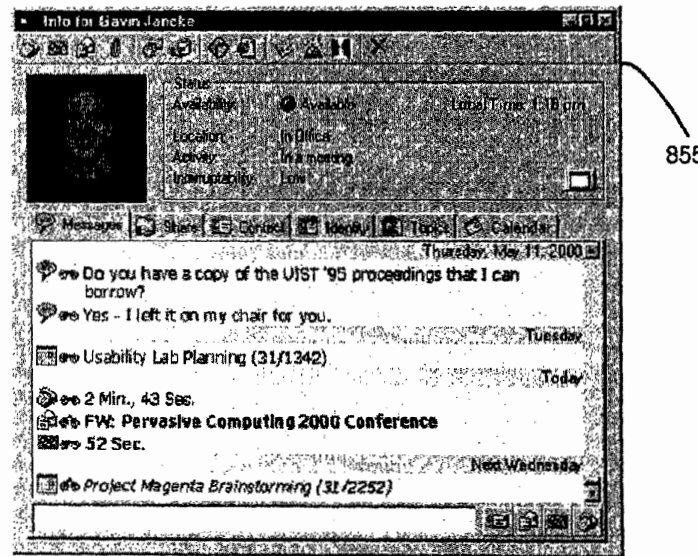


FIG. 8C

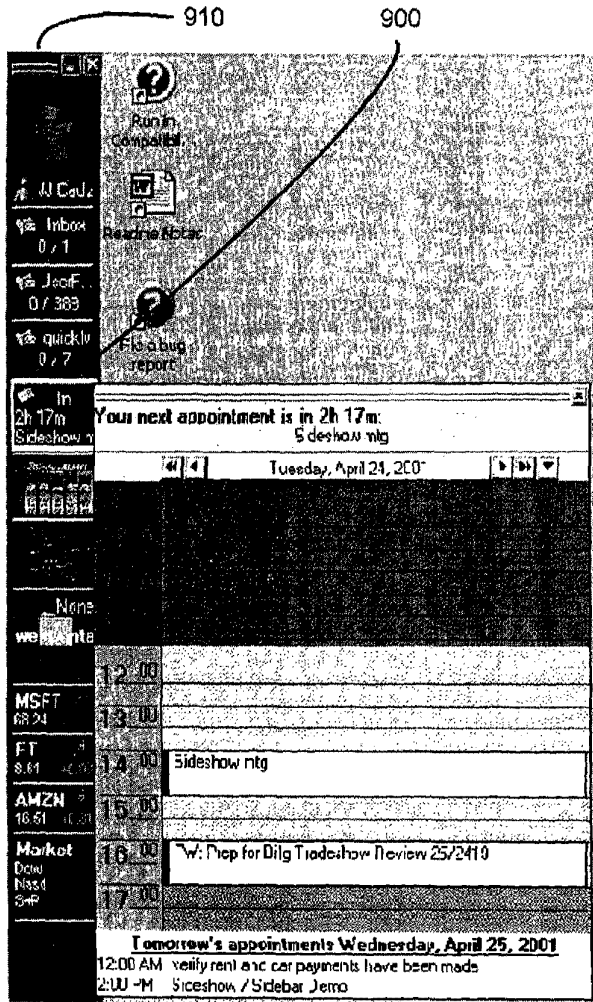


FIG. 9

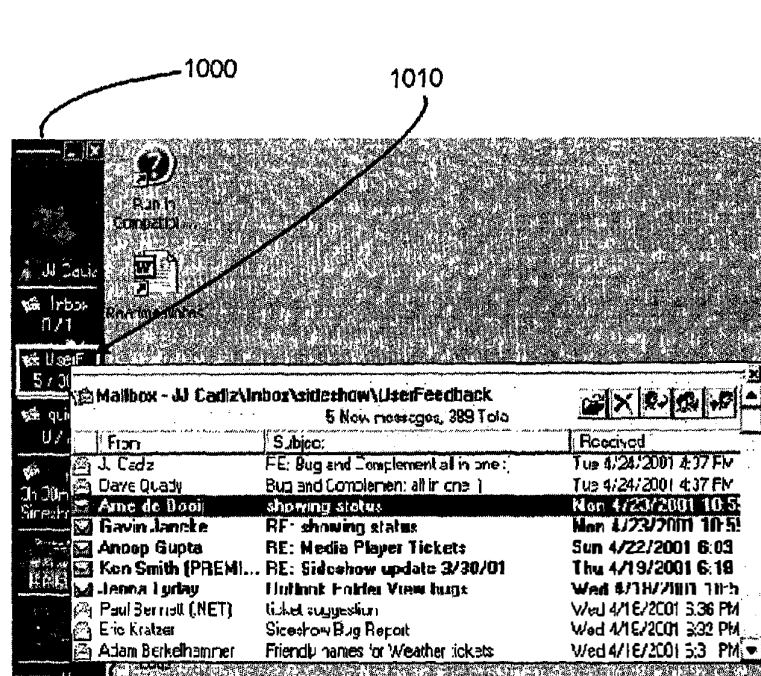


FIG. 10

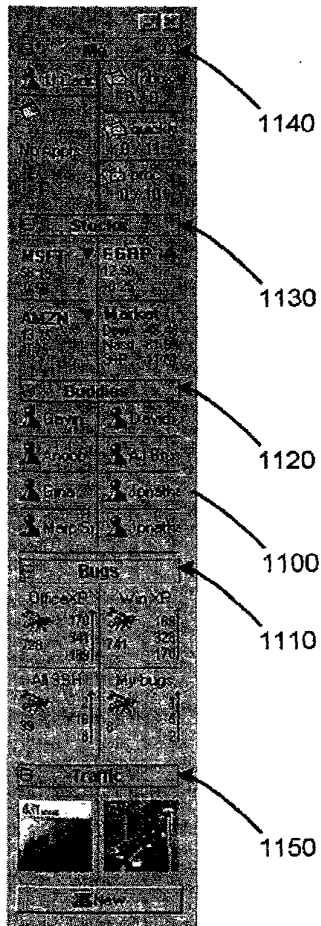


FIG. 11A

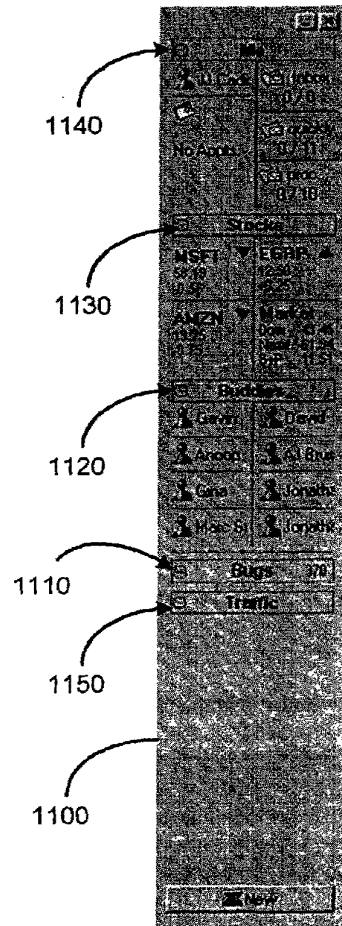


FIG. 11B












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Item 436769771 (Ends Sep-19-00 18:47:06 PDT) Cassiopeia I-100 - Microsoft Internet Explorer provided by ITG

