Class	Subclass	ISSUE CLASSIFICATION
364	5142.000	

422075

5699275

UTILITY SERIAL NUMBER	PATENT DATE	PATENT NUMBER
08 422075	DEC 16 1997	5699275

SERIAL NUMBER	FILING DATE	CLASS	SUBCLASS	GROUP ART UNIT	EXAMINER
				2603	Yao

APPLICANTS

BEST COPY

**CONTINUING DATA VERIFIED

None

KBY

**CERTIFICATE OF CORRECTION

MAY 12 1998

FOREIGN FILING LICENSE GRANTED

SMALL ENTITY

Foreign priority claimed 35 USC 119 conditions met	☐ yes ☒ no ☐ yes ☒ no	AS FILED	STATE OR COUNTRY	SHEETS DRWGS.	TOTAL CLAIMS	INDEP. CLAIMS	FILING FEE RECEIVED	ATTORNEY'S DOCKET NO.
Verified and Acknowledged	KBY Examiner's initials							

ADDRESS

2001 ROSS AVENUE
DALLAS TX 75201-

TITLE

U.S. DEPT. OF COMM./ PAT. & TM—PTO-436L (Rev.1

4-30-97

PARTS OF APPLICATION FILED SEPARATELY

ISSUE FEE IN FILE

Applications Examiner

NOTICE OF ALLOWANCE MAILED		CLAIMS ALLOWED	
4/29/97	Kwang Bin Yao Assistant Examiner	Total Claims 42	Print Claim 1
ISSUE FEE		DRAWING	
Amount Due 645.00	Date Paid 7-18-97	Sheets Drwg. 5	Figs. Drwg. 7 / Print Fig. 1
Label Area	HASSAN KIZOU PRIMARY EXAMINER GROUP 2600 Primary Examiner	ISSUE BATCH NUMBER M43	
	PREPARED FOR ISSUE		

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Form PTO-436A
(Rev. 8/92)

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08 422075

PATENT APPLICATION

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INITIALS

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	1.	Application 5 papers.	
	2.	Prior Art	4-12-95
	3.	Prior Art	9-5-95
	4.	SUPEDS	8/6/96
11-21	5.	Rej (3 mos)	11/21/96
	6.	Amdt + A + Attach	Feb 5 1997
4-28-97	7.	Suppl Disclosure Statement Notice of Allowance	Feb 5 1997 4/29/97 V.H.
	8.	Dec (Dm 7/14/97)	7/18/97
	9.	Suppl Dec C	7/18/97
	10.	PTO Grant DEC 1 6 1997	
	11.	Req. for C of C	2-5-98
	12.	Director's Repost	4-14-98
	13.	Second Req. for C of C	6-2-98
	14.	Director's Report	7-7-98
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☆ U.S. GOVERNMENT PRINTING OFFICE: 1995—394-061

PATENT NUMBER

ORIGINAL CLASSIFICATION

CLASS	SUBCLASS
364	514R.000

APPLICATION SERIAL NUMBER

08/422,075

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)

APPLICANT'S NAME (PLEASE PRINT)

Beasley et al.

IF REISSUE, ORIGINAL PATENT NUMBER

INTERNATIONAL CLASSIFICATION #6

G	0	6	F	13/00

GROUP ART UNIT: 2603

ASSISTANT EXAMINER (PLEASE STAMP OR PRINT FULL NAME): Kwang Bin Yao

PRIMARY EXAMINER (PLEASE STAMP OR PRINT FULL NAME): Hassan Kizou

PTO 270 (REV. 5-91)

ISSUE CLASSIFICATION SLIP

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

Final	Original	
1	1	✓
2	2	
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SYMBOLS

✓	Rejected
=	Allowed
- (Through numberal)	Canceled
+	Restricted
N	Non-elected
I	Interference
A	Appeal
O	Objected

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POSITION		ID NO.	DATE
CLASSIFIER		96	4/28/95
EXAMINER		3404	5-17-95
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VERIFIER		V6	5/19/95
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INDEX OF CLAIMS

Claim Final	Claim Original	Date 11/19/96	Date 4/21/97
1	1	✓	=
2	2		
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SYMBOLS

- ✓ ..... Rejected
- = ... Allowed
- - (Through numberal) Canceled
- + ... Restricted
- N ..... Non-elected
- I ..... Interference
- A ..... Appeal
- O ..... Objected

Claim Final	Claim Original	Date
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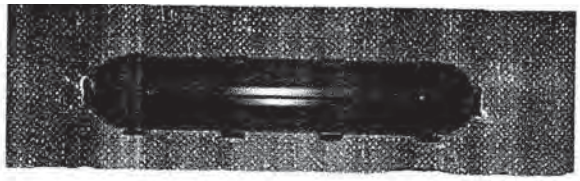
Petitioner Microsoft Corporation - Ex. 1002, p. 4



SEARCHED

Class	Sub.	Date	Exmr.
364	514R	11/14/96	KBY
395	600		
	700		
	200.09		
379	56		
	58		
	59		
	95		
455	31.1		
	33.1		
	54.1		
~~395~~ 399	updated	4/22/97	KBY
~~455~~			
364			

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
364	514R	4/24/97	KBY
~~395~~	600		
	700		
	200.09		
379	56		
	58		
	59		
	95		
~~455~~	31.1		
	33.1		
	54.1		

SEARCH NOTES

	Date	Exmr.
APS Search	11/14/96	KBY
Consult Ellis Ramirez	11/14/96	KBY
Consult Ellis Ramirez (346/514R)	4/23/97	KBY

(RIGHT OUTSIDE)

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275
DATED : December 16, 1997
INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5, line 41, after "message.", delete "application", and insert -- Application --.

Column 5, line 47, after "in", delete "application" and insert -- Application --.

Column 15, line 13, delete "execution" and insert -- executing --.

Signed and Sealed this

Twelfth Day of May, 1998

Attest:

Attesting Officer

BRUCE LEHMAN

Commissioner of Patents and Trademarks

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275

DATED : December 16, 1997

INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 15, line 13, delete "executing", and insert -- execution --.

Column 15, line 58, delete "execution", and insert -- executing --.

Signed and Sealed this

FourthDay of August, 1998

Bruce Lehman

Attest:

BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks

08 422075

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

090 BA 04/25/95 08422075 1 201 683.00 CK 019743-0165

PTO-1556
(5/87)

Transaction History Date 1995-04-1
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

PATENT

APPLICATION FOR U.S. PATENT
TRANSMITTAL FORM

Box Patent Application
THE COMMISSIONER OF PATENTS
AND TRADEMARKS
Washington, D.C. 20231

Attorney Docket No.:
19743-0165

Sir:

Transmitted herewith for filing is the patent application of:

Inventors: Dale E. Beasley, et al.

For: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

Enclosed are: 5 Sheets of Formal Drawings

FEE CALCULATION					FEE
	Number		Number Extra	Rate	Basic Fee $365.00
Total Claims:	42	-20 =	22	X $11 =	$242.00
Independent Claims	5	- 3 =	2	X $38 =	$76.00
				TOTAL FILING FEE =	$683.00

Enclosed is a check in the amount of $683.00. Please charge any additional fees or credit any overpayment to Deposit Account No. 02-0384 of BAKER & BOTTS, L.L.P.

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

April 12, 1995
Date

Barton E. Showalter
Registration No. 38,302

DAL01:85683.1

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PAT. & TRADE MARK OFF.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dale E. Beasley, et al.
Date Filed: April 12, 1995
Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

Box Patent Application
Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

CERTIFICATE OF MAILING BY EXPRESS MAIL

I hereby certify that the attached Patent Application, Declaration and Power of Attorney, a check in the amount of $683.00 to cover the cost of the patent application filing fee, Assignment Cover Sheet, Assignment, $40.00 check to cover the assignment recording fee, Verified Statement (Declaration) Claiming Small Entity Status, Information Disclosure Statement with references, and 5 sheets of formal drawings are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on this 12th day of April, 1995 addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Anthony Mauricio

Express Mail Receipt
No. TB571700844 US
Attorney's Docket:
19743-0165

DAL01:85685.1

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ATTORNEY'S DOCKET
19743-0165

PATENT APPLICATION

122,075

SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to the field of electronic systems, and more particularly to a system and method for remote patching of operating code located in a mobile unit.

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BACKGROUND OF THE INVENTION

Software suppliers and other sellers of computer systems often have a need for correcting or upgrading existing software used by their customers. Common methods of doing so include the distribution of floppy disks and tapes and the provision of modem support. However, the distribution of floppy disks and tapes is time consuming and forces the customer to use the old software while waiting for updates. Modem support can be used to link directly to the consumer's remote computer system and manually upgrade the software. However, such manual upgrade is time consuming, expensive and prone to human error.

Additionally, a central computer system has been used to provide access to software updates from systems at fixed remote locations. One such system is disclosed in U.S. Patent No. 5,155,847 entitled "*Method and Apparatus for Updating Software at Remote Locations.*"

U.S. Patent No. 5,155,847 discloses a central computer system that can monitor and record changes to versions of software. A user having a fixed remote system operating an old version of software may access the central computer system. If changes are applicable to the software used by the remote system, the central computer system can provide patches to the remote system for updating the software.

However, the system disclosed by U.S. Patent No. 5,155,847 discloses remote systems at fixed locations that access a central computer system over an on-line communication link that allows interactive and bidirectional communication. The remote systems participate in a single, continuous communication session that is terminated after the remote user receives the appropriate patches.

SUMMARY OF THE INVENTION

In accordance with the present invention, disadvantages and problems associated with prior systems and methods for updating software have been substantially reduced or eliminated. One aspect of the present invention provides remote patching of operating code located in a mobile unit.

According to an embodiment of the present invention, a system for remote patching of operating code located in a mobile unit is provided. The system includes a manager host and a mobile unit. The manager host is operable to initiate transmission through a communication network of at least one discrete patch message defining at least one patch. The mobile unit is operable to receive the at least one patch message. The mobile unit is also operable to create patched operating code by merging the at least one patch with current operating code located in the mobile unit and to switch execution to the patched operating code.

According to another embodiment of the present invention, a method for remote patching of operating code located in a mobile unit is provided. At least one discrete patch message defining at least one patch is transmitted through a communication network. The at least one patch message is received in a first mobile unit where the first mobile unit is executing current operating code located in the mobile unit. Patched operating code is created in the mobile unit by merging the at least one patch with the current operating code. Execution in the mobile unit is switched to the patched operating code.

A technical advantage of the present invention is allowing remote patching of operating code located in a mobile unit without physically touching the mobile unit or establishing a bidirectional and interactive communication link. The patching of code may be to fix

software bugs, add new functionality, or completely replace the existing version of code with a new version.

An additional technical advantage of the present invention is the provision of mobile units operable to interpret patch messages and create patched operating code therefrom without affecting the normal functions performed by the mobile unit.

According to another technical advantage of the present invention, patches are broadcast to a number of mobile units from a central location. The central location operates to keep track of the location of each mobile unit and how to deliver patch messages. The central location can also tailor the broadcasts of patches to different mobile units.

According to an additional technical advantage of the present invention, patches are sent as several discrete patch messages to a mobile unit, reception of the discrete patch messages is verified by the mobile unit, and patch information is combined by the mobile unit to create a complete patch file used to patch current operating code. The patches can be sent in a single or multiple communication sessions.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and for further features and advantages, reference is now made to the following description taken in conjunction with the accompanying drawings, wherein like reference numerals represent like parts, in which:

FIGURE 1 illustrates one embodiment of a system for remote patching of operating code located in a mobile unit;

FIGURE 2 is a schematic representation of one embodiment of a manager host;

FIGURE 3 is a schematic representation of one embodiment of a mobile unit;

FIGURE 4 illustrates one embodiment of message formats for patch messages used to represent a patch file;

FIGURE 5 is a flow chart showing one embodiment of a method of operation of a mobile unit for remote patching of operating code located in the mobile unit;

FIGURE 6 is a flow chart showing one embodiment of a method of creating patched operating code in a mobile unit; and

FIGURE 7 is a flow chart showing one embodiment of a method of resetting and restarting with patched operating code.

DETAILED DESCRIPTION OF THE INVENTION

FIGURE 1 illustrates one embodiment of a system, indicated generally at 10, for remote patching of operating code located in a mobile unit. System 10 comprises a communication network 12 that includes an enhanced services complex 14.

Communication network 12 may include one or a combination of several communication technologies, such as a wireless communication network like the cellular telephone network, a land-line communication network, another portion of the public switched telephone network (PSTN), a dedicated communication link, or any other appropriate communication link. Communication network 12 can support data transmissions or data and voice transmissions simultaneously. The type of communication link utilized in communication network 12 may vary between components of system 10, as described below.

A manager host 16 is coupled to enhanced services complex 14 using communication network 12. A first client host 18 and a second client host 20 also are coupled to enhanced services complex 14 in a similar manner as manager host 16. Manager host 16, first client host 18, and second client host 20 can be separate from or integral to enhanced services complex 14.

A first mobile unit 22 and a second mobile unit 24 are associated with first client host 18 and are coupled to enhanced services complex 14 using communication network 12. Similarly, a third mobile unit 26, a fourth mobile unit 28 and a fifth mobile unit 30 are associated with second client host 20 and are coupled to communication network 12. In the preferred embodiment, the communication link of the communication network 12 that couples mobile units 22, 24, 26, 28, and 30 with the enhanced services complex 14 is a wireless or mobile communication network, such as a cellular telephone network.

In the embodiment of FIGURE 1, manager host 16 provides support to client host 18 and client host 20 with respect to processing of information messages exchanged between enhanced services complex 14 and associated mobile units 22, 24, 26, 28 and 30 via communication network 12. For example, client host 18 and client host 20 can receive status information from and provide dispatching information to mobile units 22 and 24 and mobile units 26, 28 and 30, respectively. Manager host 16 provides support for systems operating in both client hosts 18 and 20 and mobile units 22, 24, 26, 28 and 30.

At times, manager host 16 might desire to enhance, correct, or replace current operating code located in one or more of the mobile units. A patch file can be created that defines one or more patches that need to be made to provide enhancements or corrections to the current operating code. In addition to the patch or patches, the patch file can provide a new version number and a new checksum for the resulting patched operating code. The version number can provide information such as the phase, release, revision and modifications made. Furthermore, as described below, the messages can also define a completely new version of the software that is to replace the current version running at the mobile units. Therefore, the description of the components and operation of sending patch messages to mobile units applies equally to the transmission of download messages that combine to form new operating code to replace the current operating code.

According to the teachings of the present invention, the patch file can be represented by a set of discrete patch messages. Each patch message can be sized as a discrete data payload suitable for transmission in a message through communication network 12. Manager host 16 can transmit the discrete patch messages to

appropriate mobile units. When a mobile unit receives the patch messages, the mobile unit can verify the patch messages, merge the defined patches with the current operating code, and switch execution to the patched operating code. In order to receive a complete patch file, each mobile unit receives all of the patch messages in the set representing the patch file. The transmission of discrete patch messages does not require a dedicated or interactive communication link, and can be performed in several communication sessions. For example, due to the inherent limitations of wireless communication, the communication link to the mobile unit may be lost. System 10 can then reestablish the communication link and continue transmission of the current patch message.

In this manner, operating code located in a mobile unit may be maintained and updated without the need for manager host 16 physically to contact the mobile unit. In addition, manager host 16 can provide varying levels of enhancements to mobile units associated with different client hosts and remotely maintain the operating code associated with each level of enhancement. This can be accomplished by addressing patch messages to the appropriate mobile units. For example, mobile units 22 and 24 associated with client host 18 can have a different version of operating code than mobile units 26, 28 and 30 associated with client host 20.

Manager host 16 can transmit discrete patch messages, according to the teachings of the present invention, in order to overcome limitations inherent in communication network 12. The communication link to the mobile units in communication network 12 can comprise any wireless or mobile communication system using land-based or space-based transmitters, receivers, or transceivers, such as a cellular telephone network, a personal communication system (PCS), a specialized mobile radio (SMR), an enhanced specialized mobile radio (ESMR),

citizen's band (CB), a paging network, a satellite-based communication network, or any other communication system supporting transmission of data to the mobile units.

Due to the nature of wireless communication, transmission of large amounts of data over communication network 12 can be expensive, error prone, and risky. For example, wireless communications may not be appropriate for an on-line session that requires bidirectional and interactive communications over an extended period of time. Further, in such a system, a mobile unit might be required to limit normal operation until the transmission of data was complete. Normal communication of messages between a client host and an associated mobile unit would be disrupted and the mobility of the mobile unit would be restricted. For example, if an on-line communication link over a cellular network were used, a mobile unit would be forced to stop at the edge of network coverage in order to maintain the communication link. The present invention overcomes these limitations of wireless communication by broadcasting short messages over one or several separate communication sessions that do not require interactive or substantial bidirectional communication. Furthermore, the present invention can resume transmissions when the communication link is lost without sacrificing a significant loss of previously transmitted data.

Each mobile unit 22, 24, 26, 28, and 30 can be associated with a vehicle, person, or other mobile entity. Each mobile unit 22, 24, 26, 28, and 30 operates by executing the current operating code located in the mobile unit. The mobile units 22, 24, 26, 28, and 30 may perform various communicating, locating, and fleet management functions as described in U.S. Patent No. 5,155,689 entitled *"Vehicle Locating and Communicating Method and Apparatus"*.