http://cgi

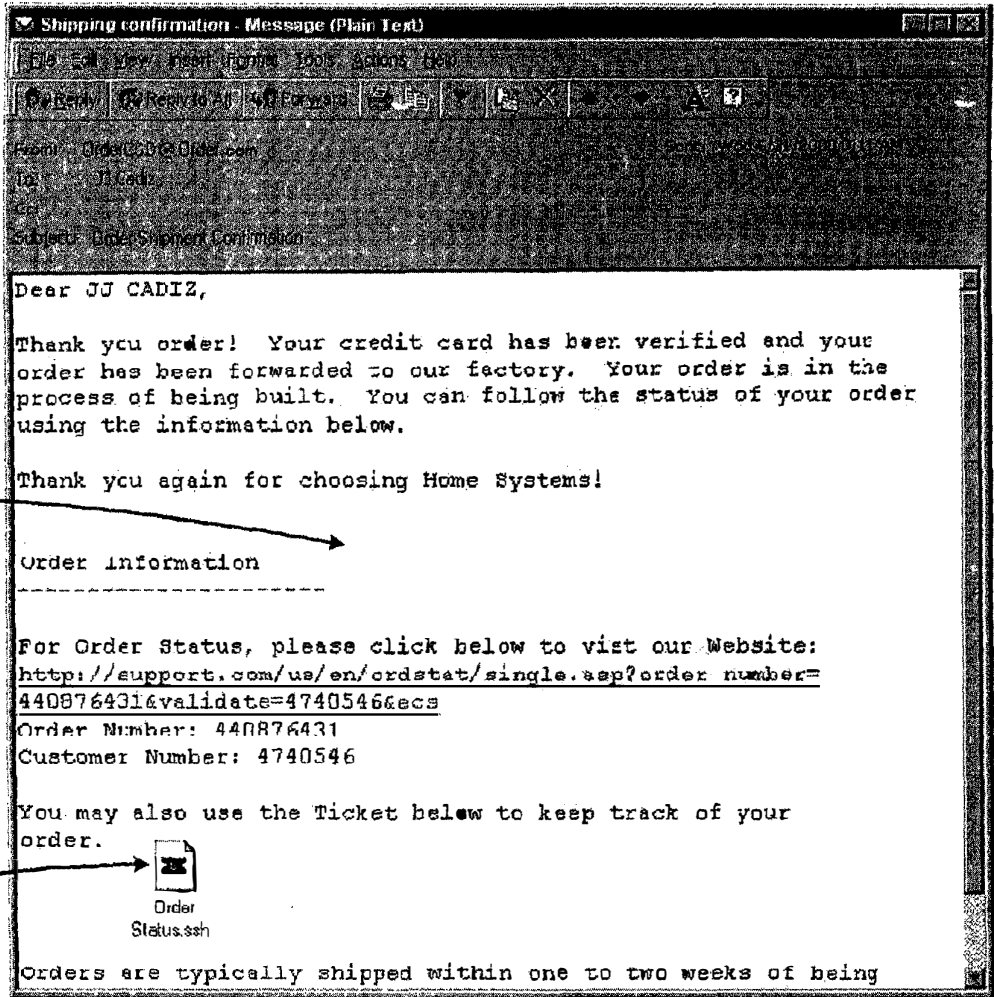
Cassiopeia I-100
Item #436769771
Computers:Hardware:PC Systems:General

	Currently \$240.00	First bid \$190.00
	Quantity 1	# of bids 4 bid history with emails
	Time left 4 hours, 39 mins +	Location Saint Louis, MO
	Started Sep-12-00 18:47:06 PDT	Country/Region USA/St. Louis
	Ends Sep-19-00 18:47:06 PDT	<input checked="" type="checkbox"/> mail this auction to a friend
	Seller (Rating) chris_mc69@hotmail.com (0)	view comments in seller's Feedback Profile view seller's other auctions ask seller a question
	High bid mayo (6)	Online Payments
	Payment Visa/MasterCard, Money Order/Cashiers Checks, COD (collect on delivery)	
	Shipping Buyer pays fixed shipping charges, Will ship to United States only	Get \$1 off! details
	Update item Seller: If this item has received no bids, you may revise it.	

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Seller assumes all responsibility for listing this item. You should contact the seller to resolve any questions before bidding. Auction currency is U.S. dollars (\$) unless otherwise noted.

FIG. 12



1300

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FIG. 13

Electronic Patent Application Fee Transmittal

Application Number:	10983606			
Filing Date:	09-Nov-2004			
Title of Invention:	Dynamic bar oriented user interface			
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott			
Filer:	Christine Y. Wong/Joanne Keshen			
Attorney Docket Number:	16813-39US			
Filed as Large 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	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	10864616
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Joanne Keshen
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	01-SEP-2011
Filing Date:	09-NOV-2004
Time Stamp:	15:52:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	2426
Deposit Account	195113
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	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	612841 10a96469c4a19c8c6f6ebc6b17a17a2af92a02	no	5
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Foreign Reference	EP1152333A2.pdf	1115648 712ca14e03f1730692a74a02c39c668db8bfdec	no	86
Warnings:					
Information:					
3	Foreign Reference	EP1265157A2.pdf	2172256 68fa022a93477920086485bcf0246f8f5f45ff	no	44
Warnings:					
Information:					
4	Non Patent Literature	NPRef1_10983606.pdf	510015 337f7f0f1674a179e9ea290fa0d5f47b38f47f	no	10
Warnings:					
Information:					
5	Non Patent Literature	NPRef2_10983606.pdf	279634 0850a302576ca96e8181ec0c9a015a8c4b054145	no	7
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Information:					
6	Non Patent Literature	NPRef3_10983606.pdf	788767 ba29c20041907c22596c0a4574e42577841a03	no	18
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Information:					
7	Non Patent Literature	NPRef4_10983606.pdf	333887 c8f1c185369410c3e117803fbcf126453b01721	no	7
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8	Non Patent Literature	NPRef5_10983606.pdf	886929 b86a32ce55f6055c2c78fc15c99b92e575802bb3	no	20
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9	Non Patent Literature	NPRef6_10983606.pdf	530643 bbcb822249#80e1e7825b6720f4c73ac639f1818	no	12
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12	Non Patent Literature	NPRef9_10983606.pdf	781896 44a6bf8b742285b9aec0a4b59cc98e95055bb29#	no	15
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Information:					
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Information:					
Total Files Size (in bytes):				10642608	

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.



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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 10/983,606, 11/09/2004, Sherryl Lee Lorraine Scott, 16813-39US, 2886
Row 2: 20988, 7590, 05/26/2011, EXAMINER SALOMON, PHENUEL S
Row 3: OGILVY RENAULT LLP, 1, Place Ville Marie, SUITE 2500, MONTREAL, QC H3B 1R1, CANADA, ART UNIT 2171, PAPER NUMBER
Row 4: MAIL DATE 05/26/2011, DELIVERY MODE PAPER

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.

Office Action Summary

Application No. 10/983,606	Applicant(s) SCOTT, SHERRYL LEE LORRAINE	
Examiner PHENUEL S. SALOMON	Art Unit 2171	

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

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 April 2011.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 28-39 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 28-39 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 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)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

1. This action is in response to the amendment after BPAI decision filed on 04/08/2011.

Claims 1-27 are canceled, claims 28-39 are newly added; and claims 28-39 are pending and have been considered below.

Note: An amendment was filed in this application after appeal to the Board of Patent Appeals and Interferences and a new set of claims is presented for prosecution which was not previously of record; therefore, the claims are being reconsidered with a new ground of rejection and the action is made final.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 32-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 32, the limitation “the links” lacks of an antecedence basis since there was no multiple links disclosed/mentioned in the preceding claim 28. For examination purposes, the examiner considers the links as the link in the dynamic bar of claim 28.

Thus, claim 33 is also rejected for being dependent on the base claim 32.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 28-32 and 34-35 are rejected under 35 U.S.C. 102(a) as being anticipated by Ögren (EP 1434411A1).

Claim 28. Ögren discloses a method for controlling an apparatus, the apparatus comprising a display (fig. 1, item 14), the method comprising:

displaying a dynamic bar on the display, the dynamic bar being displayed on a main screen of a graphical user interface for controlling the apparatus (para. [0038], fig. 3, status bar with icons 32-36 and 38);

the dynamic bar displaying dynamic preview information, the dynamic preview information being determined from information managed by a software application (col. 7, lines 17-25 and 2-7);

the dynamic bar further including a link to invoke the software application (col. 9, lines 11-28 and fig. 5b, steps 68, 70 and 72);

wherein, in response to an input invoking the link, the software application is activated (col. 9, lines 11-25).

Art Unit: 2171

Claim 29. Ögren discloses the method of claim 28, further comprising displaying a status portion on the display (para. [0038], lines 39-46).

Claim 30. Ögren discloses the method of claim 29, wherein displaying the status portion comprises displaying signal strength (para. [0033], lines 4-6).

Claim 31. Ögren discloses the method of claim 28, wherein the apparatus comprises a cellular telephone (fig. 1, para. [0035], lines 28-29).

Claim 32. Ögren discloses the method of claim 28, wherein the dynamic bar is expandable to display an expanded dynamic bar, and wherein the links are displayed when the dynamic bar is an expanded dynamic bar (par. [0039], fig. 4, items 32-36 and 38, the first icon 32 and the additional 54 and 52 relating to it is highlighted, this highlighting indicates that a selection of this icon can be made (col. 8, lines 2-5); therefore these icons constitute link to an application).

Claim 33. Ögren discloses the method of claim 32, wherein, in response to a user input invoking the dynamic bar, the dynamic bar expands to display the expanded dynamic bar (col. 8, lines 32-44).

Claim 34. Ögren discloses the method of claim 28, further comprising, following activation of the software application, displaying a user interface for the software application (*displaying main menu of SMS/email application*) (col. 9, lines 11-28).

Claim 35. Ögren discloses the method of claim 28, further comprising displaying an application portion on the display, the application portion comprising at least one icon (fig. 4, items 32-36 and 38).

Claim 36. Ögren discloses the method of claim 35, wherein, in response to a user input invoking the icon, the software application is activated (fig. 5b, steps 68, 70 and 72).

Claim 37. Ögren discloses the method of claim 28, wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email (col. 7, lines 45-50) [Ögren discloses the information is an SMS but further in col. 9, lines 22-24, the application can be e-mail; therefore the same preview feature could also apply to e-mail].

Claim 38. Ögren discloses the method of claim 28, wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party (fig. 4, items 32, 52 and 54).

Claim 39. Ögren discloses the method of claim 28, wherein the dynamic bar further displays the link to invoke the software application (fig. 5b, steps 68, 70 and 72).

Response to Arguments

5. Applicant's arguments filed on 4/08/2011 have been fully considered but are moot in view of new ground of rejection(s).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. O'Neil et al (U.S. 20050213717).

Art Unit: 2171

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phenuel S. Salomon whose telephone number is (571) 270-1699. The examiner can normally be reached on Mon-Fri 7:00 A.M. to 4:00 P.M. (Alternate Friday Off) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chat Do can be reached on (571) 272-3721. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3800.

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). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phenuel S. Salomon/

Examiner, Art Unit 2171

/Chat C. Do/

Supervisory Patent Examiner, Art Unit 2171

Notice of References Cited	Application/Control No. 10/983,606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRA	
	Examiner PHENUEL S. SALOMON	Art Unit 2171	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-2005/0213717	09-2005	O'Neil et al.	379/088.11
B	US-			
C	US-			
D	US-			
E	US-			
F	US-			
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	
V	
W	
X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	6	("20020022503" "20020037754" "20020137551" "20030050058" "20040071285" "20050159189").PN.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/16 12:58
L3	199	Ogren.in.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/16 15:45
L4	4	3 and mobile device	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/16 15:45
L5	0	3 and mobile device same status icon	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:46
L6	0	ogren.in. same mobile device same status icon	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:47
L7	219	ogren.in.	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:47
L8	0	7 and mobile device and status icon	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:48
L9	0	ogren.in. same status bar same icon	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:51
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L11	0	7 same status bar	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:51
L12	0	7 and status bar	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2011/05/16 15:52
L13	219	ogren.in.	US-PGPUB; USPAT; USOCR; EPO	ADJ	ON	2011/05/16 15:53


S1	86	("20010014615" "20020091738" "20030013483" "20030187806" "20040024610" "20040090469" "20050020316" "4617657" "4785420" "5182553" "5333256" "5379057" "5390281" "5425077" "5434777" "5491495" "5519392" "5537474" "5552779" "5586317" "5668875" "5727159" "5805166" "5818446" "5825353" "5831664" "5848356" "5861883" "5890172" "5900875" "5908467" "5948066" "5949418" "5950130" "5986654" "6026435" "6037935" "6047197" "6065120" "6073113" "6084584" "6084951" "6088730" "6112228" "6119155" "6173316" "6208342" "6211858" "6233577" "6266681" "6278449" "6310634" "6321158" "6333973" "6336142" "6338094" "6353839" "6393307" "6397246" "6405037" "6415164" "6433800" "6438390" "6456841" "6473629" "6477529" "6509913" "6526129" "6610105" "6674453" "6677964" "6704027" "6714220" "6727916" "6731316" "6804786" "6826593" "6834048"	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:10
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S2	0	mobile device with dynamic (tool\$bar or preview)	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:11
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S4	0	mobile device same ((dynamic or expand\$4 or extend\$4)(tool\$bar or preview))	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:12
S5	2	mobile device same ((dynamic or expand\$4 or extend\$4)(bar or preview))	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:12
S6	4	mobile device same ((dynamic or expand\$4 or extend\$4) (notification or warning or alarm or report))	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:17
S7	0	mobile device with ((dynamic or expand\$4 or extend\$4) (notification or warning or alarm or report))	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:17
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S10	0	mobile device with (notification or warning or alarm or report) bar	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:20
S11	11	mobile device with (notification or warning or alarm or report) (bar or region or area or section)	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 12:21

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S17	31	("4862389" "4885704" "4896291" "4931957" "5091866" "5146556" "5202961" "5416895" "5428730" "5588105" "5617526" "5640498" "5644334" "5659693" "5678034" "5757371" "5825357" "6133898").PN. OR ("6493002").URPN.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 13:37
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S19	2	"2525296".pn.	US-PGPUB; USPAT; USOCR	ADJ	OFF	2011/05/11 16:13
S20	7	"1659766"	US-PGPUB; USPAT; USOCR; DERWENT	ADJ	OFF	2011/05/11 16:25
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S22	3	"2525296"	DERWENT	ADJ	OFF	2011/05/11 16:27
S23	55	"122909"	DERWENT	ADJ	OFF	2011/05/11 16:27

5/ 16/ 2011 4:56:56 PM

**C:\ Documents and Settings\ psalomon\ My Documents\ EAST\ Workspaces\ 10983606-
Dynamic Bar Oriented User Interface.wsp**

Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

✓	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	07/03/2007	11/20/2007	05/16/2011							
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	3	✓	-	-							
	4	✓	✓	-							
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	33			✓							
	34			✓							
	35			✓							

Index of Claims 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171


✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

<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			
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Final	Original	07/03/2007	11/20/2007	05/16/2011					
	36			✓					
	37			✓					
	38			✓					
	39			✓					

Search Notes 	Application/Control No. 10983606	Applicant(s)/Patent Under Reexamination SCOTT, SHERRYL LEE LORRAINE
	Examiner Salomon, Phenuel S	Art Unit 2171

SEARCHED			
Class	Subclass	Date	Examiner
715	779,808,854,864	7/3/07	pss
455	566,564,556,557	7/3/07	pss
715	808,854	5/12/2011	pss
455	564,566	5/12/2011	pss

SEARCH NOTES		
Search Notes	Date	Examiner
US-PGPUB,USPAT,USOCR,EPO,JPO,DERWENT,IBM_TDB	7/3/07	PSS
US-PGPUB,USPAT,USOCR	5/12/2011	pss

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Application Number
10/983,606

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE



EXAMINER'S CASE ACTION WORKSHEET

Copy (Ctrl+C)	Palm Transaction Code 1340 83265217110983606		Legal Instrument Examiner
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CHECK TYPE OF ACTION

DATE OF COUNT

<input type="checkbox"/> Non-Final Rejection	<input type="checkbox"/> Restriction/Election Only	<input checked="" type="checkbox"/> Final Rejection
<input type="checkbox"/> Ex Parte Quayle	<input type="checkbox"/> Allowance	<input type="checkbox"/> Advisory Action
<input type="checkbox"/> Examiner's Answer	<input type="checkbox"/> Reply Brief Noted	<input type="checkbox"/> Non-Entry of Reply Brief
<input type="checkbox"/> Defective Notice of Appeal	<input type="checkbox"/> Interference Disposal SPE _____ (Approval for Disposal)	<input type="checkbox"/> Suspension (Examiner-Initiated) SPE _____ (initial)
<input type="checkbox"/> Defective Appeal Brief	<input type="checkbox"/> SIR Disposal (use only after FAOM)	<input type="checkbox"/> Supplemental Examiner's Amendment
<input type="checkbox"/> Miscellaneous Office Letter (With Shortened Statutory Period Set)	<input type="checkbox"/> Notice of Non-Responsive Amendment (With One Month Time Period set)	<input type="checkbox"/> Miscellaneous Office Letter (No Response Period Set)
<input type="checkbox"/> Abandonment after BPAI Decision	<input type="checkbox"/> Supplemental Action	<input type="checkbox"/> Response to Rule 312 Amendment
<input type="checkbox"/> Letter Restarting Period for Response (e.g., Missing References)	<input type="checkbox"/> Interview Summary	<input type="checkbox"/> Authorization to Change Previous Office Action SPE: _____ (Initial)
<input type="checkbox"/> Abandonment	<input type="checkbox"/> Express Abandonment Date: _____	<input type="checkbox"/> Other

Examiner's Name: PHENUEL SALOMON

AU: 2171

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/983,606

Art Unit: 2179

Filed: 11/09/2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenuel S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 20988

MS AMENDMENT

Commissioner of Patents

P.O. Box 1450

Alexandria, V.A. 22313-1450

Dear Sir/Madam:

SUBMISSION OF AMENDMENT AFTER DECISION ON APPEAL

In response to the Decision on Appeal, dated February 8, 2011, the Applicant elects to submit an amendment of the claims in respect of the new ground of rejection and reopen prosecution.