In operation, manager host 16 can accomplish remote patching of operating code located in mobile units 20, 22, 24, 26, 28 and 30 by transmitting a set of discrete patch messages through communication network 12. The discrete patch messages collectively represent a patch file defining at least one patch to be made to current operating code located in one or more of mobile units 20, 22, 24, 26, 28 and 30. Each mobile unit 20, 22, 24, 26, 28 and 30 is operable to receive the patch messages transmitted by manager host 16. Each mobile unit 20, 22, 24, 26, 28 and 30 can create patched operating code by merging the defined patch or patches with the current operating code and can switch execution to the patched operating code. The discrete patch messages can comprise packets that can be transmitted before or after voice communication, during dead time of conversation or other suitable time period for transmitting packet sized data.

Manager host 16 can address patch messages to mobile units as appropriate for the patch file being transmitted. Manager host 16 can address a patch message to one of the mobile units, to all of the mobile units, or to a group of mobile units. A patch message addressed to all of the mobile units can be referred to as a broadcast message. A patch message addressed to a group can correspond to mobile units associated with client host 18 or client host 20. For example, manager host 16 can address a patch message such that it will be transmitted to both mobile unit 22 and mobile unit 24 associated with client host 18.

In the embodiment of FIGURE 1, enhanced services complex 14 of communication network 12 operates to handle all messages transmitted between manager host 16, client host 18, client host 20 and mobile units 22, 24, 26, 28, and 30. In particular, enhanced services complex 14 maintains information to establish communication with mobile units 22, 24, 26, 28, and 30 using communication

network 12. Enhanced services complex 14 then ensures that message data is delivered with integrity. Part of the operation of enhanced services complex 14 is to handle patch messages transmitted by manager host 16 to mobile units 22, 24, 26, 28, and 30. Enhanced services complex 14 recognizes whether a patch message is addressed to one mobile unit, a group of mobile units or all mobile units, establishes communication with the appropriate mobile units, and transmits the discrete patch message. Application Serial No. 08/095,166 entitled "Method and Apparatus for a Nation-wide Cellular Telephone Network" describes in detail the components and functionality of enhanced services complex 14, and is herein incorporated by reference. Enhanced services complex 14 and manager host 16 can be separate components in system 10, or integrated into a single platform as described in Application Serial No. 08/095,166.

A technical advantage of the present invention is allowing remote patching of operating code located in a mobile unit without physically touching the mobile unit or establishing an on-line communication link. An additional technical advantage of the present invention is the provision of mobile units operable to interpret patch messages and create patched operating code therefrom without affecting the normal functions performed by the mobile unit. According to another technical advantage of the present invention, a mobile unit can provide feedback regarding the current version of operating code located in the mobile unit and can provide verification of completion of patches to the current operating code.

FIGURE 2 is a schematic representation of one embodiment of a manager host 16. Manager host 16 communicates with mobile units using link 40 to communication network 12. Link 40 may be one or a combination of dedicated or switched telephone lines in

the mobile or land-line public switched telephone network (PSTN), or other land-based communication links, satellite-based communication links, or any other suitable communication link that allows manager host 16 to transmit messages to or receive messages from communication network 12.

A message received from a mobile unit enters manager host 16 through a modem, DTMF coder/decoder, or other data encoder 42 and passes to central controller 44. Conversely, a message transmitted to a mobile unit passes from central controller 44 through coder/decoder 42 to communication network 12.

Memory 46 and input/output device 48 are coupled to central controller 44. Central controller 44 receives and processes messages from mobile units. Central controller 44 also transmits messages to mobile units including patch messages addressed to appropriate mobile units. Memory 46 may be RAM, ROM, CD-ROM, removable memory devices, or any other device that allows storage and retrieval of data. Input/output device 48 includes any variety of output devices, such as a display, a speaker to provide audible information, removable storage media, or any other appropriate output device. Input/output device 48 may also include a variety of input devices, such as a keyboard, mouse, touchscreen, removable storage media, or any other appropriate input device.

FIGURE 3 is a schematic representation of one embodiment of a mobile unit, indicated generally at 50. Mobile units 22, 24, 26, 28, and 30 of FIGURE 1 may be constructed in a similar manner as mobile unit 50 of FIGURE 3. Mobile unit 50 comprises a mobile communications device 52 including an antenna 54 coupled to a transceiver 56. A handset 58 is also coupled to transceiver 56. Transceiver 56 is coupled to bus drivers 60 which in turn are coupled to a modem, DTMF

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coder/decoder, or other data encoder 62. Coder/decoder 62 is coupled to processor 64. Transceiver 56 is also coupled to processor 64 over link 65.

Processor 64 is coupled to a first flash bank 66 and to a second flash bank 68 and to a RAM 70. First flash bank 66, second flash bank 68, and RAM 70 may be RAM, ROM, CD-ROM, removable memory devices, or any other device that allows storage and retrieval of data. Furthermore, first flash bank 66, second flash bank 68, and RAM 70 may be separate devices or portions of one or more devices. An input device 72 and an output device 74 are also coupled to processor 64.

In operation, mobile communications device 52 receives and transmits messages over communication network 12. The messages received by transceiver 56 are passed to processor 64 either over link 65 or over other appropriate path such as bus drivers 60 and coder/decoder 62. Processor 64 manages the operation of mobile unit 50. Handset 58 provides additional voice or data communication. First flash bank 66 and second flash bank 68 are operable to store operating code for execution by processor 64, and RAM 70 is operable to provide processor 64 with memory work space.

In operation, processor 64 executes current operating code out of first flash bank 66 or second flash bank 68. Processor 64 performs functions according to the current operating code. When processor 64 receives one or more patch messages representing a complete patch file, processor 64 analyzes the patch messages to determine whether processor 64 should initiate a patch process. If processor 64 is currently executing an appropriate version of operating code suitable to receive the defined patch or patches, processor 64 initiates the patch process to implement the patch or patches defined by the patch messages.

Processor 64 stores patch information defined by the patch messages in RAM 70. If processor 64 is executing out of first flash bank 66, processor 64 creates patched operating code in second flash bank 68 by merging the patch information with the current operating code. After the patched operating code is created, processor 64 sets a flag indicating that further execution should occur out of second flash bank 68. Processor 64 then initiates a reset so that mobile unit 50 restarts with processor 64 executing the patched operating code located in second flash bank 68. An analogous switch from second flash bank 68 to first flash bank 66 can occur when the current operating code is located in second flash bank 68. In this manner, mobile unit 50 can enhance, correct, or replace the current operating code based upon discrete patch or download messages transmitted over communication network 12.

The components of mobile unit 50 shown in FIGURE 3 may be packaged into one or more housings. Mobile unit 50 may be mounted to a vehicle or associated with other movable objects. Mobile unit 50 may also be packaged as a portable, hand-held device that provides personal functions. For example, a portable, hand-held mobile unit 50 may be used by surveyors, rescue teams, individuals that may change forms of transportation, or any other application requiring portability of mobile unit 50.

FIGURE 4 illustrates one embodiment of message formats for transmission over communication network 12 to mobile units. The first three message types relate to patch messages for incorporating patches of code into existing code on the mobile units. The last three messages relate to direct program download messages for replacing the current code in the mobile unit with a new version of code. All message formats shown in FIGURE 4 are inserted in a general message format, that begins

with a start, message type, length, and identifier field and ends with a checksum and end field. These messages can be sized to accommodate optimal or preferred message sizes for different technologies in communication network 12.

The patch messages include: a new patch file message, an append patch message, an append data message, and a delete unincorporated patches message. These patch messages are designated as type "0", "1", "2", and "3" respectively. In the illustrated embodiment, each patch message includes up to 252 bytes of information.

A new patch file message operates to indicate to a mobile unit that a set of one or more patch messages representing a new patch file is being transmitted. As described above, the set of patch messages will define a patch or patches to be made to current operating code. The new patch file message also operates to define the first patch.

A new patch file message includes eight fields, as shown in FIGURE 4. The new patch file message includes a "message type" field which is one byte and holds a "0" indicating that the message is a new patch file message. A "patch file ID" field is one byte and comprises a unique identification number for the patch file represented by the set of patch messages. Each patch message associated with the patch file includes this unique patch file ID. A "software version" field is eight bytes and provides an indication of which operating code versions are appropriate for receiving the patch or patches contained in the represented patch file. The software version can operate as a mask to indicate such things as phase, release, revision, and modifications made. A "number of patches" field is one byte and gives the total number of patches that are included in the set of patch messages identified by the patch file ID. Each patch may be represented by one or more discrete patch

messages. A "memory address to be modified by patch" field is four bytes and identifies the memory address of the current operating code to be modified by the first patch which is defined by the new patch file message. A "starting address in patch memory space" field is four bytes and defines the starting address in the patched operating code where the first patch is to be written. A "number of bytes of data" field is one byte and defines the number of bytes of information in a "patch data" field. Lastly, the "patch data" field can include from one to 232 bytes and holds the data associated with the first patch.

An append patch message operates to define an additional patch to be made to current operating code. The append patch message includes six fields that are similar to fields in the new patch file message. A "message type field" is one byte and is a "1" to indicate an append patch message. A "patch file ID" field is one byte and comprises the unique identification number for the patch file. This patch file ID must match the patch file ID contained in the previous new patch file message. A "memory address to be modified by patch" field is four bytes and identifies the memory address of the current operating code to be modified by the additional patch defined by the append patch message. A "starting address in patch memory space" field is four bytes and defines the starting address in the patched operating code where the additional patch is to be written. A "number of bytes of data" field is one byte and defines the number of bytes of information in a "patch data" field. Lastly, the "patch data" field can include from one to 241 bytes and holds the data associated with the additional patch.

An append data message operates to provide patch extension data where the data associated with a patch requires more space than is available in the patch data field of a new patch file message or an append patch

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message. The append data message includes three fields. A "message type" field is one byte and is a "2" to indicate an append data message. A "patch file ID" field is one byte and comprises the unique identification number for the patch file. This patch file ID must match the patch file ID contained in the previous new patch file message. Lastly, a "patch extension data" field can include from one to 250 bytes and holds additional data associated with a patch. There can be one or more append data messages associated with a new patch file message or an append patch message depending upon the number of bytes of data needed to define the associated patch.

The delete unincorporated patches message includes a single "message type" field which is one byte and holds a "3". After receiving an entire set of patch messages, the mobile unit may perform an end-to-end checksum of the patched messages or the patched operating code. If there is a checksum error, the mobile unit informs manager host 16 of the checksum error. Manager host 16 may then send the delete unincorporated patches message to the mobile unit so that the transmission of patch messages can be repeated.

A new patch file message defines one patch, and each append patch message defines an additional patch. Thus, for a set of discrete patch messages, the total of the new patch file message plus the append patch messages equals the "number of patches" field in the new patch file message. The set of discrete patch messages also can include a number of append data messages. Append data messages provide extension data as necessary for a new patch file message or one of the append patch messages. Append data messages complete the patch definition if any of the patches require more bytes of data than available in the "patch data" field of a new patch file message or an append patch message.

Using the patch message formats illustrated in FIGURE 4, a complete patch file may be transmitted through communication network 12 using at least one discrete patch message representing the patch file. Each discrete patch message can have a separate checksum associated with it. Thus, each message can be separately verified. A mobile unit can initiate a patch process after all patch messages in a set are received and verified. For the embodiment of patch messages illustrated in FIGURE 4, the patch messages are received in proper sequence although the length of time between receipt of each patch message is unimportant. Other embodiments of discrete patch messages can include additional fields that define such things as sequence and could be received in any order. Each mobile unit can operate to determine whether a patch message has been missed and to request a patch message or complete set to be retransmitted.

A patch file and associated patch messages can be generated manually or automatically. In general, a patch may insert a jump command into the current operating code causing a jump to additional code. The additional code can return execution to the point following the jump command. A patch may alternatively simply overwrite current operating code. Additionally, the current operating code may include empty space following each module to provide room for expansion by patches. Other embodiments of patches are possible. The embodiments of patch messages and patches described with respect to FIGURE 4 are not intended nor should be construed to limit the scope of the present invention.

The direct program download messages include: a prepare for download, a download message, and a program checksum message. These patch messages are designated as type "4", "5" and "6", respectively. In the illustrated

embodiment, each download message includes up to 109 bytes of information.

The prepare for download message includes a single "message type" field which is one byte and holds a "4", which informs the mobile unit that a new program download is about to be transmitted. In response, the mobile unit erases first flash bank 66 or second flash bank 68 in preparation for receiving new operating code.

The download message transmits the actual data that combines to form the new operating code that replaces the current operating code of the mobile unit. Normally, the mobile unit receives several download messages that combine to form the new operating code. The download message includes six fields, as shown in FIGURE 4. The download message has a "message type" field which is one byte and holds a "5" indicating that the message is a download message. The "record type" field contains two bytes and indicates the format of the remaining data in the message. The "record length" field is one byte long and indicates the length of the remaining message. The "starting address" field can be between two and four bytes long and defines a starting address in first flash bank 66 or second flash bank 68 to insert the data contained in the download message. The "program data" field contains up to 100 bytes that define a portion of the new operating code for the mobile unit. The "record checksum" field contains a single byte that is used by the mobile unit to confirm the integrity of the received download message.

The new program checksum message includes two fields. A one-byte "message type" field holds a "6", which informs the mobile unit that the program download is complete and that a program checksum value follows. A "new checksum" field contains a two-byte checksum to verify the integrity of the new operating code combined from the download messages received at the mobile unit.

Using the download message formats illustrated in FIGURE 4, new operating code may be transmitted through communication network 12 using at least one download message representing the new operating code. Each download message includes a separate record checksum to verify the integrity of each download message transmission. Upon receipt and verification of a single download message, the mobile unit transmits an acknowledgement to manager host 16 that the download message has been accurately received. The program data from each download message is then loaded into first flash bank 66 or second flash bank 68 at the address specified in the download message. Additionally, an end-to-end checksum on the new operating code can be used to verify the complete set of download messages loaded in memory. After verifying receipt of the new operating code, the mobile unit swaps out the current operating code with the new operating code and initiates a reset to execute the new code. The download messages can be received in any sequence and over any number of communication sessions. By receiving acknowledgements from the mobile unit, manager host 16 or enhanced services complex 14 can monitor which download messages have been sent and when the transmission of the set of download messages is complete.

FIGURE 5 is a flow chart showing one embodiment of a method of operation of a mobile unit for remote patching operating code. The method of FIGURE 5 is one embodiment of a patch process by which a mobile unit can receive a set of patch messages collectively representing a patch file, can merge the defined patches with the current operating code to create patched operating code, and can switch execution to the patched operating code. A similar operation could be used to receive several download messages defining new operating code to replace the current operating code in the mobile unit.

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In step 100, the mobile unit receives an initial patch message which includes a software version. In one embodiment of the present invention, the initial patch message comprises a new patch file message as described with respect to FIGURE 4. In step 102, the mobile unit compares the software version provided by the initial patch message with the software version of the mobile unit's current operating code. In step 104, the mobile unit determines whether the software version of the current operating code is appropriate for the patches defined by the set of patch messages. If not, the mobile unit transmits an appropriate error message in step 106. This error message can be addressed to manager host 16, an associated client host 18 and 20, or both.

If the current operating code is an appropriate version, the mobile unit checks whether the initial patch message is valid in step 108. This validity check can comprise a checksum technique or other appropriate validity check. If the patch message is not valid, the mobile unit transmits an appropriate error message in step 106. If the patch message is valid, then the mobile unit stores the associated patch information in step 110. The mobile unit may also send an acknowledgment that the patch message was valid. In one embodiment, the patch information is stored in RAM 70 that is used as a work space. In step 112, the mobile unit determines whether there are additional patch messages to be received. If so, the mobile unit receives the next patch message in step 114. In one embodiment of the present invention, the next patch message comprises either an append patch message or an append data message as described with respect to FIGURE 4. The mobile unit checks the validity of the next patch message in step 108, and, if valid, stores the patch information in step 110. If the next patch message is not valid, the mobile unit sends an appropriate error message in step 106.

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The mobile unit continues in this manner until all patch messages are received for the patch file. The mobile unit uses the "number of patches" defined by the new patch message to determine the total number of patch messages associated with a patch file. In one embodiment of the present invention, there is a new patch file message plus a number of append patch messages, the total equal to the "number of patches" field in the new patch file message format shown in FIGURE 4. The number of append data messages can be determined from respective "number of bytes of data" fields in the new patch file message or the append patch messages.

As described above, each patch message is a discrete message. When the mobile unit identifies an incoming message as a patch message, the mobile unit handles the patch message accordingly. The patch messages can be transmitted over a long or short period of time, and in one or many separate communication sessions. The mobile unit waits until a complete set of patch messages has been received and then continues to step 116 of FIGURE 5. Alternatively, the mobile unit may begin to create the patched operating code while still receiving additional patch messages from manager host 16.

In step 116, the mobile unit creates patched operating code. To do so, the mobile unit merges the patch or patches defined by the set of patch messages into the current operating code to create a patched operating code. One embodiment of this process is described with respect to FIGURE 6. This process is not necessary if the mobile unit receives a set of download messages that in themselves define the new operating code to be executed.