Amendments to the Claims begin on page 2.

Remarks/Arguments begin on page 4.

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

1-27. (Cancelled)

28. (New) A method for controlling an apparatus, the apparatus comprising a display, the method comprising:

displaying a dynamic bar on the display, the dynamic bar being displayed on a main screen of a graphical user interface for controlling the apparatus;

the dynamic bar displaying dynamic preview information, the dynamic preview information being determined from information managed by a software application;

the dynamic bar further including a link to invoke the software application;

wherein, in response to an input invoking the link, the software application is activated.

29. (New) The method of claim 28, further comprising displaying a status portion on the display.

30. (New) The method of claim 29, wherein displaying the status portion comprises displaying signal strength.

31. (New) The method of claim 28, wherein the apparatus comprises a cellular telephone.

32. (New) The method of claim 28, wherein the dynamic bar is expandable to display an expanded dynamic bar, and wherein the links are displayed when the dynamic bar is an expanded dynamic bar.

33. (New) The method of claim 32, wherein, in response to a user input invoking the dynamic bar, the dynamic bar expands to display the expanded dynamic bar.

34. (New) The method of claim 28, further comprising, following activation of the software application, displaying a user interface for the software application.

35. (New) The method of claim 28, further comprising displaying an application portion on the display, the application portion comprising at least one icon.

36. (New) The method of claim 35, wherein, in response to a user input invoking the icon, the software application is activated.

37. (New) The method of claim 28, wherein the software application is an email application, and wherein the dynamic preview information comprises a preview of a content of an email.

38. (New) The method of claim 28, wherein the software application is a telephone application, and wherein the dynamic preview information comprises an identity of a calling party.

39. (New) The method of claim 28, wherein the dynamic bar further displays the link to invoke the software application.

REMARKS/ARGUMENTS

Claims 1-27 have been cancelled without prejudice. Claims 28-39 are new. No admission or representation is made by the present argument other than that explicitly provided herein.

Status of Related Applications

The following U.S., foreign, and international patent applications are or may be considered to be related to the application herein. Relevant documents pertaining to such cases are or have been provided in one or more separately-filed Information Disclosure Statements. The status of such applications is summarized in order to ensure that the Office is fully apprised of the current state thereof. In the event the Office has any questions about the identified cases, the Examiner is requested to call the Applicant's representative at the number below.

Serial No.	Country	Status
2,525,296	Canada	Pending
ZL200510120010.X	China	Granted
1 659 766	Europe	Granted
1 659 766	Germany	Granted
1 659 766	Spain	Granted
1 659 766	France	Granted
1 659 766	United Kingdom	Granted
1 659 766	Italy	Granted
1089599	Hong Kong	Granted
06125884.4	Europe	Pending
2961/DEL/2005	India	Pending
122909	Singapore	Granted

Claim Amendments

The claims have been replaced by new claims 28-39, for clarity and to address the new ground of rejection in the Decision on Appeal. The clarifying amendments made herein are made solely in order to expedite examination of the application. No new matter is added by the amendment.

The Applicant notes that each and every amendment and argument entered herein is made in view of the particular circumstances surrounding the application at this point in time, and, in view of such circumstances, in the interest of advancing examination of the case. The Applicant expressly reserves the right to disclaim any or all such amendments and/or arguments in subsequent prosecution, in the interest of recapturing, upon entry of such disclaimer, any disclaimed claim scope.

The Applicant hereby rescinds, and no longer intends that the claims be limited by, any assertion, statement, argument, amendment or other action in this patent application, or any application whose file history is available for use in interpreting any patent issuing on this application, that might be taken to be a surrender or disclaimer of any subject matter from the scope of any claim. No such assertion, statement, argument, amendment or other action in this application or in any such available application should be taken as a surrender or disclaimer from, and may not be used to interpret, any claim of this patent, or any claim of any patent to which such applications' file histories may be pertinent.

The Applicant respectfully suggests to the Examiner that it may be necessary to, and hereby requests that in fact the Examiner do, re-visit and reconsider all art cited against the claims in previous prosecution, in case any amendment made herein re-opens any question of the applicability of such art. The Applicant hereby requests that the Examiner re-visit any previous surrender, disclaimer or characterization of claims, and re-visit any prior art that may have been avoided or intended to be avoided by any such surrender, disclaimer or characterization.

Claim Rejection - 35 U.S.C. 112, Second Paragraph

The Decision on Appeal has rejected claims 1, 4-13 and 16-27 under 35 U.S.C. 112, second paragraph, as being indefinite.

These claims have been replaced by new claims 28-39. The Applicant submits that claims 28-39 clearly define the subject matter claimed.

New Claims for Consideration

The present claims have been redrafted so that they are different from the claims previously examined. The claims should be given a fresh examination, and previous rejections must not be reasserted without proper analysis. Legal principles pertaining to a proper examination must be applied to this new examination. These legal principles are neither optional nor discretionary.

Requirements for a Finding of Anticipation

A claim is anticipated if, and only if, each and every element set forth in the claim is either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). All elements of the claim must be shown in the single reference, *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In order to anticipate, a single prior art reference must not only disclose all elements of the claim, but the reference must also disclose those elements “as arranged in the claim.” *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 548 (Fed. Cir. 1983).

Requirements for a finding of obviousness

In order to reject a claim based on a combination of references, as explained at MPEP 2143 (citing the Supreme Court in *KSR v. Teleflex*), “Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

- (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;

(2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;

(3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and

(4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

KSR, 82 USPQ2d at 1395; *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

MPEP 2143 notes that if “any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.”

In particular:

The Examiner Has the Burden of Proof

In the event a rejection is offered on grounds of obviousness, the burden of proof is on the Examiner to demonstrate obviousness. E.g., *In re Oetiker*, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

The Examiner Must Provide Evidence and Articulated Reasoning

Any conclusion of obviousness must be supported by evidence and articulated reasoning. *KSR Int'l Co. v. Teleflex Inc.*, 550 U. S. 398, 127 S. Ct. 1727, 1741 (2007) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational

underpinning to support the legal conclusion of obviousness”) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); see also *In re Lee*, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (pursuant to the Administrative Procedure Act, the agency must not only reach a sound decision, the agency must also develop an evidentiary basis for its findings and articulate reasons for its decision).

The Examiner Must Demonstrate All Elements

If the references cited by the Examiner fail to disclose all of the claimed elements, then one skilled in the art could not combine elements from the cited references to reach the claimed invention, regardless of what impetus there may be to combine those elements. The Examiner’s burden of proof includes (but is not limited to) citing references that teach or suggest all of the features of a claimed invention. E.g., *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995); *In re Wada and Murphy*, Appeal No. 2007-3733, slip op. at 7 (BPAI 2008).

The Examiner Must Demonstrate a Reason for the Combination

An Examiner has not satisfied the burden of proof of obviousness by showing that the individual claim elements are already known. As stated in *KSR Int’l Co. v. Teleflex Inc.*, 550 U. S. 398, 418-19 (2007):

[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. ... This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.

Further, the evidence must do more than simply show that a combination of elements is possible. The evidence must suggest the desirability of the combination, not merely the feasibility. *In re Fulton*, 73 USPQ2d 1141, 1145 (Fed. Cir. 2004).

The Claims are Novel and Nonobvious

The present claims recite features that are not found in Ögren, Jarrad Maass, Ausems, and Andrew, or any other reference cited by the Examiner, whether taken alone or in combination.

Independent claim 28 recites features such as “displaying a dynamic bar on the display, the dynamic bar being displayed on a main screen of a graphical user interface for controlling the apparatus”, “the dynamic bar displaying dynamic preview information, the dynamic preview information being determined from information managed by a software application” and “the dynamic bar further including a link to invoke the software application” which are not all found in any of the cited references.

The dependent claims recite additional features that are not found in the cited references.

The Applicant therefore submits that the present claims are all patentable over the references cited by the Examiner.

Conclusion

It is believed that the Applicant has responded to each ground of rejection raised, and that the claims, as presented, are in condition for immediate allowance. Favourable reconsideration and allowance of the application are respectfully requested. Should the Examiner have any questions in connection with the Applicant’s submissions, please contact the undersigned.

If any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

OGILVY RENAULT LLP

Date: April 8, 2011

By: /Christine Y. Wong/
Christine Y. Wong
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Toronto, ON M5J 2Z4
Canada

Electronic Acknowledgement Receipt

EFS ID:	9842681
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	20988
Filer:	Christine Y. Wong/Kelly Trewin
Filer Authorized By:	Christine Y. Wong
Attorney Docket Number:	16813-39US
Receipt Date:	08-APR-2011
Filing Date:	09-NOV-2004
Time Stamp:	15:46:53
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.)
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Multipart Description/PDF files in .zip description			
	Document Description	Start	End
	Amendment/Argument after BPAI Decision	1	1
	Amendment Copy Claims/Response to Suggested Claims	2	3
	Applicant Arguments/Remarks Made in an Amendment	4	10
Warnings:			
Information:			
		Total Files Size (in bytes):	114281
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 10/983,606		Filing Date 11/09/2004		<input type="checkbox"/> To be Mailed			
APPLICATION AS FILED – PART I					OTHER THAN SMALL ENTITY							
		(Column 1)	(Column 2)		SMALL ENTITY <input type="checkbox"/> OR		OTHER THAN SMALL ENTITY					
FOR		NUMBER FILED	NUMBER EXTRA		RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>		N/A	N/A		N/A			N/A				
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (i), or (m))</small>		N/A	N/A		N/A			N/A				
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>		N/A	N/A		N/A			N/A				
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>		minus 20 =	*		X \$ =			X \$ =				
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>		minus 3 =	*		X \$ =			X \$ =				
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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 <small>(37 CFR 1.16(j))</small>												
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL		TOTAL					
APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY							
		(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY		OR		OTHER THAN SMALL ENTITY		
AMENDMENT	04/08/2011	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total <small>(37 CFR 1.16(i))</small>	* 12	Minus	** 25	= 0	X \$ =		OR	X \$52=	0		
	Independent <small>(37 CFR 1.16(h))</small>	* 2	Minus	***3	= 0	X \$ =		OR	X \$220=	0		
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>								OR			
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>								OR			
					TOTAL ADD'L FEE		TOTAL ADD'L FEE	0				
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =		OR	X \$ =			
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =		OR	X \$ =			
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>								OR			
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>								OR			
					TOTAL ADD'L FEE		TOTAL ADD'L FEE					
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.					Legal Instrument Examiner: /Timothy Cole/							
** 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.												

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10/983,606 11/09/2004 Sherryl Lee Lorraine Scott 16813-39US 2886

20988 7590 02/08/2011
OGILVY RENAULT LLP
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CANADA

EXAMINER
SALOMON, PHENUEL S

ART UNIT 2179
PAPER NUMBER

MAIL DATE 02/08/2011
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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHERRYL LEE LORRAINE SCOTT

Appeal 2009-006954
Application 10/983,606
Technology Center 2100

Before LANCE LEONARD BARRY, HOWARD B. BLANKENSHIP, and
THU A. DANG, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL¹

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1, 4-13, and 16-27, which are all the claims remaining in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse the rejections over the prior art, *pro forma*, and enter a new ground of rejection as permitted by 37 C.F.R. § 41.50(b).

Invention

Appellant's invention relates to a "dynamic bar" displayed on a graphical user interface for controlling the apparatus. *See* Abstract. Embodiments include a single "dynamic bar" 304 (Figs. 3, 4) and a plurality of "dynamic bars" 1004, 1008, 1012, 1016, and 1020 (Fig. 10). *See* Spec. ¶¶ [0046], [0050].

Representative Claim

1. A method for controlling an apparatus comprising:
 - providing at least one dynamic bar for displaying on a main screen of a graphical user interface for controlling the apparatus, each dynamic bar associated with respective multiple interfaces for applications and functions provided by the apparatus, said each dynamic bar having an expandable pop-up interface for providing respective preview information determined from information managed by the applications and functions and the dynamic bars providing links to invoke said respective interfaces;
 - invoking said respective interfaces to control said apparatus in response to user input;

associating with at least some of the dynamic bars respective dynamic preview information determined from information managed by at least one of the respective applications and functions associated with the at least some of the dynamic bars and displaying the respective dynamic preview information within the associated dynamic bar, and

updating the display of the at least some of the dynamic bars in response to a change to the respective dynamic preview information.

Prior Art

Jarrad	US 6,047,197	Apr. 4, 2000
Ausems	US 2003/0013483 A1	Jan. 16, 2003
Andrew	US 2004/0204133 A1	Oct. 14, 2004
Maass	WO 03/100591 A2	Dec. 4, 2003
Ögren	EP 1 434 411 A1	Jun. 30, 2004

Examiner's Rejections

Claims 1, 7, 10, 13, 19, 22, and 25-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ögren and Jarrad.

Claims 4, 11, 16, and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ögren, Jarrad, and Maass.

Claims 5, 6, 8, 17, 18, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ögren, Jarrad, and Ausems.

Claims 9, 12, 21, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ögren, Jarrad, and Andrew.

DISCUSSION

I.

The Standing Rejections

We reverse, *pro forma*, the Examiner's rejections of the claims over the prior art, because the claims are indefinite under 35 U.S.C. § 112, second paragraph. Rejections of claims over prior art should not be based on speculation and assumptions as to the scope of the claims. *See In re Steele*, 305 F.2d 859, 862 (CCPA 1962). We enter a new ground of rejection against all the claims on appeal, *infra*.

Although our reversal is not a decision on the merits of the applied prior art rejections, we note the following further impediments to reaching such a decision. First, the rejections are not clear in setting forth exactly what disclosure in Ögren is deemed to correspond to the one or more "dynamic bars." Although Appellant seems to make assumptions with respect to what part of Figures 3 and/or 4 of Ögren might be deemed to teach one or more "dynamic bars," the rejections ambiguously cite to text and an icon in Figure 3 (*see* Final Rejection 3; Ans. 3-4, 10-11). Second, Appellant indicates in the Appeal Brief (at 17-18) that the rejection applied against claims 26 and 27 (over Ögren and Jarrad) is facially deficient because the claims depend, respectively, from claims 5 and 17 (rejected over Ögren, Jarrad, and Ausems). In response, the Examiner tells us why Ausems was applied against claims 5 and 17 (Ans. 16), which neither elucidates nor remedies the apparent deficiency in the rejection applied against claims 26 and 27.

II.

Definiteness

The function of claims is (1) to point out what the invention is in such a way as to distinguish it from the prior art; and (2) to define the scope of protection afforded by the patent. *In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564, 1577 n.5 (Fed. Cir. 1985). The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope. *In re Warmerdam*, 33 F.3d 1354, 1361 (Fed. Cir. 1994). The inquiry is merely to determine whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. *In re Moore*, 439 F.2d 1232, 1235 (CCPA 1971). The definiteness of the language employed must be analyzed -- not in a vacuum, but in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. *Id.*

New Ground of Rejection -- 35 U.S.C. § 112, Second Paragraph

We reject claims 1, 4-13, and 16-27 under 35 U.S.C. § 112, second paragraph, as being indefinite. We will discuss only claim 1, as it is representative of all the claims on appeal.

Claim 1 is internally inconsistent. The claim recites “providing at least one dynamic bar,” which includes providing “one” dynamic bar, and which is not inconsistent with later language that recites “each dynamic bar.” The remainder of the claim, however, refers to a plurality of “dynamic bars,” such as “the dynamic bars providing links to invoke said respective

interfaces” and “associating with at least some of the dynamic bars respective dynamic preview information”

Due to the patent ambiguity as to whether the claims require a plurality of “dynamic bars,” or require no more than a single “dynamic bar,” we conclude that the claims fail to reasonably apprise those of skill in the art of their respective scope.² We therefore reject all the claims under 35 U.S.C. § 112, second paragraph.

DECISION

The rejections of claims 1, 4-13, and 16-27 under 35 U.S.C. § 103(a) are reversed, *pro forma*.

In a new ground of rejection, we reject claims 1, 4-13, and 16-27 under 35 U.S.C. § 112, second paragraph, as being indefinite.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (2010). 37 C.F.R. § 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 C.F.R. § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

² We also note that dependent claims refer at times (e.g., claim 5) to “the at least one dynamic bar” and at times (e.g., claim 6) to “the dynamic bars.”