After creating the patched operating code, the mobile unit verifies the patched operating code in step 118. This step can be performed using a checksum or other appropriate technique. In step 120, the mobile

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unit determines whether the result of verification indicates valid patched operating code. If not, the mobile unit transmits an appropriate error message in step 106. The mobile unit may then receive a delete unincorporated patch messages from manager host 16, and the process can be repeated at step 100.

If the patched operating code is valid, the mobile unit resets and restarts such that execution is switched to the patched operating code in step 122. One embodiment of this reset and restart process is described with respect to FIGURE 7. After patching is completed, the mobile unit executes and operates according to the patched operating code. If a new set of patch messages is received, the mobile unit repeats the patching process to create and switch to new patched operating code. In this manner, the current operating code in the mobile unit may be remotely patched to provide enhancements or corrections as part of ongoing support of the mobile unit. Similarly, a set of download messages can provide an entirely new version of software to replace the current version.

FIGURE 6 is a flow chart showing one embodiment of a method of creating patched operating code. In this embodiment, the mobile unit comprises first flash bank 66 and second flash bank 68 and can execute operating code located in either flash memory bank. The mobile unit also comprises RAM 70 holding the patch information supplied by the set of patch messages.

In step 130, the mobile unit prepares the second flash bank 68 to receive patched code. Second flash bank 68 is the one in which the current operating code is not located. In step 132, the mobile unit begins the process of merging patches into the current operating code. In step 132, the mobile unit determines whether the next memory address of the current operating code in the first flash bank is to be modified by a patch beginning with

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the first memory address that holds part of the current operating code. If so, in step 134, the mobile unit merges the patch with the current operating code and stores the resulting patched operating code in the second flash bank 68. In one embodiment of the present invention, the mobile unit steps through byte-by-byte, and upon detecting a patch, inserts bytes of a patch. After inserting bytes of a patch, the mobile unit continues with the next byte in the current operating code. If the next memory address in the first flash bank 66 is not to be modified, the mobile unit copies the associated byte of operating code into the second flash bank 68 in step 136.

In step 138, the mobile unit determines whether patching is complete. If not, the mobile unit continues at step 132. This process proceeds byte-by-byte, sequentially, until a current operating code memory address matches a patch message "memory address to be modified" field. The mobile unit continues merging patches with the current operating code until the current operating code has been processed completely from beginning to end and all patches have been inserted. In this manner, patched operating code is created in the second flash bank 68 by merging the current operating code in first flash bank 66 with the patches defined by the set of patch messages. The second flash bank 68 then contains complete patched operating code that is ready for verification and execution by the mobile unit.

FIGURE 7 is a flow chart showing one embodiment of a method of resetting and restarting with patched or new operating code stored in second flash bank 68. This process operates to switch execution to either patched operating code generated from a set of patch messages or new operating code generated from a set of download messages. The embodiment described with reference to FIGURE 7 comprises switching execution from first flash

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bank 66 which holds the current operating code to second flash bank 68 which holds the patched or new operating code. An analogous method could be used to switch from second flash bank 68 to first flash bank 66.

In step 150, the mobile unit copies into RAM 70 the code needed to switch execution to second flash bank 68. In this embodiment of the present invention, this code comprises a copy of boot code executed by the mobile unit when a reset occurs. The boot code includes instructions to cause execution of the patched or new operating code stored in second flash bank 68. In step 152, the mobile unit executes a system reset from RAM to restart and switch execution to second flash bank 68. In this embodiment, the mobile unit accomplishes the switch by setting a flag in RAM indicating that the mobile unit should execute operating code located in second flash bank 68. After the reset occurs, the mobile unit begins power-up with the patched or new operating code. Alternatively, the mobile unit may physically swap the contents of first memory bank 66 and second memory bank 68, perform a reset, and execute the new or patched operating code now residing in first memory bank 66.

In step 154, the mobile unit determines whether the power-up checksum is valid. If the power-up checksum is valid, then the patched or new operating code located in the second flash bank 68 is valid, and the mobile unit continues execution of the patched or new operating code. If the power-up checksum is not valid, then in step 156, the mobile unit executes another system reset from RAM to restart and switch execution back to first flash bank 66. Thus, if the patched or new operating code is not valid, the mobile unit returns to executing the current operating code as it existed prior to receiving a set of patch messages or download messages.

In an alternative embodiment, the mobile unit copies the contents of second flash bank 68 to first flash bank

66 after verifying the receipt and compilation of patched or new operating code. Mobile unit then executes the patched or new operating code residing in first flash bank 66. If the operating code in first flash bank 66 becomes corrupted, then mobile unit can switch execution to the copy of the same operating code stored in second flash bank 68.

The system and method of remote patching or updating of operating code located in a mobile unit of the present invention provides numerous technical advantages. A manager host can provide support for operating code located in one or more mobile units. The manager host can transmit a set of discrete patch messages collectively representing a patch file defining one or more patches to be made to operating code currently executed by one or more mobile units. The patches can comprise enhancements or corrections to the current operating code. The mobile units are capable of receiving the patch messages, creating patched operating code, and switching execution to the patched operating code without interrupting normal functions. The manager host can also transmit a set of discrete download messages collectively representing new operating code to replace the current operating code being executed by the mobile unit.

Although the present invention has been described with respect to several embodiments, it should be understood that various changes, substitutions and alterations can be made thereto without departing from the spirit and scope of the invention as defined by the appended claims.

WHAT IS CLAIMED IS:

~~1. A system for remote patching of operating code~~ located in a mobile unit, comprising:

a manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch; and

a first mobile unit operable to receive the at least one discrete patch message, the first mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the first mobile unit and to switch execution to the ~~patched operating code~~.

2. The system of Claim 1, wherein the current operating code and the patched operating code comprise object code for a processor located in the first mobile unit.

3. The system of Claim 1, wherein the at least one discrete patch message collectively represent a patch file that defines the at least one patch.

4. The system of Claim 1, wherein the at least one discrete patch message comprises one discrete patch message.

5. The system of Claim 4, wherein the one discrete patch message defines one patch to be made to the current operating code.

6. The system of Claim 1, wherein the at least one discrete patch message comprises a plurality of discrete patch messages.

7. The system of Claim 6, wherein the at least one discrete patch message defines a plurality of patches to be made to the current operating code.

8. The system of Claim 7, wherein the at least one discrete patch message includes at least one new patch file message and at least one append patch message.

9. The system of Claim 8, wherein the at least one discrete patch message further includes at least one append data message.

10. The system of Claim 1, wherein the mobile unit separately verifies the at least one discrete patch message.

11. The system of Claim 1, wherein the mobile unit separately verifies the at least one discrete patch message, and the mobile unit verifies the patched operating code.

~~12. The system of Claim 1, further comprising:~~

a second mobile unit operable to receive the at lest one patch message, the second mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the second mobile unit and to switch execution to the patched operating code; and

wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to ~~the first mobile unit but not to the second mobile unit.~~

~~13. The system of Claim 12, wherein the first mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.~~

14. The system of Claim 12, wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit and to the second mobile unit.

15. The system of Claim 14, wherein the first mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.

16. The system of Claim 1, wherein the wireless communication network includes an enhanced services complex operable to establish communication with the first mobile unit and to transmit the at least one patch message to the first mobile unit.

~~17. A mobile unit, comprising:~~

a memory operable to store current operating code;

a receiver operable to receive the at least one discrete patch message transmitted through a wireless communication network, the at least one discrete patch message defining at least one patch to be made to the current operating code; and

a processor coupled to the memory and to the receiver, the processor operable to execute the current operating code, to process the at least one discrete patch message, to create patched operating code by merging the at least one patch with the current operating code, and to switch execution to the patched operating code.

18. The system of Claim 17, wherein the current operating code and the patched operating code comprise object code for the processor.

~~19. The system of Claim 17, further comprising:~~

a second memory coupled to the processor; and

wherein the processor is further operable to store patch information provided by the at least one discrete patch message in the second memory.

~~20~~ 23. The system of Claim ~~19~~ 22, further comprising:

a third memory coupled to the processor; and

wherein the processor is further operable to store the patched operating code in the third memory after the patched operating code is created.

~~21. The system of Claim 20, wherein the processor~~ is further operable to switch execution between the first ~~memory and the third memory.~~

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~~22~~. The system of Claim ~~21~~, wherein the processor is further operable to switch execution between the first memory and the third memory after a system reset.

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~~23. The system of Claim 20, wherein the first~~ memory comprises a ~~first~~ flash bank, the second memory ~~comprises~~ a random-access memory, and the third memory ~~comprises a second flash bank.~~

~~24. A set of discrete patch messages for defining a~~ plurality of patches to be made to current operating code located in a mobile unit, comprising:

a new patch file message operable to define a first patch to be made to current operating code;

an append patch message operable to define an additional patch to be made to the current operating code; and

an append data message operable to extend patch definition information.

25. The set of patch messages of Claim 24, wherein the new patch file message comprises information including a patch file ID, a software version, a number of patches, and first patch data.

26. The set of patch messages of Claim 25, wherein the append patch message comprises information including ~~a patch file ID, and additional patch data.~~

27. The set of patch messages of Claim 26, wherein the append data message comprises information including a patch file ID, and patch extension data.

~~28. A method of operation of a mobile unit for~~ remote patching of operating code, comprising:

receiving at least one discrete patch message defining at least one patch to be made to current operating code located in the mobile unit;

creating patched operating code by merging the at least one patch with the current operating code to create the patched operating code; and

~~switching execution to the patched operating code.~~

29. The method of Claim 28, wherein the step of creating comprises creating patched operating code comprising object code for a processor located in the mobile unit.

30. The method of Claim 28, further comprising the step of verifying each patch message after the step of receiving.

31. The method of Claim 28, further comprising the step of verifying the patched operating code after the step of creating.

32. The method of Claim 28, wherein the step of creating patched operating code comprises the steps of:

processing the current operating code byte-by-byte to determine whether a patch is to be made to each byte of the current operating code; and

storing the patched operating code in a memory byte-by-byte as the current operating code is processed.

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~~33. The method of Claim 28, wherein the step of~~ switching comprises the steps of:

copying boot code into a ~~first~~ memory;

executing a system ~~reset~~ from the first memory such that execution is switched from a second memory to a third memory; and

~~restarting using patched operating code in the third memory.~~

34. The method ~~of~~ Claim 33, further comprising the step ~~of~~ validating patched operating code executed from ~~the third~~ memory.

35. A method for remote patching of operating code located in a mobile unit, comprising:

transmitting at least one discrete patch message defining at least one patch through a communication network;

receiving the at least one patch message in a first mobile unit, the first mobile unit executing current operating code located in the first mobile unit;

creating patched operating code in the first mobile unit by merging the at least one patch with the current operating code; and

switching execution in the first mobile unit to the patched operating code.

36. The method of Claim 35, wherein the step of creating comprises creating patched operating code comprising object code for a processor located in the first mobile unit.

37. The method of Claim 35, wherein the step of receiving comprises separately verifying the at least one discrete patch message.

38. The method of Claim 37, wherein the step of switching comprises verifying the patched operating code.

39. The method of Claim 35, wherein the step of transmitting is accomplished using an enhanced services complex in a communication network.

40. The method of Claim 35, wherein the step of transmitting further comprises addressing the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to a second mobile unit.

~~41. The method of Claim 40, wherein the first~~ mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.

42. The method of Claim 40, wherein the first mobile unit and the second mobile unit are associated ~~with a first client host.~~

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SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

ABSTRACT OF THE DISCLOSURE

A system (10) for remote patching or updating of operating code located in a mobile unit (22, 24, 26, 28, or 30) is provided. The system (10) includes a manager host (16) and a mobile unit (22, 24, 26, 28, or 30). The manager host (16) is operable to initiate transmission through a communication network (12) of at least one discrete patch message defining at least one patch. The mobile unit (22, 24, 26, 28, or 30) is operable to receive the at least one patch message. The mobile unit (22, 24, 26, 28, or 30) is also operable to create patched operating code by merging the patch with current operating code located in the mobile unit (22, 24, 26, 28, or 30) and to switch execution to the patched operating code. The mobile unit (22, 24, 26, 28, or 30) can also receive at least one download message defining new operating code to replace the current operating code.

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FIG. 1

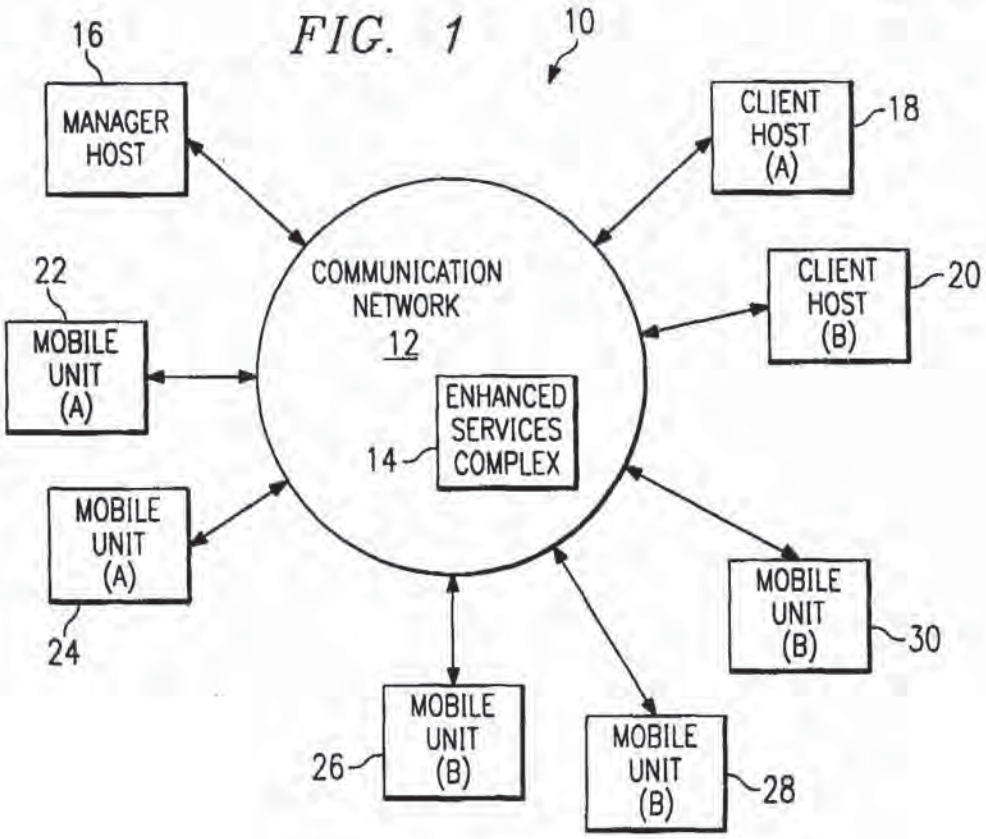


FIG. 2

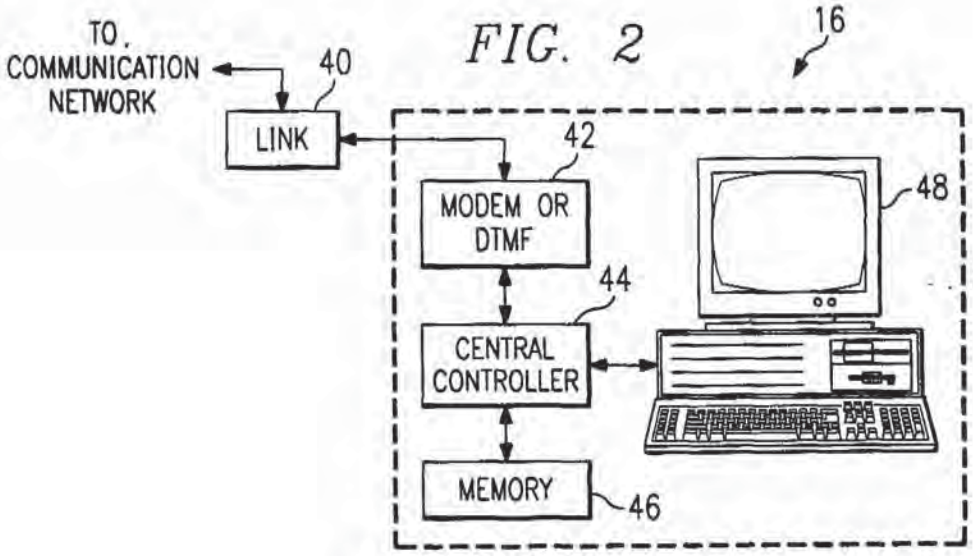
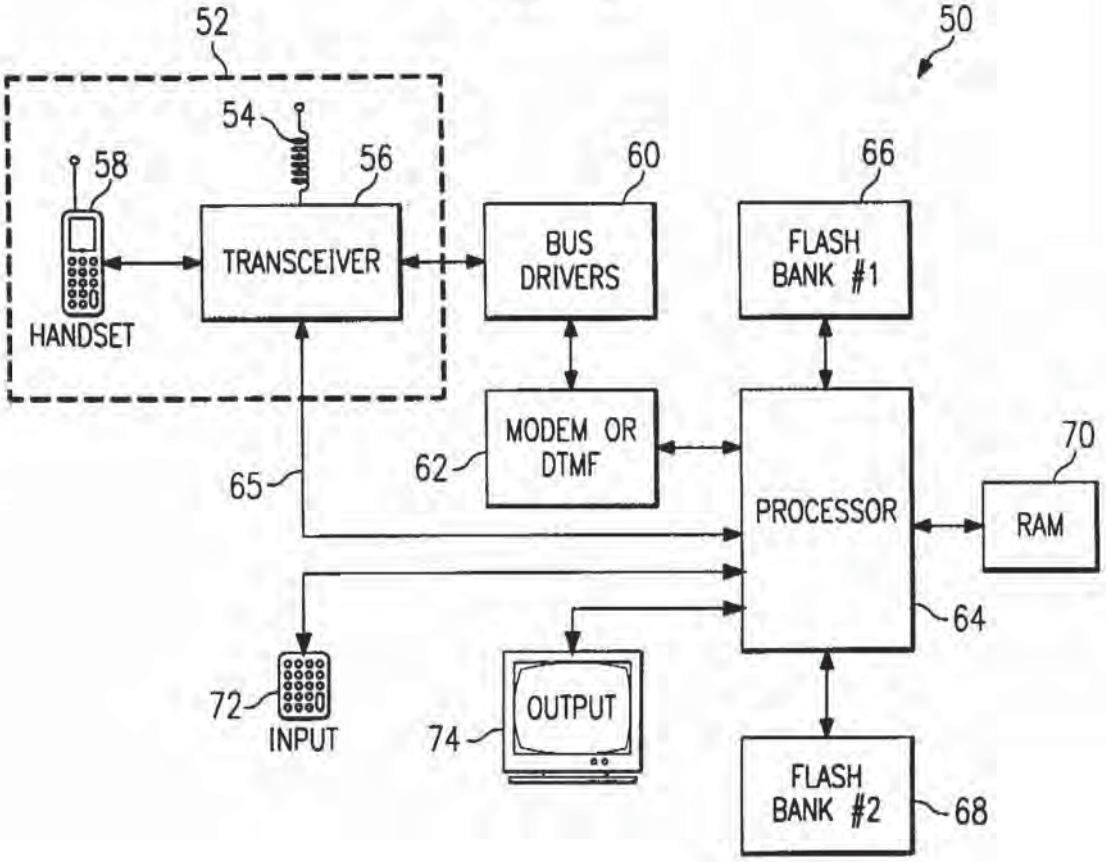


FIG. 3


52
50
54
58
56
60
66
TRANSCEIVER
BUS DRIVERS
FLASH BANK #1
HANDSET
MODEM OR DTMF
62
65
PROCESSOR
70
RAM
64
72
INPUT
OUTPUT
74
FLASH BANK #2
68

PRINT OF DRAWINGS AS ORIGINAL FILED

FIG. 4

MESSAGE	TYPE	MESSAGE FORMAT							
NEW PATCH FILE MESSAGE	0	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTE)	SOFTWARE VERSION (8 BYTES)	NUMBER OF PATCHES (1 BYTE)	MEMORY ADDRESS TO BE MODIFIED BY PATCH (4 BYTES)	STARTING ADDRESS IN PATCH MEMORY SPACE (4 BYTES)	NUMBER OF BYTES OF DATA (1 BYTE)	PATCH DATA (1-232 BYTES)
APPEND PATCH MESSAGE	1	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTES)	MEMORY ADDRESS TO BE MODIFIED BY PATCH (4 BYTES)		STARTING ADDRESS IN PATCH MEMORY SPACE (4 BYTES)	NUMBER OF BYTES OF DATA (1 BYTE)	PATCH DATA (1-241 BYTES)	
APPEND DATA MESSAGE	2	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTE)	PATCH EXTENSION DATA (1-250 BYTES)					
DELETE UNINCORPORATED PATCHES MESSAGE	3	MESSAGE TYPE (1 BYTE)							
PREPARE FOR DOWNLOAD MESSAGE	4	MESSAGE TYPE (1 BYTE)							
DOWNLOAD MESSAGE	5	MESSAGE TYPE (1 BYTE)	RECORD TYPE (2 BYTES)	RECORD LENGTH (1 BYTE)	STARTING ADDRESS (2-4 BYTES)	PROGRAM DATA (1-100 BYTES)			RECORD CHECKSUM (1 BYTE)
PROGRAM CHECKSUM MESSAGE	6	MESSAGE TYPE (1 BYTE)	PROGRAM CHECKSUM (2 BYTES)						

Petitioner Microsoft Corporation - Ex. 1002, p. 50

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FIG. 5

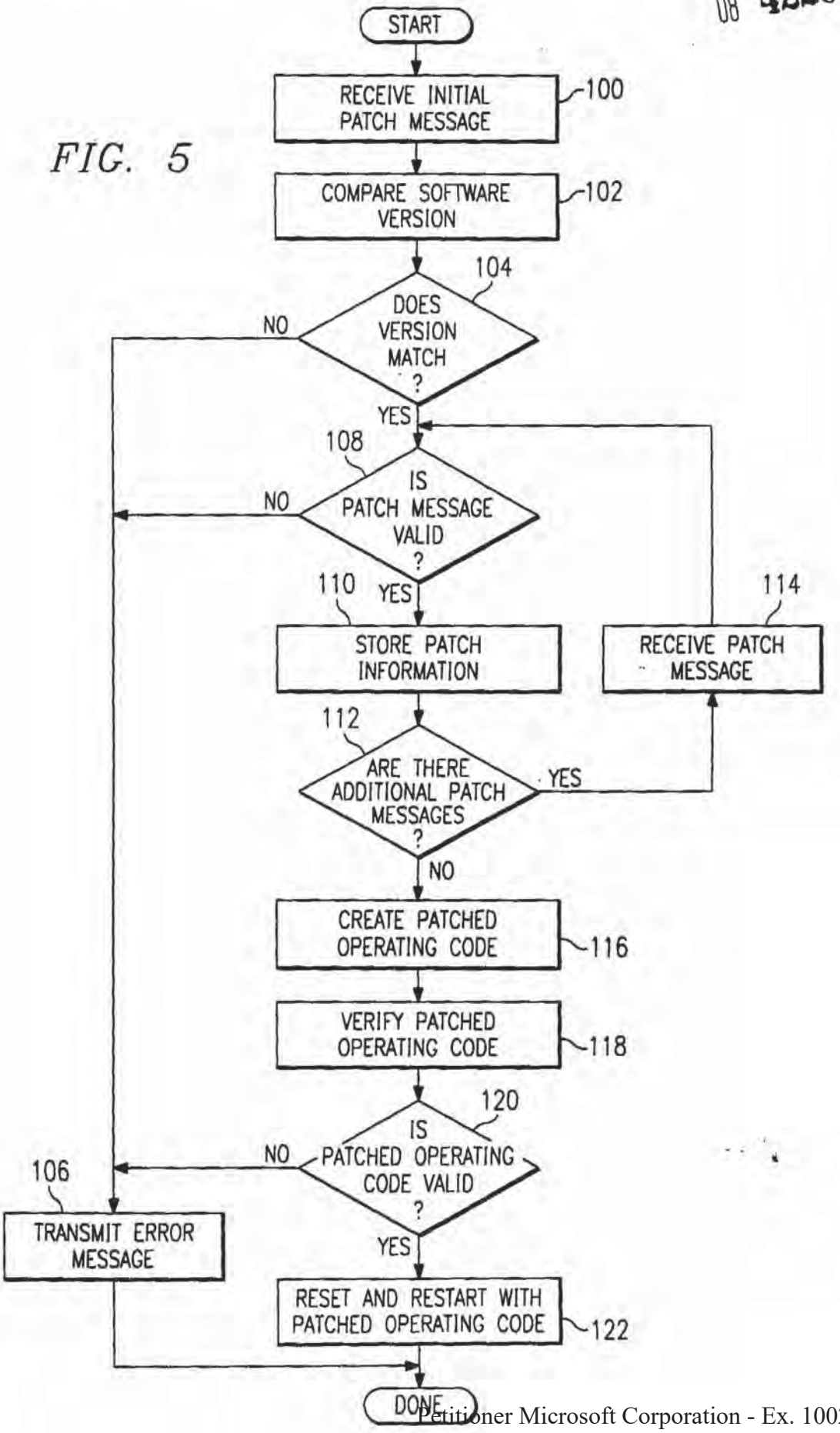

FIG. 6

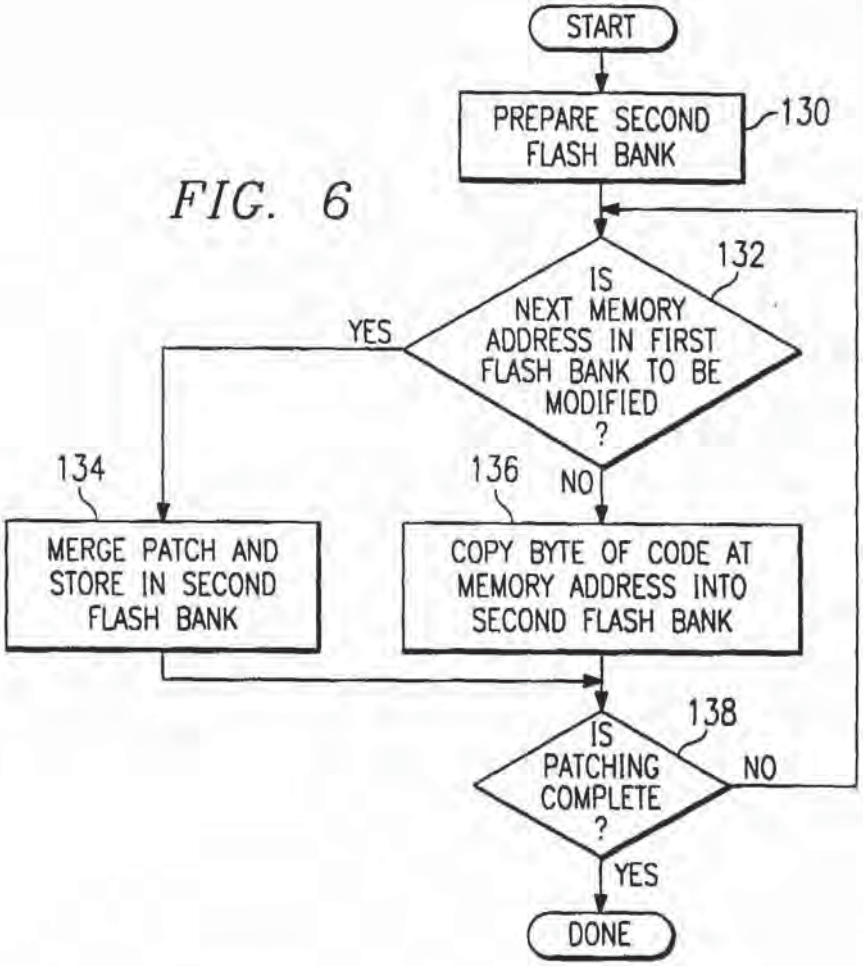
START
PREPARE SECOND FLASH BANK
130
IS NEXT MEMORY ADDRESS IN FIRST FLASH BANK TO BE MODIFIED ?
132
YES
NO
134
MERGE PATCH AND STORE IN SECOND FLASH BANK
136
COPY BYTE OF CODE AT MEMORY ADDRESS INTO SECOND FLASH BANK
IS PATCHING COMPLETE ?
138
NO
YES
DONE

FIG. 7

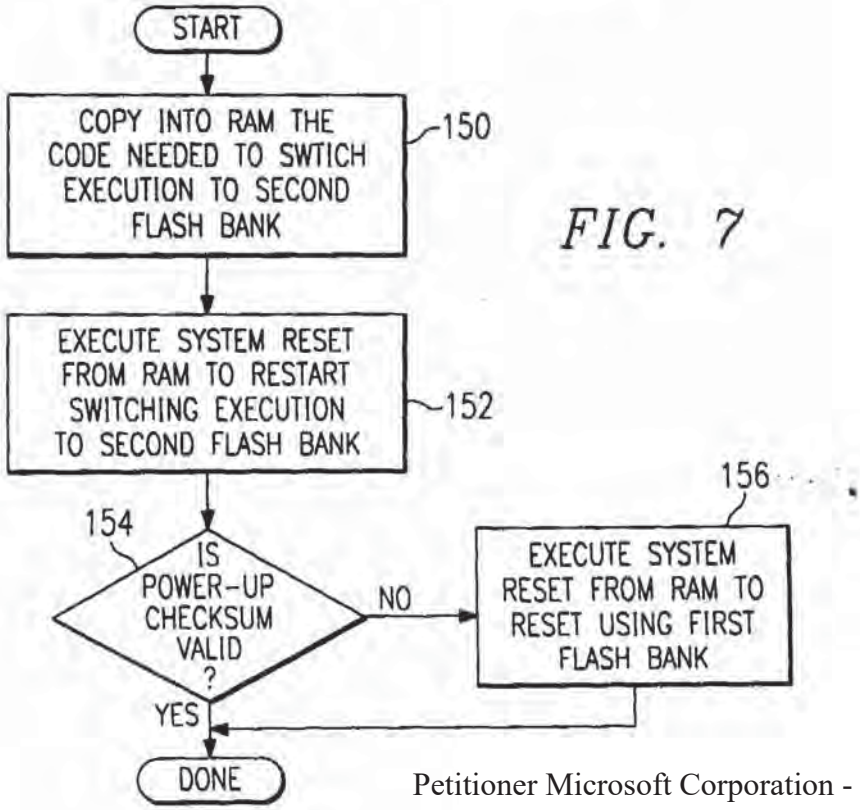
START
COPY INTO RAM THE CODE NEEDED TO SWTICH EXECUTION TO SECOND FLASH BANK
150
EXECUTE SYSTEM RESET FROM RAM TO RESTART SWITCHING EXECUTION TO SECOND FLASH BANK
152
154
IS POWER-UP CHECKSUM VALID ?
NO
156
EXECUTE SYSTEM RESET FROM RAM TO RESET USING FIRST FLASH BANK
YES
DONE