Appeal 2009-006954
Application 10/983,606

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

REVERSED -- 37 C.F.R. § 41.50(b)

msc

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20988 7590 04/07/2009
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EXAMINER
SALOMON, PHENUEL S

ART UNIT 2178
PAPER NUMBER

MAIL DATE 04/07/2009
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Appeal No: 2009-6954
Application: 10/983,606
Appellant: Sherryl Lee Lorraine Scott

Board of Patent Appeals and Interferences Docketing Notice

Application 10/983,606 was received from the Technology Center at the Board on December 17, 2008 and has been assigned Appeal No: 2009-6954.

A review of the file indicates that the following documents have been filed by appellant:

Appeal Brief filed on: April 04, 2008
Reply Brief filed on: July 11, 2008
Request for Hearing filed on: NONE

In all future communications regarding this appeal, please include both the application number and the appeal number.

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10/983,606 11/09/2004 Sherryl Lee Lorraine Scott 16813-39US 2886

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SALOMON, PHENUEL S

ART UNIT 2178
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10983606	11/9/2004	SCOTT, SHERRYL LEE LORRAINE	16813-39US

EXAMINER

PHENUEL S.. SALOMON

ART UNIT	PAPER
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/Stephen S. Hong/
Supervisory Patent Examiner, Art Unit 2178

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Filing Date	November 9, 2004
First Named Inventor	Sherryl Lee Lorraine Scott
Art Unit	2178
Examiner Name	Phenuel S. Salomon
Attorney Docket Number	16813-39US

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- Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number _____.

Signature */mve/*

Typed or Printed
Name Michael Van Eesbeek

Date September 10, 2008

Telephone 416-216-4020

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EFS ID:	3920172
Application Number:	10983606
International Application Number:	
Confirmation Number:	2886
Title of Invention:	Dynamic bar oriented user interface
First Named Inventor/Applicant Name:	Sherryl Lee Lorraine Scott
Customer Number:	54120
Filer:	Michael W. Van Eesbeek/Lisette Ruiz
Filer Authorized By:	Michael W. Van Eesbeek
Attorney Docket Number:	16813-39US
Receipt Date:	10-SEP-2008
Filing Date:	09-NOV-2004
Time Stamp:	16:11:28
Application Type:	Utility under 35 USC 111(a)

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1	Change of Address	Change_of_Correspondence_address.pdf	288822 <small>0099#470b6ce599c4aa44f9735e#987882148108</small>	no	1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/983,606

Art Unit: 2178

Filed: 11/09/2004

Confirmation No.: 2886

Applicant: Sherryl Lee Lorraine Scott

Examiner: Phenucl S. Salomon

Title: DYNAMIC BAR ORIENTED USER INTERFACE

Docket No.: 16813-39US

Customer No.: 020988

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Commissioner of Patents
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Dear Sir/Madam:

REPLY BRIEF

This Reply Brief is submitted in response to the Examiner's Answer, dated June 25, 2008, which was in response to the Appeal Brief filed on April 4, 2008.

REPLY BRIEF
Application Serial No. 10/983,606

2

Status of Claims

Pursuant to the Examiner's Final Office Action mailed November 28, 2007, the status of the claims is as follows:

claims 1, 4-13 and 16-27 stand rejected under 35 U.S.C. 103(a); and

claims 2-3 and 14-15 were previously cancelled.

The rejections of claims 1, 4-13 and 16-27 are being appealed.

Grounds of Rejection to be Reviewed on Appeal

The Applicant seeks to appeal the following grounds of rejection:

1) whether claims 1, 7, 10, 13, 19, 22, 25 and 26-27 are unpatentable under 35 U.S.C. 103(a) over European Patent Application No. 1,434,411 to Ögren et al. (hereinafter “Ögren”) in view of U.S. Patent No. 6,047,197 to Jarrad (hereinafter “Jarrad”);

2) whether claims 4, 11, 16 and 23 are unpatentable under 35 U.S.C. 103(a) over Ögren in view of Jarrad and in further view of PCT Publication No. 03/100591 to Maass et al. (hereinafter “Maass”);

3) whether claims 5-6, 8, 17-18 and 20 are unpatentable under 35 U.S.C. 103(a) over Ögren in view of Jarrad and in further view of U.S. Patent Application Publication No. 2003/0013483 to Ausems et al. (hereinafter “Ausems”); and

4) whether claims 9, 12, 21 and 24 are unpatentable under 35 U.S.C. 103(a) over Ögren in view of Jarrad and in further view of U.S. Patent Application Publication No. 2004/0204133 to Andrew et al. (hereinafter “Andrew”).

Argument

In the Examiner's Answer to the Appeal Brief, dated June 25, 2008, the Examiner has maintained all the claim rejections of the Final Office Action. The Examiner's citations against the claims are identical to those presented in the Final Office Action, and for which the Applicant has already submitted arguments in the Appeal Brief. The Examiner has further responded to the Applicant's arguments submitted in the Appeal Brief, and comments in reply to the Examiner's response follows.

Claim Rejections - 35 USC 103

Claims 1, 13 and 25

The Examiner has cited paragraph [0038] of Ögren as teaching the display of dynamic preview information and/or application status. In the cited passage, Ögren teaches that the status bar may "include a number of icons, each associated with the status of either an application, a function or a performance of the phone" (emphasis added). Reference is made to Figure 3, which shows a first icon 32 indicating a missed phone call. The Applicant respectfully submits that this passage does not teach any dynamic preview information, but only application status, as evidenced by the quote above. While an icon may be displayed for other performances, functions and applications, these only indicate that the associated application is active (column 8, lines 18-24) or the status of the device such as battery level or signal strength (column 5, lines 4-9). There is no preview information, because there is nothing to preview.

The Examiner appears to have ignored the distinction between status information and dynamic preview information, and has not made any attempt to address the argument previously submitted in the Appeal Brief that dynamic preview information is different from status information. The Examiner cites the example of an icon indicating a missed phone call. An icon indicating a missed phone call only shows the status of the phone function, and does not include any preview information, such as the caller or the phone number. Rather, such preview information is provided on a full screen display, as shown

in Figure 4, and is only shown when further user input is detected (column 8, lines 32-35).

In response to the Applicant's previously submitted argument that signal strength is a mere indicator of the state or performance of the device and not dynamic preview information, the Examiner responds that signal strength is equated as dynamic preview information. The Applicant submits that there is nothing in Ögren that would suggest such an equation. Signal strength is not dynamic preview information, because there is nothing to preview. Preview information typically provides a portion of more detailed information. Ögren does not suggest that signal strength is a portion of any further information - it is just the status of the device.

In response to the Applicant's previously submitted argument that Ögren does not provide invocable links in a dynamic bar, the Examiner has cited paragraph [0018] and Figures 3 and 4 of Ögren. The Examiner has previously cited paragraph [0010] and column 8, lines 2-8. Since the Examiner has changed the cited passages, the Applicant assumes that the Examiner has accepted the argument that an invocable link in a dynamic bar was not taught by the previously-cited passages.

Paragraph [0018] teaches the display of further information in response to user input. This is the user input required to show preview information, as discussed above in reference to Figure 4 and column 8, lines 32-35. The Examiner alleges that this new interface with further information, as shown in Figure 4, contains items or icons which when acted upon will be translated into instructions that the computer can interpret. However, it must be noted that the claimed subject matter recites "the dynamic bars providing links to invoke said respective interfaces [i.e., interfaces for applications and functions]" (emphasis added). As described above, Figure 4 is a full screen display of preview information that is brought up in response to user input at the screen of Figure 3. Figure 4 clearly does not show a dynamic bar or any type of bar, but rather a full screen display. Hence, it is irrelevant whether or not a user can activate an application from the screen of Figure 4, as the present claims are concerned with links provided on the dynamic bars.

The bar shown in Figure 3 also fails to provide invocable links. User input at the bar of Figure 3 brings up the screen of Figure 4, as described in column 8, lines 32-40. User input at the bar of Figure 3 does not bring up an interface for an application or function, only the further information shown in Figure 4. This further information is not equivalent to an interface for an application. Yet further user input is required to activate an application from the screen of Figure 4.

In response to the Applicant's previously submitted argument that Ögren does not provide the streamlined interface of the present claims and in fact teaches in a direction that is contrary to the claimed subject matter, the Examiner has repeated the response already described above. For at least the reasons explained above, Ögren does not teach a dynamic bar providing dynamic preview information and links for invoking application and function interfaces, as presently claimed. Ögren teaches a bar providing status information, not preview information, and requires more user navigation in order to invoke an application interface than as described in the present claims. The Applicant respectfully submits that Ögren does not teach or suggest all the features of the present claims and hence does not provide the streamlined interface of the present claims.