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FIG. 1

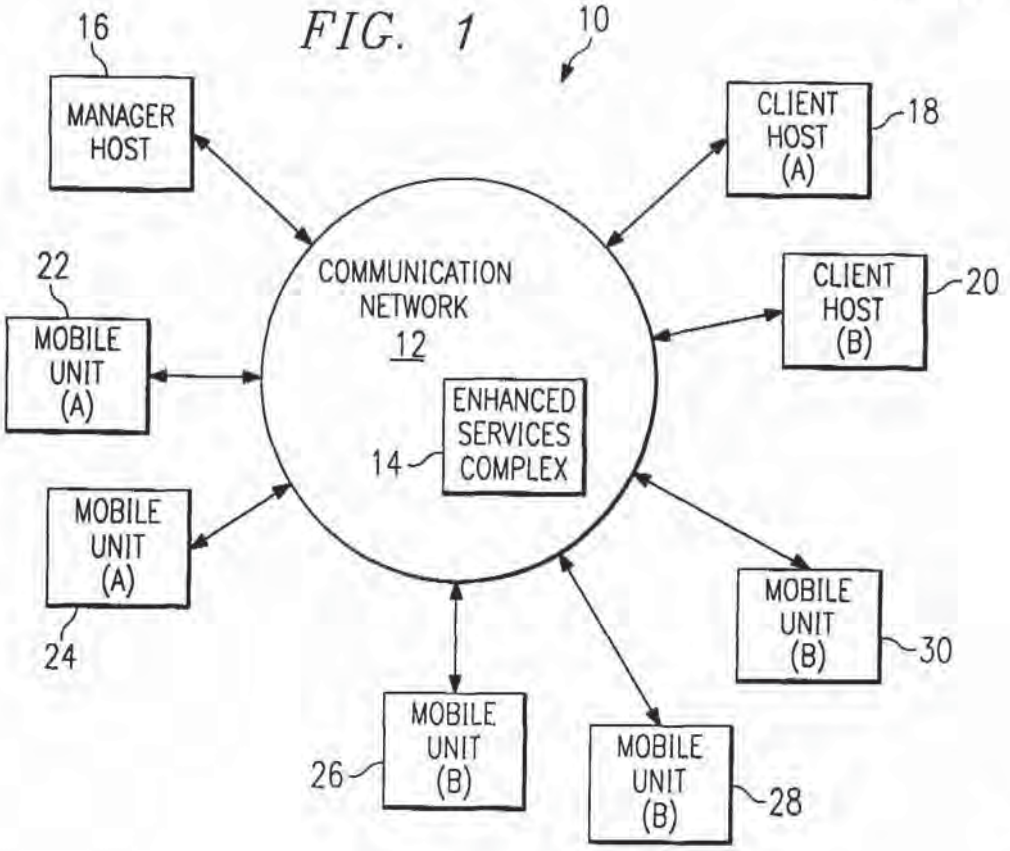

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FIG. 2

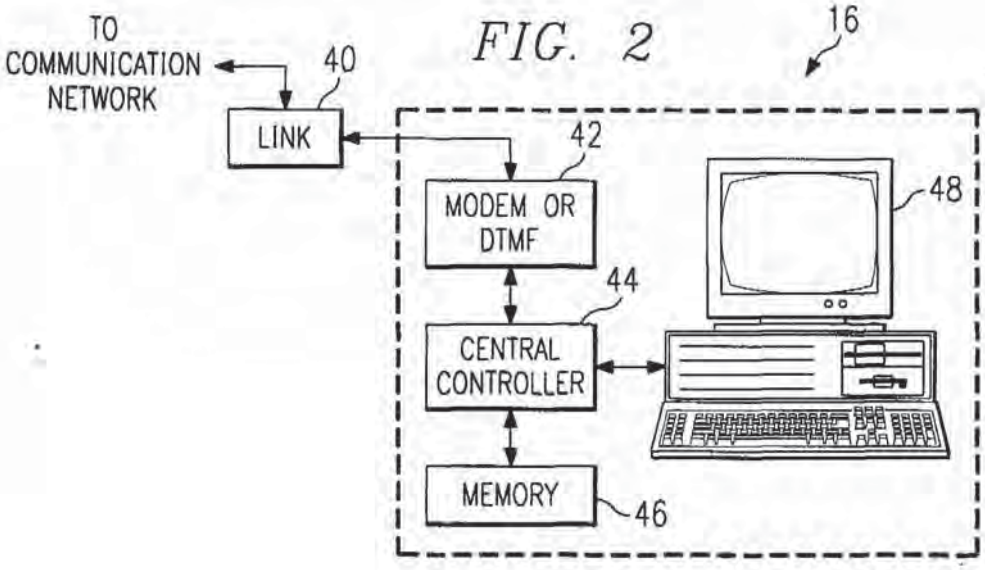

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FIG. 3

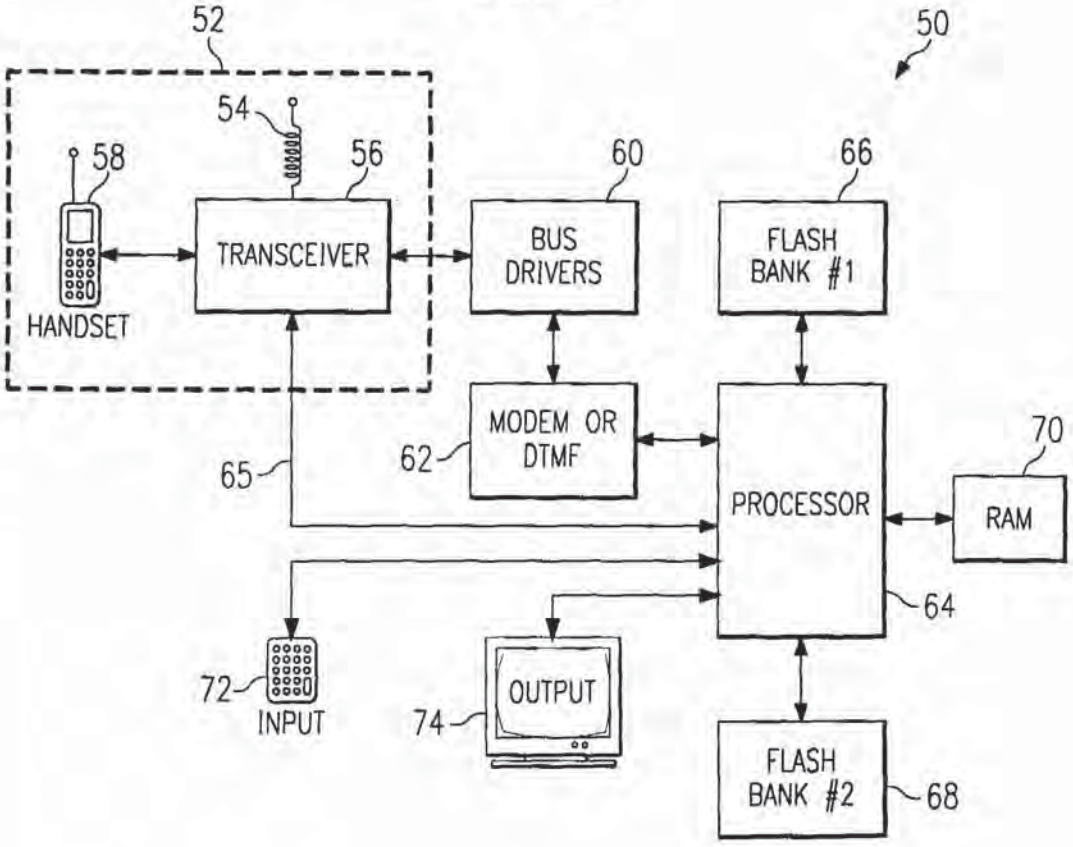

FIG. 4

MESSAGE	TYPE	MESSAGE FORMAT								
NEW PATCH FILE MESSAGE	0	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTE)	SOFTWARE VERSION (8 BYTES)	NUMBER OF PATCHES (1 BYTE)	MEMORY ADDRESS TO BE MODIFIED BY PATCH (4 BYTES)	STARTING ADDRESS IN PATCH MEMORY SPACE (4 BYTES)	NUMBER OF BYTES OF DATA (1 BYTE)	PATCH DATA (1-232 BYTES)	
APPEND PATCH MESSAGE	1	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTES)	MEMORY ADDRESS TO BE MODIFIED BY PATCH (4 BYTES)		STARTING ADDRESS IN PATCH MEMORY SPACE (4 BYTES)	NUMBER OF BYTES OF DATA (1 BYTE)	PATCH DATA (1-241 BYTES)		
APPEND DATA MESSAGE	2	MESSAGE TYPE (1 BYTE)	PATCH FILE ID (1 BYTE)	PATCH EXTENSION DATA (1-250 BYTES)						
DELETE UNINCORPORATED PATCHES MESSAGE	3	MESSAGE TYPE (1 BYTE)								
PREPARE FOR DOWNLOAD MESSAGE	4	MESSAGE TYPE (1 BYTE)								
DOWNLOAD MESSAGE	5	MESSAGE TYPE (1 BYTE)	RECORD TYPE (2 BYTES)	RECORD LENGTH (1 BYTE)	STARTING ADDRESS (2-4 BYTES)	PROGRAM DATA (1-100 BYTES)				RECORD CHECKSUM (1 BYTE)
PROGRAM CHECKSUM MESSAGE	6	MESSAGE TYPE (1 BYTE)	PROGRAM CHECKSUM (2 BYTES)							

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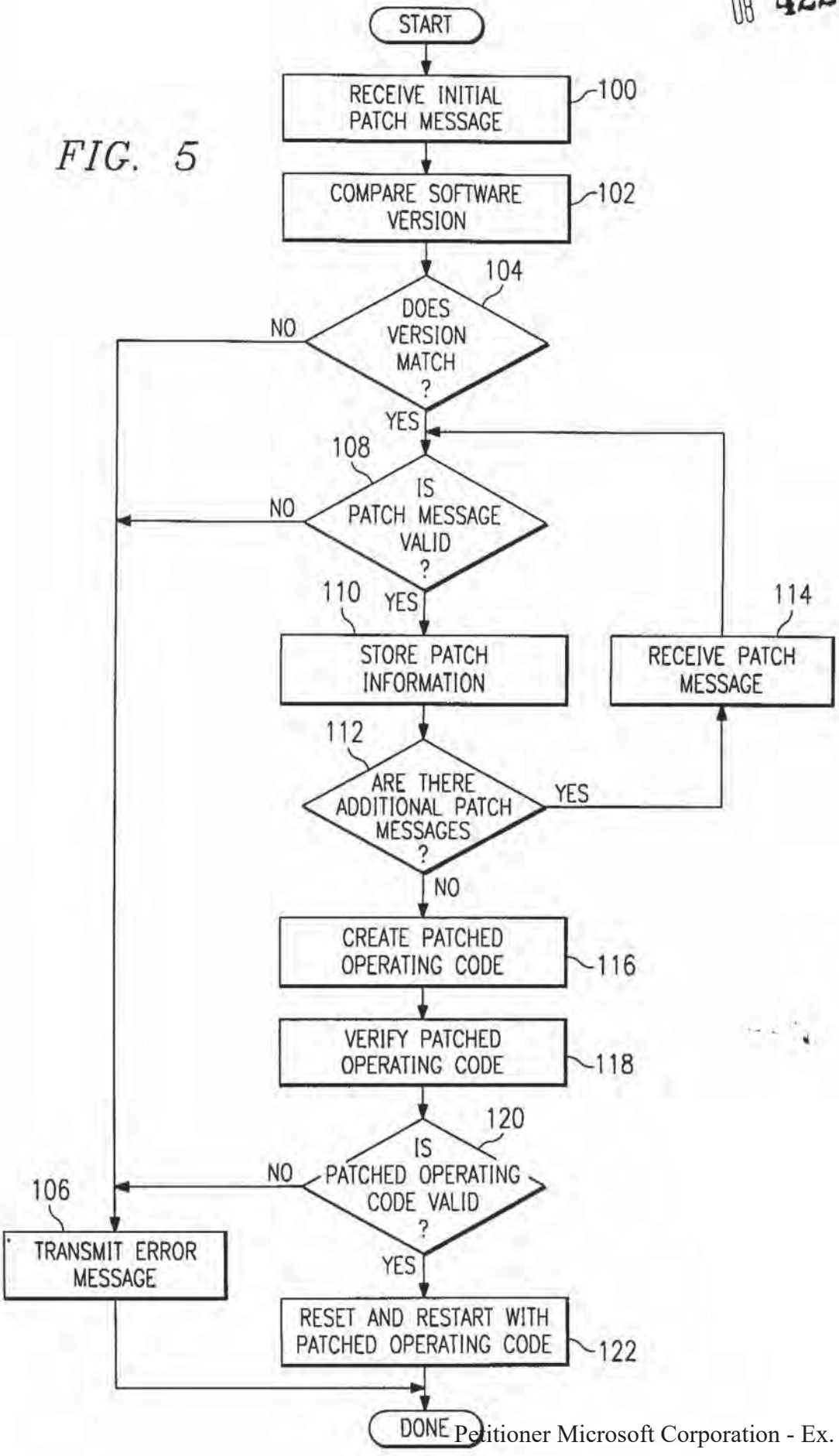
FIG. 5



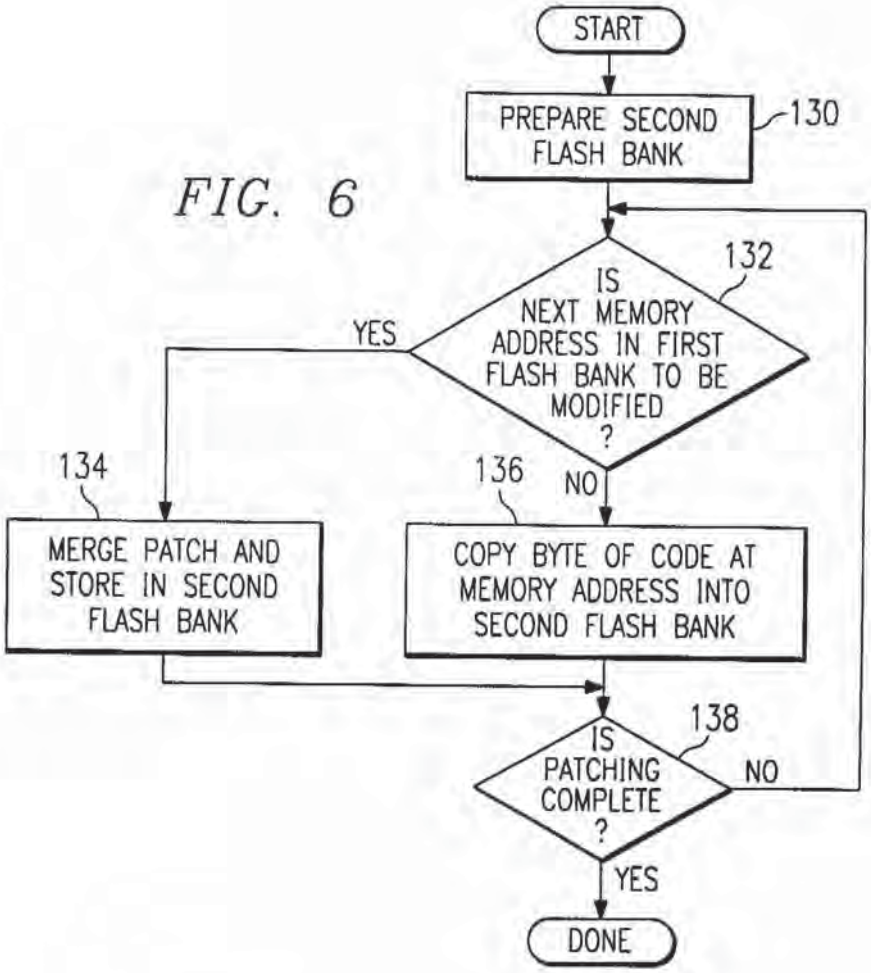

START
PREPARE SECOND FLASH BANK
130
IS NEXT MEMORY ADDRESS IN FIRST FLASH BANK TO BE MODIFIED ?
132
YES
NO
134
MERGE PATCH AND STORE IN SECOND FLASH BANK
136
COPY BYTE OF CODE AT MEMORY ADDRESS INTO SECOND FLASH BANK
IS PATCHING COMPLETE ?
138
NO
YES
DONE

FIG. 6

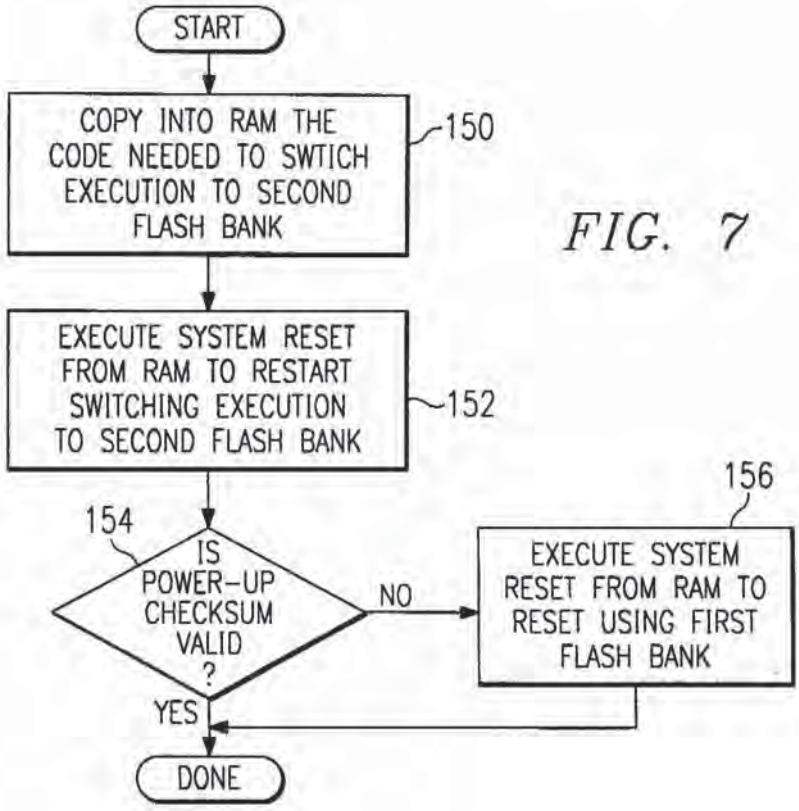

START
COPY INTO RAM THE CODE NEEDED TO SWTICH EXECUTION TO SECOND FLASH BANK
150
EXECUTE SYSTEM RESET FROM RAM TO RESTART SWITCHING EXECUTION TO SECOND FLASH BANK
152
154
IS POWER-UP CHECKSUM VALID ?
NO
156
EXECUTE SYSTEM RESET FROM RAM TO RESET USING FIRST FLASH BANK
YES
DONE

FIG. 7

ATTORNEY'S DOCKET NO. 19743-0165 PATENT

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name, that I believe I am an original and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention or design entitled SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT the specification of which is attached hereto; that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; and that I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed (Yes) (No)
----------NONE----------			

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial Number	Date Filed	Status
----------NONE----------		

I hereby appoint:

Jerry W. Mills	Reg. No. 23,005
Robert M. Chiaviello, Jr.	Reg. No. 32,461
Ann C. Livingston	Reg. No. 32,479
William N. Hulsey III	Reg. No. 33,402
Dennis W. Braswell	Reg. No. 35,831
Thomas R. Felger	Reg. No. 28,842
Charles S. Fish	Reg. No. 35,870
David N. Fogg	Reg. No. 35,138
Thomas A. Gigliotti	Reg. No. 37,579
Robert H. Johnston III	Reg. No. 37,364
Kevin J. Meek	Reg. No. 33,738
Richard J. Moura	Reg. No. 34,883
Wei Wei Jeang	Reg. No. 33,305
Rodger L. Tate	Reg. No. 27,399
Scott F. Partridge	Reg. No. 28,142
James G. Gatto	Reg. No. 32,694
James B. Arpin	Reg. No. 33,470
James Remenick	Reg. No. 36,902
Charles B. Lobsenz	Reg. No. 36,857
Christopher C. Campbell	Reg. No. 37,291
Jay B. Johnson	Reg. No. 38,193
Anthony E. Peterman	Reg. No. 38,270
Barton E. Showalter	Reg. No. 38,302
David G. Wille	Reg. No. 38,363
Robert J. Ward	Reg. No. 38,652

25

all of the firm of Baker & Botts, L.L.P., my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities under the Patent Cooperation Treaty.

Send Correspondence To:

Baker & Botts, L.L.P.
2001 Ross Avenue
Dallas, Texas 75201-2980

Direct Telephone Calls To:

Barton E. Showalter
at (214) 953-6509
Atty. Docket No. 19743-0165

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are

believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of the first inventor

1st Dale E. Beasley

Inventor's signature Dale E. Beasley

Date 4/10/95

Residence (City, County, State) Flower Mound, Denton County, Texas 75028 TX

Citizenship United States of America

Post Office Address 2709 Ridgemere Drive
Flower Mound, Texas 75028

Full name of second joint inventor, if any

2nd William C. Kennedy, III

Inventor's signature William C. Kennedy III

Date 4/11/95

Residence (City, County, State) Dallas, Dallas County, Texas 75231 TX

Citizenship United States of America

Post Office Address 9049 Church Road
Dallas, Texas 75231

Full name of third joint inventor, if any

300 Kenneth R. Westerlage

Inventor's signature

Date 4-10-95

Residence (City, County, State) Fort Worth, Tarrant County, Texas 76118 TX

Citizenship United States of America

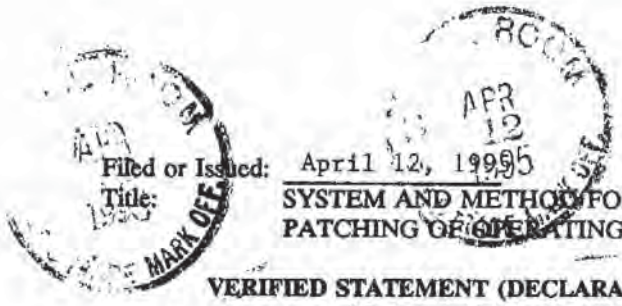
Post Office Address 3605 Scranton Drive
Fort Worth, Texas 76118

Petitioner Microsoft Corporation - Ex. 1002, p. 61

Application Assignment Record

According to the application transmittal letter, an assignment recording ownership was filed with this application; however, a copy of this record was not located in the original file history record obtained from the United States Patent and Trademark Office. Upon your request, we will attempt to obtain the assignment documents from the Assignment Recordation Branch of of the United States Patent and Trademark Office or from a related application case (if applicable). Please note that additional charges will apply for this service.

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.



Filed or Issued: April 12, 1995

Attorney's Docket: 19743-0165

Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(c)) – SMALL BUSINESS CONCERN

I hereby declare that I am an official of the small business concern empowered to act on behalf of the concern identified below:

Name of Small Business Concern: HM Holding Corporation
Address of Small Business Concern: 16479 Dallas Parkway, Suite 710
Dallas, Texas 75248

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT by inventors Dale E. Beasley, William C. Kennedy, III, and Kenneth R. Westerlage, described in the specification filed herewith.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e):

NONE

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or my maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Person Signing: William C. Kennedy, Jr.
Title of Person if other than owner: Chairman of the Board
Address of Person Signing: 16479 Dallas Parkway, Suite 710
Dallas, Texas 75248

Signature: William C Kennedy Jr

Date: April 10, 1995

DAL01:85679.1

Attorney's Docket: 19743-0165 #2 PATENT

aw 3/22/96

ROOM APR 12 1995 TRADE MARK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dale E. Beasley, et al.
Filing Date: April 12, 1995
Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request, pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, that the art listed on the attached PTO-1449 form be considered and cited in the examination of the above-identified application. A copy of this art is enclosed for the convenience of the Examiner. Furthermore, pursuant to 37 C.F.R. §§ 1.97(g) and (h), no representation is made that this art is material to patentability of the present application.

Applicants respectfully submit that the claims of Applicants' above-referenced patent application are patentably distinguishable from these references.

Respectfully submitted,

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2980
(214) 953-6509

Date: April 12, 1995

Petitioner Microsoft Corporation - Ex. 1002, p. 64

#2

FORM PTO-1449 (REV. 7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 19743-0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		APPLICANT Dale E. Beasley, et al.	
		FILING DATE April 12, 1995	GROUP 2603

APR 12 1995 TRADE MARK OFFICE

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBJ	AA	R	E	3	4	0	3	4	08/92	O'Sullivan	379	59	09/29/89
	AB	3	5	1	8	6	7	4	06/70	D. L. Moorehead, et al.	343	112	02/13/69
	AC	3	6	8	0	1	2	1	07/72	Anderson, et al.	343	112 TC	01/02/70
	AD	3	7	1	4	6	5	0	01/73	Fuller, et al.	343	6.5 LC	07/30/70
	AE	3	7	5	7	2	9	0	09/73	Ross, et al.	340	23	03/12/71
	AF	3	7	8	9	4	0	9	01/74	Easton	343	112 R	10/08/70
	AG	3	8	4	8	2	5	4	11/74	Drebinger, et al.	343	112 R	06/14/72
	AH	3	9	0	6	1	6	6	09/75	Cooper, et al.	179	41 A	10/17/73
	AI	4	0	5	3	8	9	3	10/77	Boyer	343	112 PT	11/18/75
	AJ	4	0	8	3	0	0	3	04/78	Haemming	325	6	04/08/76
	AK	4	1	0	7	6	8	9	08/78	Jellinek	343	23	06/07/76

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER							DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
KBJ	AL	0	1	6	1	9	4	1	09/84	Japan	H04B7/26	—		X
	AM	3	5	1	6	3	5	7	11/86	Republic of Germany	H04B7/26	G01S1/02	X	
	AN	0	2	4	2	0	9	9	10/87	EPO	G01S5/14	G08B25/00	X	
	AO	2	1	9	3	8	6	1	02/88	United Kingdom	H04Q7/04	—	X	
	AP	0	1	7	5	5	3	7	07/88	Japan	H04B7/26	H04Q7/04		X

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

KBJ	AR		"TRIMPACK" Brochure, TrimbleNavigation, date unknown, 1 page.
	AS		Gary D. Ott, "Vehicle Location in Cellular Mobile Radio Systems," *IEEE*, Vol. VT-26, No. 1, Feburary, 1977, pp.43-46.
	AT		James C. Reynolds, et al., "GPS-Based Vessel Position Monitoring and Display System," IEEE, 1990, pp. 601-607.

EXAMINER Kwang B. Yao	DATE CONSIDERED 11/15/96

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

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APR
12
1995
PATENT AND TRADEMARK OFFICE

FORM PTO-1449 (REV. 7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 19743-0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		APPLICANT Dale E. Beasley, III, et al.	
		FILING DATE April 12, 1995	GROUP 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBJ	AA	4 1 5 2 6 9 3	05/79	Ashworth, Jr.	340	24	04/25/77
	AB	4 1 7 7 4 6 6	12/79	Reagan	343	112 TC	11/16/77
	AC	4 2 2 2 0 5 2	09/80	Dunn	343	112 R	12/15/77
	AD	4 4 2 8 0 5 2	01/84	Robinson, et al.	364	436	06/09/81
	AE	4 4 2 8 0 5 7	01/84	Setliff, et al.	364	521	06/09/81
	AF	4 4 3 5 7 1 1	03/84	Ho, et al.	343	389	09/15/80
	AG	4 4 4 5 1 1 8	04/84	Taylor, et al.	343	357	05/22/81
	AH	4 5 4 7 7 7 8	10/85	Hinkle, et al.	343	456	06/09/81
	AI	4 5 9 0 5 6 9	05/86	Rogoff, et al.	364	452	10/14/83
	AJ	4 6 4 4 3 5 1	02/87	Zabarsky, et al.	340	825.44	05/08/84
	AK	4 6 5 1 1 5 7	03/87	Gray, et al.	342	457	05/07/85

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
KBJ	AL	0 2 1 9 2 3 8	09/88	Japan	H04B7/26	—		X
	AM	0 2 9 0 7 2 5	11/88	EPO	H04Q7/04	—	X	
	AN	WO 89 0 4 0 3 5	05/89	PCT	G10L5/06	—	X	
	AO	0 2 2 6 2 2 6	09/89	Japan	H04B7/26	—		X
	AP	WO 89 1 2 8 3 5	12/89	PCT	G01S5/02	G08G1/12	X	

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

KBJ	AR		R. DeSadaba, "Personal Communications in the Intelligent Network," *British Telecommunications Engineering*, Vol. 9, August, 1990, pp. 80-83.
	AS		"GPS NAVSTAR Global Positioning System User's Overview - YEE-82-009D," *Navstar Global Positioning System Joint Program Office*, March, 1991, pp. 1-164.
	AT		"U.S. Coast Guard Differential GPS" Brochure, *U.S. Department of Transportation, United States Coast Guard*, May, 1993.

EXAMINER Kwang B Yun DATE CONSIDERED 11/15/96

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

MAIL ROOM APR 19 1995 TRADE MARK

FORM PTO-1449 (REV. 7-80) — U.S. DEPARTMENT OF COMMERCE — PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)

ATTY. DOCKET NO.	SERIAL NO.
19743-0165	08/422,075
APPLICANT: Dale E. Beasley, et al.	
FILING DATE: April 12, 1995	GROUP: 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBH	AA	4 6 5 4 8 7 9	03/87	Goldman, et al.	455	33	03/29/85
	AB	4 6 6 0 0 3 7	04/87	Nakamura	340	990	01/26/831
	AC	4 6 7 0 9 0 5	06/87	Sandvos, et al.	455	33	11/29/85
	AD	4 6 8 8 2 4 4	08/87	Hannon, et al.	379	58	11/10/86
	AE	4 7 0 0 3 7 4	10/87	Bini	379	60	06/21/85
	AF	4 7 3 4 9 2 8	03/88	Weiner, et al.	379	59	03/18/87
	AG	4 7 3 7 9 7 8	04/88	Burke, et al.	379	60	10/31/86
	AH	4 7 4 0 7 9 2	04/88	Sagey, et al.	342	457	08/27/86
	AI	4 7 4 2 3 5 7	05/88	Rackley	342	457	09/17/86
	AJ	4 7 5 0 1 9 7	06/88	Denekamp, et al.	379	58	07/02/87
	AK	4 7 5 4 4 6 5	06/88	Trimble	375	1	05/07/84

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
KBH	AL	0 3 6 7 9 3 5	05/90	EPO	H04Q7/04	—	X	
	AM	2 2 2 1 1 1 3	01/93	United Kingdom	G01S5/00	—	X	
	AN	3 7 6 7 5 8 9	02/93	Australia	G01S005/02	G08G001/127	X	
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

KBH	AR		"GPS Facts & Figures" Brochure, *U.S. Department of Transportation, United States Coast Guard*, May, 1993.
	AS		D. H. Alsip, J. M. Butler, and J. T. Radice, "Implementation of the U.S. Coast Guard's Differential GPS Navigation Service," *U.S. Coast Guard Headquarters, Office of Navigation Safety and Waterway Services, Radionavigation Division*, June 28, 1993, pp. 1-10.
	AT		"Motorola GPS Technical Reference Manual," *Motorola*, October, 1993, Manual Cover, Title Page, and Page 4-109.

EXAMINER: Kirtan M. Patel — DATE CONSIDERED: 11/15/96

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

FORM PTO-1449 (REV. 7-80) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)

ATTY. DOCKET NO. 19743-0165

SERIAL NO. 08/422,075

APPLICANT Dale E. Beasley, et al.

FILING DATE April 12, 1995

GROUP 2603

APR 12 1995

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KRY	AA	4 7 7 4 6 7 0	09/88	Palmieri	364	446	04/29/85
	AB	4 7 7 5 9 9 9	10/88	Williams	379	59	12/07/87
	AC	4 7 7 6 0 0 3	10/88	Harris	379	91	10/01/86
	AD	4 7 8 8 6 3 7	11/88	Tamaru	364	200	09/29/86
	AE	4 7 9 1 5 7 1	12/88	Takahashi, et al.	364	436	10/08/86
	AF	4 7 9 1 5 7 2	12/88	Green, III, et al.	364	449	11/20/85
	AG	4 7 9 6 1 8 9	01/89	Nakayama, et al.	364	449	03/19/86
	AH	4 7 9 7 9 4 8	01/89	Milliorn, et al.	455	54	07/22/87
	AI	4 7 9 9 1 6 2	01/89	Shinkawa, et al.	364	436	10/24/86
	AJ	4 8 0 4 9 3 7	02/89	Barbiaux, et al.	340	52F	05/26/87
	AK	4 8 0 9 0 0 5	02/89	Counselman, III	342	352	01/21/88

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

KRY	AR		Don Burtis, "CDPD--A Bandwidth Optimization Technique for Cellular Telephones," *Computer Design's OEM Integration*, May, 1994, pp. 19-20.
	AS		"U.S. Coast Guard Bulletin Board System File 'FRP-DGPS,'" *U.S. Coast Guard*, Date Unknown, pp. 1-6.
	AT		Gene L. Schlechte, LCDR, "U.S. Coast Guard Bulletin Board System Document 'DESIGN.TXT' - Design Process for the United States Coast Guard's Differential GPS Navigation Service," *U.S. Coast Guard, U.S. Coast Guard Omega Navigation System Center*, Date Unknown, pp. 1-21.

EXAMINER Kwasi K. Yeboah — DATE CONSIDERED 11/15/96

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MAIL ROOM APR 12 1995 PATENT AND TRADEMARK OFFICE

FORM PTO-1449 (REV. 7-80) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)

ATTY. DOCKET NO.	SERIAL NO.
19743-0165	08/422,075
APPLICANT: Dale E. Beasley, et al.	
FILING DATE: April 12, 1995	GROUP: 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KB	AA	4 8 1 9 1 7 4	04/89	Furuno, et al.	364	444	01/29/87
	AB	4 8 3 3 4 7 7	05/89	Tendler	342	389	11/22/88
	AC	4 8 3 3 7 0 1	05/89	Comroe, et al.	379	60	01/27/88
	AD	4 8 3 3 7 0 2	05/89	Shitara, et al.	379	60	05/13/88
	AE	4 8 4 3 5 7 5	06/89	Crane	364	550	02/03/86
	AF	4 8 6 0 3 4 1	08/89	D'Avello, et al.	379	91	02/13/89
	AG	4 8 6 6 7 6 2	09/89	Pintar	379	200	04/04/88
	AH	4 8 7 6 7 3 8	10/89	Selby	455	33	09/16/87
	AI	4 8 8 4 2 0 8	11/89	Marinelli, et al.	364	460	05/16/88
	AJ	4 8 9 1 6 5 0	01/90	Sheffer	342	457	05/16/88
	AK	4 8 9 1 7 6 1	01/90	Gray, et al.	364	452	03/31/88

FOREIGN PATENT DOCUMENTS

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	AL							
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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

KB	AR		"Appendix B, The 1991 Radionavigation User Conference," *Department of Transportation*, Date Unknown, pp. 1-2.
	AS		Kirk Ladendorf, "First in Flight--Using State-Of-The-Art Technology, Austin-Based Arrowsmith Technologies Establishes Itself As A Major Player in Nascent Technology-Supplier Market, *Austin America-Statesman*, January 30, 1995, 3 pages.
	AT		

EXAMINER: Kirby K Yoo — DATE CONSIDERED: 11/15/96

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

MAIL ROOM APR 12 1995

FORM PTO-1449 (REV. 7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 19743-0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		APPLICANT Dale E. Beasley, et al.	
		FILING DATE April 12, 1995	GROUP 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBJ	AA	4 8 9 7 6 4 2	01/90	DiLullo, et al.	340	825.060	10/14/88
	AB	4 9 0 1 3 4 0	02/90	Parker, et al.	379	60	09/19/88
	AC	4 9 0 5 2 7 0	02/90	Ono	379	58	12/14/88
	AD	4 9 0 7 2 9 0	03/90	Crompton	455	56	05/13/88
	AE	4 9 0 8 6 2 9	03/90	Apsell, et al.	342	457	12/05/88
	AF	4 9 1 2 7 5 6	03/90	Hop	379	60	04/07/89
	AG	4 9 1 4 6 8 6	04/90	Hagar, III, et al.	379	61	11/28/86
	AH	4 9 4 5 5 7 0	07/90	Gerson, et al.	381	110	08/25/89
	AI	4 9 5 3 1 9 8	08/90	Daly, et al.	379	61	07/05/89
	AJ	4 9 6 3 8 6 5	10/90	Ichikawa, et al.	340	995	03/16/87
	AK	4 9 9 3 0 6 2	02/91	Dula, et al.	379	88	02/10/89

FOREIGN PATENT DOCUMENTS

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EXAMINER Kwang B. Yao	DATE CONSIDERED 11/15/96