With regards to Jarrad, the Examiner's response is that Jarrad was only used to remedy the deficiency in Ögren where he fails to disclose an overlay window or pop up with a text field which identifies the function or application. However, the Applicant has previously argued that a person skilled in the art would not combine the teachings of Jarrad with that of Ögren because the two are contrary to each other. The Examiner has not addressed this argument. Jarrad aims to provide a user interface for a cellular telephone that is simple (as shown in Figure 4 of Jarrad) and largely independent of language. Providing any preview information, especially the full screen further information shown in Figure 4 of Ögren, would clutter the interface and may introduce additional language requirements, contrary to the aim of Jarrad. The Applicant respectfully submits that a person skilled in the art would not combine Ögren and Jarrad in the manner suggested by the Examiner.

Even if Ögren and Jarrad were to be combined, which a person skilled in the art would not do, the combination still fails to teach the present claims, as neither Ögren nor Jarrad teach the display of dynamic preview information in a dynamic bar.

In view of the foregoing arguments, it is submitted that Ögren does not teach all the features of the present claims. It is further submitted that a person skilled in the art would not combine the teachings of Jarrad with that of Ögren as the Examiner suggested, since the two references teach away from each other. Even a combination of Ögren and Jarrad, which the Applicant submits a person skilled in the art would not attempt, does not teach all the features of the present claims.

Claims 10 and 22

The Examiner's response cites paragraph [0018] and Figures 3 and 4 of Ögren as disclosing invocable links that when clicked on will display interface for an application or function. As already explained above, the present claims describe invocable links being provided on the dynamic bar, which is not the case in Ögren. Hence, these claims are also not taught by Ögren.

Claims 7 and 19

The Examiner cites paragraph [0041] and steps 62, 64, 68, 70 and 72 of Figure 5B in Ögren as teaching the activation of interfaces for applications and/or functions from icons displayed in a status bar as shown in Figure 3. It appears that the Examiner has misinterpreted the teaching of Ögren. Paragraph [0041] clearly describes steps 62, 64, 68, 70 and 72 with reference to Figure 4, not the icons of Figure 3, as the Examiner alleges. Looking at Figures 5A and 5B, it is clear that steps 58 and 60 takes place before steps 62, 64, 68, 70 and 72. Steps 58 and 60 describe the user pressing a first key, and in response providing further information via the screen of Figure 4, as described in column 8, lines 32-40. That is, the activation of applications takes place not from the status bar, as the Examiner alleges, but from the full screen display of further information. This is different from the present claims, which provides for the activation of interfaced for applications and functions from the main screen showing the dynamic bar.

Claims 26 and 27

The Examiner cites paragraphs [0014] and [0015] of Ögren as providing a list of further possible actions in relation to the application, and hence that there are some predetermined logical relationships between the functions and the applications. However, claims 26 and 27 are dependent on claims 1 and 13, which are novel and unobvious over Ögren for at least the reasons discussed above. Hence, claims 26 and 27 are also novel and unobvious over Ögren for at least the same reasons.

Claims 4, 5, 6, 8, 9, 11, 12, 16, 17, 21, 23 and 24

The Examiner relies on a combination of Ögren with Maass, Ausems or Andrew to teach the features of these claims. The Examiner relies on Ögren to teach the feature of providing dynamic preview information in a dynamic bar, and appears to accept our previous argument that neither Maass, Ausems nor Andrew teaches this feature.

As explained above, Ögren fails to teach the feature of providing dynamic preview information in a dynamic bar. Hence, a combination of Ögren with Maass, Ausems and/or Andrew still fails to teach this feature. Thus, these claims are all novel and unobvious over Ögren, Maass, Ausems and/or Andrew, whether taken alone or in combination.

Conclusion

In view of the foregoing arguments, it is the view of the Applicant that the present claims are patentable for the following reasons:

a) Ögren and Jarrad, whether taken alone or in combination, fail to teach or suggest all of the features recited in the claims;

b) Jarrad teaches away from the claimed subject matter and is not suitable references for citation in a rejection under 35 U.S.C. 103(a);

c) Ögren and Jarrad teach away from each other and are not suitable to be combined in a rejection under 35 U.S.C. 103(a); and

d) the dependent claims recite further features that are not taught or suggested by a combination of Ögren and Jarrad with Maass, Ausems, or Andrew.

The Board of Appeals is thus respectfully asked to withdraw the claim rejections under 35 U.S.C. 103(a).

If any extension of time under 37 C.F.R. 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

OGILVY RENAULT LLP

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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.



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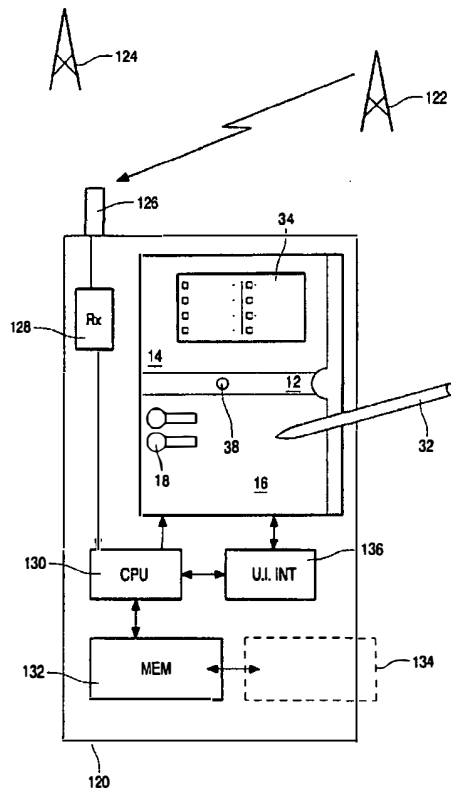
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[Continued on next page]

(54) Title: MANAGEMENT OF INTERACTION OPPORTUNITY DATA



(57) Abstract: A portable data processing apparatus (120) receives information identifying interaction opportunities for a user of the apparatus and presents them via a display (10). For each identified interaction opportunity, a processor (130) generates a respective display icon (38, 18). The processor generates a user interface having at least first (12), second (16) and third (14) display panes, with newly generated display icons (38) being initially displayed in the first display pane (12). Subsequently, icons (18) are moved to the second display pane (16) and arranged according to a predetermined prioritisation scheme. On user selection of a displayed icon, additional data associated with the selected icon is displayed in the third display pane (14).



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

DESCRIPTION

MANAGEMENT OF INTERACTION OPPORTUNITY DATA

5 The present invention relates to apparatuses having display means operable to display data relating to interaction opportunities for a user of such apparatus. In particular, but not exclusively, the invention relates to apparatus displaying such data in display panels or windows (hereinafter generally referred to as panes) on a single screen or display device, and to methods for
10 managing the presentation and updating of such data displays.

 Recent years have seen a great increase in subscribers world-wide to mobile telephone networks and, through advances in technology and the addition of functionalities, cellular telephones have become personal, trusted
15 devices. A result of this is that a mobile information society is developing, with personalised and localised services becoming increasingly more important. Such "Context-Aware" (CA) mobile telephones are used with low power, short range base stations in places like shopping malls to provide location-specific information. This information might include local maps, information on nearby
20 shops and restaurants and so on. With other personal and portable devices, such as personal digital assistants (PDA's) and laptop computers, gaining the technical features also to support such interaction, the number of CA terminals is also beginning to increase.

 An example of a CA terminal is given in U.S. patent 5,835,861 which
25 discloses the use of wireless telephones within the context of advertisement billboards. The user of a wireless telephone obtains the telephone number of a vendor by activating his/her wireless telephone to transmit a prompt signal to an active advertisement source and to receive from the advertisement source a response signal containing the telephone number of the advertising vendor.
30 The telephone number can then be used to automatically place a call to that vendor via the public switched telephone network. Alternatively, the telephone number can be stored for use later on. This arrangement can be used to place

a call to a vendor without having to either memorise the telephone number or to write it down. The signals between the billboard and the caller can be transmitted as modulated infrared (IR) signals.

5 A problem that users are increasingly faced with is the volume of data relating to interaction opportunities that is available. The user's CA terminal may be equipped to filter the information received according to pre-stored user preferences, and the user only alerted if an item of data of particular interest has been received, but there is still a need to effectively manage the information that does pass the filter.