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FORM PTO-1449 (REV. 7-80) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.	SERIAL NO.
19743-0165	08/422,075
APPLICANT: Dale E. Beasley, et al.	
FILING DATE: April 12, 1995	GROUP 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
K.B	AA	4 9 9 8 2 9 1	03/91	Marui, et al.	455	89	11/23/88
	AB	5 0 0 3 3 1 7	03/91	Gray, et al.	342	457	07/11/89
	AC	5 0 0 8 8 1 4	04/91	Mathur	364	200	08/15/88
	AD	5 0 1 4 2 0 6	05/91	Scribner, et al.	364	449	08/22/88
	AE	5 0 1 9 9 6 3	05/91	Alderson, et al.	364	200	03/21/88
	AF	5 0 2 5 2 5 3	06/91	DiLullo, et al.	340	825.06	10/03/89
	AG	5 0 3 2 8 4 5	07/91	Velasco	342	457	02/08/90
	AH	5 0 4 3 7 3 6	08/91	Darnell, et al.	342	357	07/27/90
	AI	5 0 4 5 8 6 1	09/91	Duffett-Smith	342	457	07/28/88
	AJ	5 0 4 6 0 8 2	09/91	Zicker, et al.	379	59	05/02/90
	AK	5 0 5 5 8 5 1	10/91	Sheffer	342	457	11/29/89

FOREIGN PATENT DOCUMENTS

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EXAMINER: Kwang R Yoo — DATE CONSIDERED: 11/15/96

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File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 1995-04-12

Document Title - List of References cited by applicant and considered by examiner

Page(s) - 8 of 10

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

FORM PTO-1449 (REV. 7-80) — U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)

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ATTY. DOCKET NO.	SERIAL NO.
19743-0165	08/432,075
APPLICANT: Dale E. Beasley, et al.	
FILING DATE: April 12, 1995	GROUP 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBY	AA	5 1 5 5 8 4 7	10/92	Kirouac, et al.	395	600	08/03/88
	AB	5 1 5 9 6 2 5	10/92	Zicker	379	59	10/24/90
	AC	5 1 6 6 6 9 4	11/92	Russell, et al.	342	457	08/20/91
	AD	5 1 7 2 3 2 1	12/92	Ghaem, et al.	364	444	12/10/90
	AE	5 2 0 8 7 5 6	05/93	Song	364	449	01/28/91
	AF	5 2 2 3 8 4 4	06/93	Mansell, et al.	342	357	04/17/92
	AG	5 2 2 5 8 4 2	07/93	Brown, et al.	342	357	05/09/91
	AH	5 2 3 5 6 3 3	08/93	Dennison, et al.	379	60	12/26/91
	AI	5 2 3 7 6 1 2	08/93	Raith	380	23	03/29/91
	AJ	5 2 4 3 5 2 9	09/93	Kashiwazaki	364	449	06/29/92
	AK	5 2 4 7 5 6 4	09/93	Zicker	379	40	10/24/90

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EXAMINER: Kwang Bin Yao — DATE CONSIDERED: 11/15/96

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MAIL ROOM APR 12 1995

FORM PTO-1449 (REV. 7-80)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO. 19743-0165

SERIAL NO. 08/422,075

APPLICANT Dale E. Beasley, et al.

FILING DATE April 12, 1995

GROUP 2603

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
KBY	AA	5	2	5	2	9	8	2	10/93	Frei	342	357	08/07/91
	AB	5	2	6	1	1	1	8	11/93	Vanderspool, II, et al.	455	51.2	10/04/91
	AC	5	2	7	0	9	3	6	12/93	Fukushima, et al.	364	444	09/23/92
	AD	5	2	7	6	7	2	9	01/94	Higuchi, et al.	379	58	07/14/92
	AE	5	2	9	3	1	6	3	03/94	Kakihara, et al.	340	995	08/18/93
	AF	5	2	9	7	1	9	1	03/94	Gerszberg	379	59	06/03/93
	AG	5	2	9	7	1	9	2	03/94	Gerszberg	379	59	06/30/93
	AH	5	2	9	9	1	3	2	03/94	Wortham	364	460	07/28/92
	AI	5	3	1	1	1	9	4	05/94	Brown	342	357	09/15/92
	AJ	5	3	2	3	3	2	2	06/94	Mueller, et al.	364	449	03/05/92
	AK	5	3	6	5	5	1	6	11/94	Jandrell	370	18	08/16/91

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EXAMINER Kwang R Yao

DATE CONSIDERED 11/15/96

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Other Prior Art

According to the information contained in form PTO-1449 or PTO-892, there are one or more other prior art/non-patent literature documents missing from the original file history record obtained from the United States Patent and Trademark Office. Upon your request we will attempt to obtain these documents from alternative resources. Please note that additional charges will apply for this service.

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MAIL ROOM JUL 24 1995 97 PAT. & TRADEMARK OFF.

Attorney's Docket: 019743.0165 PATENT

GP 2312

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED AUG 08 1995 GROUP 2300

In re Application of:	Dale E. Beasley, et al.
Serial No.:	08/422,075
Filing Date:	April 12, 1995
Group Art Unit:	2312
Title:	SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on July 19, 1995.

Donna Lidik
Name

July 19, 1995
Date of Signature

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request, pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, that the art listed on the attached PTO-1449 form be considered and cited in the examination of the above-identified application. A copy of this art is enclosed for the convenience of the Examiner. Furthermore, pursuant to 37 C.F.R. § 1.97(h), no representation is made that this art is material to patentability of the present application.

Applicants respectfully submit that the claims of Applicants' above-referenced patent application are patentably distinguishable from these references.

Respectfully submitted,
BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2980
(214) 953-6509
Date: July 19, 1995

DAL01:103572.1

FORM PTO-1449 (REV. 7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 019743.0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		APPLICANT Beasley, et al.	
		FILING DATE April 12, 1995	GROUP ~~2312~~ 2603

RECEIVED AUG 08 1995 GROUP 2300

MAIL ROOM JUL 24 1995 PAT. & TRADEMARK OFF. 97

U.S. PATENT DOCUMENTS

*EXAMINER														FILING DATE
KB	AA	5	1	2	1	1	2	6	06/92	Clagett	342	419		03/12/91
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FOREIGN PATENT DOCUMENTS

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EXAMINER	Kevin M. Teska	DATE CONSIDERED	11/15/96

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

Transaction History Date 1995-09-0
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

SEP 5 1995 TRADEMARK OFFICE

Attorney's Dock 019743.0165

#3 PATENT

2316 ad 3/25/96

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED SEP 18 1995 GROUP 2300

In re Application of: Dale E. Beasley, et al.
Serial No.: 08/422,075
Filing Date: April 12, 1995
Group Art Unit: 2312
Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on August 31, 1995
Donna Ulrich
Name
August 31, 1995
Date of Signature

Honorable Assistant Commissioner
for Patents
Washington, D.C. 20231

Dear Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request, pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, that the art listed on the attached PTO-1449 form be considered and cited in the examination of the above-identified application. A copy of this art is enclosed for the convenience of the Examiner. Furthermore, pursuant to 37 C.F.R. § 1.97(h), no representation is made that this art is material to patentability of the present application.

Applicants respectfully submit that the claims of Applicants' above-referenced patent application are patentably distinguishable from these references.

Respectfully submitted,
BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2980
(214) 953-6509
Date: August 31, 1995

DAL01:110697.1

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 1995-09-05

Document Title - List of References cited by applicant and considered by examiner

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Beasley, et al.
Serial No.:	08/422,075
Filing Date:	April 12, 1995
Group Art Unit:	2312
Title:	SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

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Donna Ulrik
Name

July 31, 1996
Date of Signature

Honorable Assistant Commissioner
for Patents
Washington, D.C. 20231

Dear Sir:

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REMARKS

Enclosed is a copy of a PCT search report identifying U.S. Patent No. 5,371,692 issued to *Draeger, et al.*, U.S. Patent No. 5,430,877 issued to *Naylor*, and U.S. Patent No. 5,495,610 issued to *Shing, et al.* which are contained in this Supplemental Information Disclosure Statement. The PCT search report has a mailing date of June 28, 1996. Therefore, I

hereby certify that the *Draeger, et al*, *Naylor*, and *Shing, et al.* references contained in this Supplemental Information Disclosure Statement were cited in a communication from a foreign patent office in a related foreign application not more than three months prior to the filing of this Supplemental Information Disclosure Statement.

Applicants believe that no fee is due, however, if a fee is required, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker & Botts, L.L.P.

Respectfully submitted,

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2980
(214) 953-6509

Date: July 31, 1996

Petitioner Microsoft Corporation - Ex. 1002, p. 81

Sheet 1 of 1

FORM PTO-1449 (REV. 7-80) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 019743.0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)	APPLICANT Beasley, et al.	
	FILING DATE April 12, 1995	GROUP ~~2312~~ 2603

MAIL ROOM 32 AUG 31 1996 PAT. & TRADE MARK OFF.

U.S. PATENT DOCUMENTS

*EXAMINER		DOCUMENT NUMBER							DATE	NAME	CLASS	SUBCLASS	FILING DATE
KBY	AA	5	3	7	1	6	9	2	12/94	Draeger, et al.	364	580	03/12/91
	AB	5	4	3	0	8	7	7	07/95	Naylor	395	700	07/20/93
	AC	5	4	9	5	6	1	0	02/96	Shing, et al.	395	600	07/13/95
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EXAMINER Kimberly R. Yao	DATE CONSIDERED 11/15/96

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: BARTON E. SHOWALTER
BAKER & BOTTS, L.L.P.
2001 ROSS AVENUE
DALLAS, TEXAS 75201-2980

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 019743.0187	Date of Mailing *(day/month/year)* 28 JUN 1996 FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US96/04505	International filing date *(day/month/year)* 01 APRIL 1996
Applicant HIGHWAYMASTER COMMUNICATIONS, INC.	

1. [X] The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. [ ] **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 *bis* 1 and 90 *bis* 3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer ELLIS B. RAMIREZ Telephone No. (703) 305-3800

Form PCT/ISA/220 (January 1994)*

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 019743.0187	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US96/04505	International filing date *(day/month/year)* 01 APRIL 1996	(Earliest) Priority Date *(day/month/year)* 12 APRIL 1995
Applicant HIGHWAYMASTER COMMUNICATIONS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [ ] **Certain claims were found unsearchable** (See Box I).

2. [ ] **Unity of invention is lacking** (See Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] transcribed by this Authority.

4. With regard to the **title**,
   - [ ] the text is approved as submitted by the applicant.
   - [X] the text has been established by this Authority to read as follows:

   REMOTE PATCHING OF OPERATING CODE IN AMOBILE UNIT

5. With regard to the **abstract**,
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

   Figure No. 1
   - [X] as suggested by the applicant.
   - [ ] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [ ] None of the figures.

Petitioner Microsoft Corporation - Ex. 1002, p. 84

MAIL ROOM
32 AUG 5 1996
PATENT AND TRADEMARK OFFICE

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/04505

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 13/00
US CL : 364/514R

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/514R; 395/ 600,700,200.09; 379/95

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US, A, 5,430,877 (NAYLOR) 04 July 1995, cols. 4-5.	1-42
Y, P	US, A, 5,495,610 (SHING et al.) 27 February 1996, cols.19-20.	1-35
Y	US, A, 5,155,847 (KIROUAC et al.) 13 October 1993, cols.7-8.	1-35
Y	US, A, 5,371,692 (DRAEGER et al.) 6 December 1994, col. 7, lines 52-61.	1-35

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 07 JUNE 1996	Date of mailing of the international search report 28 JUN 1996
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer ELLIS B. RAMIREZ Telephone No. (703) 305-3800

Form PCT/ISA/210 (second sheet)(July 1992)*

BEST COPY

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/422,075	04/12/	D	19743-0165

BAKER & BOTTS
2001 ROSS AVENUE
DALLAS TX 75201-2980

EXAMINER	
YAO, K	
ART UNIT	**PAPER NUMBER**
2603	5

DATE MAILED: 11/21/96

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

Commissioner of Patents and Trademarks

PTO-90C (REV. 2/95)

1 - File Copy

Office Action Summary	Application No. 08/422,075	Applicant(s) Beasley et al.
	Examiner Kwang Bin Yao	Group Art Unit 2603

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ 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.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-42* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-11, 16-19, 24, 28-32, and 35-39* is/are rejected.

☒ Claim(s) *12-15, 20-23, 25-27, 33, 34, and 40-42* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *2,3,4*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Petitioner Microsoft Corporation - Ex. 1002, p. 87

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. 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 --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 28-32 and 35-39 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Naylor (US 5,430,877).

Naylor discloses a reprogramming method comprising: receiving the issue number of software in the input terminal of the interface of handset B from other handset A (receiving at least one discrete patch message, transmitting discrete patch message through a communication network) via a cable loom to incorporating a link 46 (an enhanced service complex in a communication network); handset B compares its own software issue number (object code) with the software issue number received from A (step of verifying, processing the current operating code to determine whether a patch is to be made); the handset A having the updated version of the software commands the handset B to erase all older version software and updates the new version software for it (creating patched operating code by merging the one patch with the current operating code to create the patched operating code); saving the updating software in FLASH

Eprom memory in handset B (storing the patched operating code); after whole procedure of the updating software, the updated handset returns to normal operation using the updating software (switching execution to the patched operating code). (See columns 3-5, and Fig.1).

Claim Rejections - 35 USC § 103

3. 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 negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-11, 16, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirouac et al. (US 5,155,847).

Kirouac et al. discloses an apparatus for updating software at remote locations comprising: central computer 14 (a manager host, enhanced service complex); remote computers

12 receiving updating software (first mobile unit, second mobile unit, the mobile unit separately verifies the patch message, object code); patch P_N denoting all the changes made to a program, where N is the number of the patch (at least one discrete patch message collectively represent a patch file, at least one discrete patch message comprises one discrete patch message, one discrete patch message defines one patch to be made to the current operating code, one discrete patch message comprises a plurality of discrete patch message, at least one new patch file message, at least one append patch message); the first patch P made to any program is assigned to patch number 1 which is N=1 (a new patch file message operable to define a first patch to be made to current operating code); the second patch made to any program is assigned patch number 2 which is N=2 (an append patch message operable to define an additional patch); the patch number and assigned code denotes the patch information(an append data message). (See columns 4 and 5, and Fig.1). Kirouac et al. does not disclose the apparatus for mobile unit in wireless communication network. It would have been obvious to one of the ordinary skill in the art at the time of the invention to implement the apparatus in wireless communication network, as taught by Kirouac et al., in order to update software stored in the mobile unit whenever it is needed.

5. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naylor (US 5,430,877).

Naylor discloses a reprogramming apparatus comprising: reprogrammable memory 10A (a memory) which stores a software (object code) controlling the operation of microprocessor 10A; transmitting and receiving circuitry (a receiver); microprocessor 5A (a processor) contains a small

amount of memory indicated at 8A (second memory). (See Fig. 1 and columns 3-5). Naylor discloses this reprogramming apparatus by using a cable loom to incorporate a link 46 between cellular phone handsets instead of implementing it under a wireless communication link. It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the reprogramming apparatus in the wireless communication link as taught by Naylor, in order to provide instant and convenient procedure for updating software in mobile communication equipments.

Allowable Subject Matter

6. Claims 12-15, 20-23, 25-27, 33-34, and 40-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Bin Yao whose telephone number is (703) 308-7583. The examiner can normally be reached on Monday through Friday from 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Olms, can be reached on (703) 305-4703. The fax phone number for this Group is (703) 305-9509.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Kwang Bin Yao

Nov. 19, 1996

HASSAN KIZOU
PRIMARY EXAMINER
GROUP 2600

Form PTO 948 (Rev. 10-94) U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office Application No. 8/422075

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

PTO Draftspersons review all originally filed drawings regardless of whether they are designated as formal or informal. Additionally, patent Examiners will review the drawings for compliance with the regulations. Direct telephone inquiries concerning this review to the Drawing Review Branch, 703-305-8404.

The drawings filed (insert date) 4/12/95 are
A. ✓ not objected to by the Draftsperson under 37 CFR 1.84 or 1.152.
B. ___ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawings must be submitted according to the instructions on the back of this Notice.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:
Black ink. Color.
___ Not black solid lines. Fig(s) ___
___ Color drawings are not acceptable until petition is granted.
Fig(s) ___
2. PHOTOGRAPHS. 37 CFR 1.84(b)
___ Photographs are not acceptable until petition is granted.
Fig(s) ___
___ Photographs not properly mounted (must be mounted on photographic double-weight paper). Fig(s) ___
___ Poor quality (half-tone). Fig(s) ___
3. GRAPHIC FORMS. 37 CFR 1.84 (d)
___ Chemical or mathematical formula not labeled as separate figure
Fig(s) ___
___ Group of waveforms not presented as a single figure, using common vertical axis with time extending along horizontal axis.
Fig(s) ___
___ Individuals waveform not identified with a separate letter designation adjacent to the vertical axis. Fig(s) ___
4. TYPE OF PAPER. 37 CFR 1.84(e)
___ Paper not flexible, strong, white, smooth, nonshiny, and durable.
Sheet(s) ___
___ Erasures, alterations, overwritings, interlineations, cracks, creases, and folds copy machine marks not accepted. Fig(s) ___
___ Mylar, velum paper is not acceptable (too thin). Fig(s) ___
5. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:
21.6 cm. by 35.6 cm. (8 1/2 by 14 inches)
21.6 cm. by 33.1 cm. (8 1/2 by 13 inches)
21.6 cm. by 27.9 cm. (8 1/2 by 11 inches)
21.0 cm. by 29.7 cm. (DIN size A4)
___ All drawing sheets not the same size. Sheet(s) ___
___ Drawing sheet not an acceptable size. Sheet(s) ___
6. MARGINS. 37 CFR 1.84(g): Acceptable margins

Paper size	21.6 cm. X 35.6 cm. (8 1/2 X 14 inches)	21.6 cm. X 33.1 cm. (8 1/2 X 13 inches)	21.6 cm. X 27.9 cm. (8 1/2 X 11 inches)	21.0 cm. X 29.7 cm. (DIN Size A4)
T	5.1 cm. (2")	2.5 cm. (1")	2.5 cm. (1")	2.5cm.
L	.64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	2.5 cm.
R	.64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	1.5 cm.
B	.64 cm. (1/4")	.64 cm. (1/4")	.64 cm. (1/4")	1.0 cm.