10

It is accordingly an object of the present invention to provide a means for presentation of interaction information to a user which gives improved utilisation of display capacity per unit area of display surface.

15 It is a further, subsidiary, object to provide such a system supporting improved indexing and access facilities for the user.

In accordance with a first aspect of the present invention there is provided a portable data processing apparatus being operable to receive information identifying interaction opportunities for a user of the apparatus and present the same to said user via a display, the apparatus comprising:

20 a processor coupled with data storage means and said display and programmed to generate a respective display icon for each identified interaction opportunity; and

user operable input means for selecting a displayed icon;

25 wherein the processor is arranged to generate a user interface having at least first, second and third display panes, with newly generated display icons being initially displayed in said first display pane and subsequently moved to said second display pane wherein other icons are displayed; wherein the processor is configured to arrange the icons in the second display pane according to a predetermined prioritisation scheme; and wherein on user selection of a displayed icon additional data associated with the selected icon
30 is displayed in the third display pane. By the provision of the particular arrangement of panes, the user can quickly identify newly-arrived interaction

opportunities (first pane), more easily find those likely to be of interest (prioritised arrangement in the second pane), and call up further information (third pane) without obscuring the first two panes.

The apparatus may be arranged to determine from the information identifying interaction opportunities a respective priority for each, with the predetermined prioritisation scheme applied by the processor positioning those display icons in the second display pane in order of priority relative to the position of the first display pane. The predetermined prioritisation scheme applied by the processor may comprise complex schemes for evaluating and prioritising opportunities, or it may be as simple as temporal prioritisation with those display icons in the second display pane being displayed in the order they arrived in the first display pane.

For improved clarity, the processor may be configured to identify, from the received information, a plurality of different classes of interaction opportunity and to indicate the same to a user by the form of display icon presented for each identified interaction opportunity. Such different forms of icon may be determined at least partly by data held in the data storage means, and/or they may be delivered from a remote source with the interaction opportunity data.

The processor may be operable to receive additional information relating to an interaction opportunity for which an icon is already displayed in the second display pane: in such a case, the processor may indicate the arrival of said information to the user by altering the appearance of the respective display icon in the second display pane, rather than congesting the second pane by the addition of a further icon.

The apparatus may comprise means coupled with the processor and operable to receive said information identifying interaction opportunities from at least one remote source, preferably (though not essentially) by wireless download. To further facilitate interaction with remote sources, the processor may be further operable to generate in said third display pane a visual representation of the location of said at least one remote source relative to the

location of the apparatus and/or a representation of relative valuations for two or more remote sources to the apparatus.

In combination with the appearance of an icon in the first display pane, the apparatus may further comprise means controlled by the processor to
5 generate an alert to a user on the generation of a new icon in the first display pane (i.e. on the detection of a new interaction opportunity). Such means may suitably include sounders or vibration devices such that the user can be alerted even if not looking at the user interface at the time, as may be necessary when walking in a crowded environment, for example.

10 To identify to the user how recently a new opportunity has arisen, the processor may be arranged to scroll an icon in the first display pane from one edge of the pane to an opposite edge prior to moving such icon to the second display pane. With multiple opportunities being received close together, the first pane acts as a pipeline along which the icons pass before being arranged
15 in prioritised order in the second pane.

The apparatus may be further operable to facilitate user alteration of device settings through the same arrangement of user interface, with options for setting nested in menus with submenus for respective entries, with respective icons in the first display pane representing menu items on selection
20 of one of which icons are presented in the second display pane representing the respective submenu options, and on selection on one of the icons in the second display pane, the individual device setting options under that submenu are shown in the third display pane.

Also in accordance with the present invention there is provided a
25 method for managing the presentation of information identifying interaction opportunities to a user via a user interface, comprising the steps:

generating a user interface having at least first, second and third display panes;

generating a respective display icon for each identified interaction
30 opportunity and initially displaying the same in said first display pane;

subsequently moving the icon from the first to the second display pane wherein other icons are displayed;

arranging the icons in the second display pane according to a predetermined prioritisation scheme; and

on user selection of a displayed icon, displaying additional data associated with the selected icon in the third display pane. The invention
5 further provides a computer readable storage medium containing executable instructions for performing the above method steps.

Further features and advantages of the present invention will become apparent from reading of the following description of preferred embodiments of
10 the present invention, given by way of example only, and with reference to the accompanying drawings, in which:

Figures 1 to 30 are images of a user interface presenting information identifying interaction opportunities; and

Figure 31 schematically represents a device embodying the invention in
15 conjunction with external sources of interaction opportunities.

In the following, interaction mechanisms are described to support a mobile device user's management of the activation of applications on the move. These mechanisms are illustrated in Figures 1 to 30 which show a user-
20 interface design in which:

- The mechanisms allow easy management of both user-initiated applications ('pull') as well as applications initiated automatically or externally ('push') by a new situation, device, network, time, place or social-context event.
- 25 • Both the management of opportunities for peer-to-peer and for client-server applications are unified under an easy-to-use user interface.
- The design has two modes – one for supporting the user on the move (Opportunity Management Mode), one for the user to configure a number of sets of personal preferences, filters and priorities for different
30 application opportunities they may encounter in different contexts (Personal Settings Mode).

Although the design is illustrated by the screen design of a PDA, other handset formats and devices, such as a mobile phone or a laptop, can implement the mechanisms.

5 Opportunity Management Mode

A simple example of an opportunity for interaction might be an incoming phone call or SMS message signalled by a ringing tone and the caller's ID. Alternatively, an opportunity might be for the user's wireless headset to receive audio privately when within range of TV, or a nearby computer projection
10 system to which the user could beam a presentation or a printer, or the proximity of a large public display which the user can appropriate temporarily. Such events might also include a reminder alert to make a phone call, triggered by the user's calendar system. Another example might be the event
15 of a user entering the coverage of a short-range RF beacon that offers local services or the pointers to wide-area network services. Yet another example might be coming within range of an IR signal transmitted from another user's handset offering wireless exchange of business cards.

Considering initially the sequence of Figures 1 to 18, the user interface screen 10 is divided by a central pane 12 into an upper part 14 for viewing and
20 interacting with an application, and lower part 16 for monitoring the current set and state of opportunities. The pane 12 acts as a 'pipeline' for the announcing the arrival of new opportunities/events that pass the user's current personal filter. These are signalled by icons 18 arriving on the pane from the right hand
25 side: the particular form of icon 18 represents the class of opportunity. The new event may also be signalled to a user by a special vibration pattern or accompanied by a signature sound indicating the event's category or class, for example.

These icons 18 trail an explanatory title 20 and possibly also further
30 messages (22; Fig. 2) which scroll from right to left as with a ticker-tape. The event shown in Figures 1 to 8 is an opportunity to interact with location-based services, as a result of a beacon signal that has been discovered or 'pushed'

to the user's handset from an RF or IR beacon which the user has just encountered.

The new opportunity for user interaction then moves down onto a 'rack' of opportunities maintained in a push-down stack in pane 16 (Figs. 2 and 3).

5 This stack may be ordered in different ways. The latest opportunities may be simply put at the top, so then the whole stack of events of the day or week can be reviewed by scrolling down through a long rack. Alternatively, the higher the priority that a new event or opportunity has for the user in their current context (priorities set for example by their current set of personal preferences),
10 the higher on the stack (i.e. closest to the first pane 12) that the event-icon 18 comes to rest. New high-priority events may therefore push down older events, whilst new low priority events will find their place lower in the stack. Thus the user can focus on highest priority events on bars (horizontal lines in the rack) closest to the centre of the screen. The rack can be scrolled up or down, for
15 example via the hotspot or control icon 24 at the right of the screen.

Each new opportunity, such as encountering a short-range RF beacon may offer a number of different applications. For example a beacon may offer (pointers to) services for navigation assistance, commercial offers or stored
20 messages left in that place for the user to read. In this case, the horizontal bar 26 on the rack in the pane 16 will show:

- On the left an event-icon 18 identifying the source of the opportunity and its category (e.g. a RF beacon for location-based services). This icon allows the user to quickly assess some characteristics of the application source, such as the trustworthiness of services on offer, or
25 how well the user personally knows the sender of messages.
- To the right a number of icons (30; Fig. 4), one per possible application, again optionally with graphics/accompanying sounds indicating the category of service offered, and optionally also tagged by whether these are visible in the top pane (application space) 14, or are waiting for user
30 interaction (e.g. by the hand icon 30 as in Fig. 4) , or are now passive, or are non-interactive (e.g. one-way broadcast information).