Margins do not conform to chart above.
Sheet(s) ___
___Top (T) ___Left (L) ___Right (R) ___Bottom (B)

7. VIEWS. 37 CFR 1.84(h)
REMINDER: Specification may require revision to correspond to drawing changes.
___ All views not grouped together. Fig(s) ___
___ Views connected by projection lines or lead lines.
Fig(s) ___
Partial views. 37 CFR 1.84(h) 2
___ View and enlarged view not labeled separately or properly
Fig(s) ___
Sectional views. 37 CFR 1.84 (h) 3
Hatching not indicated for sectional portions of an object.
Fig(s) ___
Cross-section not drawn same as view with parts in cross section with regularly spaced parallel oblique strokes. Fig(s) ___
8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
___ Views do not appear on a horizontal, left-to-right baseline when several views are required.
___ Views not arranged so that the appearance the right side is to the right of the front view. Fig(s) ___
9. SCALE. 37 CFR 1.84(k)
Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s) ___
Indication that a view is "actual size" or scale 1/2" not permitted. Fig(s) ___
10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)
___ Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (except for color drawings). Fig(s) ___
11. SHADING. 37 CFR 1.84(m)
___ Solid black shading areas not permitted. Fig(s) ___
___ Shade lines, pale, rough and blurred. Fig(s) ___
12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)
___ Numbers and reference characters not plain and legible. 37 CFR 1.84(p)(1) Fig(s) ___
Numbers and reference characters not oriented in same direction as the view. 37 CFR 1.84(p)(1) Fig(s) ___
English alphabet not used. 37 CFR 1.84(p)(2) Fig(s) ___
___ Numbers, letters, and reference characters do not measure at least .32 cm. (1/8 inch) in height. 37 CFR(p)(3) Fig(s) ___
13. LEAD LINES. 37 CFR 1.84(q)
___ Lead lines cross each other. Fig(s) ___
___ Lead lines missing. Fig(s) ___
14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)
___ Sheets not numbered consecutively, and in Arabic numerals, beginning with number 1. Sheet(s) ___
15. NUMBER OF VIEWS. 37 CFR 1.84(u)
___ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) ___
___ View numbers not preceded by the abbreviation Fig. Fig(s) ___
16. CORRECTIONS. 37 CFR 1.84(w)
___ Corrections not made from prior PTO-948. Fig(s) ___
17. DESIGN DRAWING. 37 CFR 1.152
___ Surface shading shown not appropriate. Fig(s) ___
___ Solid black shading not used for color contrast. Fig(s) ___

COMMENTS:

5 REVIEWER WAS DATE 5/19/95

Petitioner Microsoft Corporation - Ex. 1002, p. 93

ATTORNEY'S DOCKE NO. 43.0165

ATENT APPLICATION

MAIL ROOM FEB 5 1997 PATENT & TRADEMARK OFFICE

1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Dale E. Beasley, et al.
Serial No.:	08/422,075
Filing Date:	April 12, 1995
Group Art Unit:	2603
Examiner:	Yao, K.
Title:	SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

2-19-97

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on the date shown below.

Donna Ulsik
Name

January 27, 1997
Date of Signature

Honorable Assistant Commissioner
for Patents
Washington, D.C. 20231

Dear Sir:

AMENDMENT

In response to the Official Action mailed November 21, 1996 (Paper No. 5), Applicants respectfully request the Examiner to reconsider the rejection of the claims in view of the following amendments and the remarks as set forth below.

IN THE CLAIMS[1]:

1. **(Amended)** A system for remote patching of operating code located in a mobile unit, comprising:

a manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch; **[and]**

a first mobile unit operable to receive the at least one discrete patch message, the first mobile unit further operable

[1] (Note that all claims not canceled by this Amendment have been included, whether amended or not, for the convenience of the Examiner in reviewing the Amendment).

to create patched operating code by merging the at least one patch with current operating code located in the first mobile unit and to switch execution to the patched operating code; and

a second mobile unit operable to receive the at least one discrete patch message, the second mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the second mobile unit and to switch execution to the patched operating code; and

wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to the second mobile unit.

2. The system of Claim 1, wherein the current operating code and the patched operating code comprise object code for a processor located in the first mobile unit.

3. The system of Claim 1, wherein the at least one discrete patch message collectively represent a patch file that defines the at least one patch.

4. The system of Claim 1, wherein the at least one discrete patch message comprises one discrete patch message.

5. The system of Claim 4, wherein the one discrete patch message defines one patch to be made to the current operating code.

6. The system of Claim 1, wherein the at least one discrete patch message comprises a plurality of discrete patch messages.

7. The system of Claim 6, wherein the at least one discrete patch message defines a plurality of patches to be made to the current operating code.

8. The system of Claim 7, wherein the at least one discrete patch message includes at least one new patch file message and at least one append patch message.

9. The system of Claim 8, wherein the at least one discrete patch message further includes at least one append data message.

10. The system of Claim 1, wherein the mobile unit separately verifies the at least one discrete patch message.

11. The system of Claim 1, wherein the mobile unit separately verifies the at least one discrete patch message, and the mobile unit verifies the patched operating code.

12. **(Amended)** The system of Claim 1, **[further comprising:**

a second mobile unit operable to receive the at least one patch message, the second mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the second mobile unit and to switch execution to the patched operating code; and]

wherein the manager host is further operable to address **[the at least one]** **another** discrete patch message such that the **[at least one]** **other** discrete patch message is transmitted to the **second** **[first]** mobile unit but not to the **first** **[second]** mobile unit.

13. **(Amended)** The system of Claim **1** **[12]**, wherein the first mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.

14. **(Amended)** The system of Claim **1** **[12]**, wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit and to the second mobile unit.

15. The system of Claim 14, wherein the first mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.

16. The system of Claim 1, wherein the wireless communication network includes an enhanced services complex operable to establish communication with the first mobile unit and to transmit the at least one patch message to the first mobile unit.

17. **(Amended)** A mobile unit, comprising:

a memory operable to store current operating code;

a receiver operable to receive the at least one discrete patch message transmitted through a wireless communication network, the at least one discrete patch message defining at least one patch to be made to the current operating code; **[and]**

a processor coupled to the memory and to the receiver, the processor operable to execute the current operating code, to process the at least one discrete patch message, to create patched operating code by merging the at least one patch with the current operating code, and to switch execution to the patched operating code;

a second memory coupled to the processor; and

a third memory coupled to the processor;

and wherein the processor is further operable to store patch information provided by the at least one discrete patch message in the second memory and to store the patched operating code in the third memory after the patched operating code is created.

18. The system of Claim 17, wherein the current operating code and the patched operating code comprise object code for the processor.

~~19~~ 22. **(Amended)** [The system of Claim 17, further comprising:] **A mobile unit, comprising:**

a first memory operable to store current operating code;

a receiver operable to receive the at least one discrete patch message transmitted through a wireless communication network, the at least one discrete patch message defining at least one patch to be made to the current operating code;

a processor coupled to the first memory and to the receiver, the processor operable to execute the current operating code, to process the at least one discrete patch message, to create patched operating code by merging the at least one patch with the current operating code, and to switch execution to the patched operating code; and

a second memory coupled to the processor; and

wherein the processor is further operable to store patch information provided by the at least one discrete patch message in the second memory.

20. The system of Claim 19, further comprising:

a third memory coupled to the processor; and

wherein the processor is further operable to store the patched operating code in the third memory after the patched operating code is created.

19

~~21~~. **(Amended)** The system of Claim **17** [20], wherein the processor is further operable to switch execution between the first memory and the third memory.

22. The system of Claim 21, wherein the processor is further operable to switch execution between the first memory and the third memory after a system reset.

21

~~23~~. **(Amended)** The system of Claim **17** [20], wherein the first memory comprises a first flash bank, the second memory comprises a random-access memory, and the third memory comprises a second flash bank.

24. **(Amended)** A set of discrete patch messages for defining a plurality of patches to be made to current operating code located in a mobile unit, comprising:

a new patch file message operable to define a first patch to be made to current operating code;

an append patch message operable to define an additional patch to be made to the current operating code; and

an append data message operable to extend patch definition information**; and**

wherein the new patch file message comprises information including a patch file ID, a software version, a number of patches, and first patch data.

25. **(Amended)** The set of patch messages of Claim 24, wherein the new patch file message **further** comprises **message type, memory address to be modified by patch, starting address in patch memory space, and number of bytes of data [patch file ID, a software version, a number of patches, and first patch data]**.

26. **(Amended)** The set of patch messages of Claim **24 [25]**, wherein the append patch message comprises information including a patch file ID, and additional patch data.

27. The set of patch messages of Claim 26, wherein the append data message comprises information including a patch file ID, and patch extension data.

28. **(Amended)** A method of operation of a mobile unit for remote patching of operating code, comprising:

receiving at least one discrete patch message defining at least one patch to be made to current operating code located in the mobile unit;

creating patched operating code by merging the at least one patch with the current operating code to create the patched operating code; and

switching execution to the patched operating code**, wherein switching execution comprises:**

copying boot code into a first memory;

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executing a system reset from the first memory such that execution is switched from a second memory to a third memory; and

restarting using patched operating code in the third memory.

29. The method of Claim 28, wherein the step of creating comprises creating patched operating code comprising object code for a processor located in the mobile unit.

30. The method of Claim 28, further comprising the step of verifying each patch message after the step of receiving.

31. The method of Claim 28, further comprising the step of verifying the patched operating code after the step of creating.

32. The method of Claim 28, wherein the step of creating patched operating code comprises the steps of:

processing the current operating code byte-by-byte to determine whether a patch is to be made to each byte of the current operating code; and

storing the patched operating code in a memory byte-by-byte as the current operating code is processed.

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~~33.~~ (Amended) A method of operation of a mobile unit for remote patching of operating code, comprising:

receiving at least one discrete patch message defining at least one patch to be made to current operating code located in the mobile unit;

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creating patched operating code by merging the at least one patch with the current operating code to create the patched operating code;

verifying the patched operating code after the step of creating; and

switching execution to the patched operating code [The method of Claim 28, wherein the step of switching comprises the steps of:

copying boot code into a first memory;

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executing a system reset from the first memory such that execution is switched from a second memory to a third memory; and

restarting using patched operating code in the third memory].

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~~34~~. **(Amended)** The method of Claim 28 **[33]**, further comprising the step of validating patched operating code executed from the third memory.

35. **(Amended)** A method for remote patching of operating code located in a mobile unit, comprising:

transmitting at least one discrete patch message defining at least one patch through a communication network;

receiving the at least one patch message in a first mobile unit, the first mobile unit executing current operating code located in the first mobile unit;

creating patched operating code in the first mobile unit by merging the at least one patch with the current operating code; **[and]**

switching execution in the first mobile unit to the patched operating code; and

wherein the step of transmitting further comprises addressing the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to a second mobile unit.

36. The method of Claim 35, wherein the step of creating comprises creating patched operating code comprising object code for a processor located in the first mobile unit.

37. The method of Claim 35, wherein the step of receiving comprises separately verifying the at least one discrete patch message.

38. The method of Claim 37, wherein the step of switching comprises verifying the patched operating code.

39. The method of Claim 35, wherein the step of transmitting is accomplished using an enhanced services complex in a communication network.

40. **(Amended)** The method of Claim 35, wherein the step of transmitting further comprises addressing **[the at least one]** **another** discrete patch message such that the **[at least one]** **other** discrete patch message is transmitted to **a second** **[the first]** mobile unit but not to **the first** **[a second]** mobile unit.

41. **(Amended)** The method of Claim **35** **[40]**, wherein the first mobile unit is associated with a first client host, and the second mobile unit is associated with a second client host.

42. **(Amended)** The method of Claim **35** **[40]**, wherein the first mobile unit and the second mobile unit are associated with a first client host.

REMARKS

Applicants appreciate the time taken by the Examiner to review Applicants' present application. Claims 1, 12-14, 17, 19, 21, 23-26, 28, 33-35, and 40-42 have been amended. Applicants have amended independent Claims 1, 17, 24, 28, and 35 to incorporate the allowable subject matter formerly contained in Claims 12, 20, 25, 33, and 40. Claims 19 and 33 have been amended to overcome the Examiner's rejection. Applicants' respectfully request reconsideration and full allowance of all pending claims.

Allowable Subject Matter:

The Examiner stated that Claims 12-15, 20-23, 25-27, 33-34, and 40-42 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. Applicants have amended Claims 1, 17, 24, 28, and 35 to incorporate the allowable subject matter formerly contained in Claims 12, 20, 25, 33, and 40. Claims 2-16, 18, 20-23, 25-27, 29-32, 34, and 36-42 have been amended as necessary so that these claims now depend from corresponding independent Claims 1, 17, 24, 28, and 35. As such, Claims 2-16, 18, 20-23, 25-27, 29-32, 34, and 36-42 are patentably distinct as a further limitation upon those independent claims. Applicants therefore respectfully request entry of the above amendments and full allowance of Claims 1-18, 20-32, and 34-42.

Rejections under 35 U.S.C. § 102

Claim 33, as amended, incorporates the elements of former Claim 28 which stood rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,430,877, issued to Naylor ("Naylor").

Claim 33, as amended, recites a method of operation of a mobile unit for remote patching of operating code that includes a step of "verifying the patched operating code after the step of creating." Naylor replaces entire versions of operating code, rather than creating patched operating code as recited in Claim 33. As stated by the Examiner on page 2 of

the Office Action, Naylor teaches erasing "all older version software." Moreover, Naylor does not perform a subsequent verification of the code. Naylor merely verifies, prior to copying, that the new code is a version of the old code. Thus, Naylor does not verify patched operating code after creation.

Applicants therefore respectfully request reconsideration and allowance of Claim 33, as amended.

Rejections under 35 U.S.C. § 103

Claim 19 stands rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,430,877, issued to Naylor ("Naylor").

Claim 19, as amended, recites a mobile unit comprising a first memory operable to store current operating code, a receiver to receive patch messages, a processor, and a second memory coupled to the processor, "wherein the processor is further operable to store patch information provided by the at least one discrete patch message in the second memory." Again, Naylor does not disclose, teach, or suggest the creation of patched operating code. In addition, Naylor does not disclose, teach, or suggest a system having a processor that stores patch information in a second memory, or a second memory for storing patch information. Naylor does not teach or suggest that the "small amount of memory" associated with microprocessor 8A stores any patch information or other provisioning data relating to the patched code.

Applicants therefore respectfully request reconsideration and allowance of Claim 19, as amended.

Consideration of IDS

Applicants point out that the Supplemental Information Disclosure Statement, filed August 31, 1995, does not appear among the Information Disclosure Statements the Examiner indicated as considered. Applicants enclose a copy of the August 31, 1995 Supplemental Information Disclosure Statement, as filed. Applicants respectfully request the Examiner consider the August 31, 1995 Supplemental IDS.

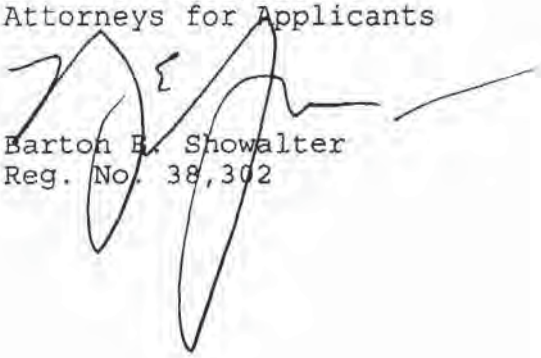
CONCLUSION

Applicants have now made an earnest attempt to place this case in condition for allowance. For the foregoing reasons, and for other reasons clearly apparent, Applicants respectfully request full allowance of all pending claims. If the Examiner feels that a telephone conference or an interview would advance prosecution of this Application in any manner, the undersigned attorney for Applicants stands ready to conduct such a conference at the convenience of the Examiner.

The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker & Botts, L.L.P.

Respectfully submitted,

BAKER & BOTTS, L.L.P.
Attorneys for Applicants



Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2908
(214) 953-6509

Date: January 27, 1997

Petitioner Microsoft Corporation - Ex. 1002, p. 105

Received 2-5-97

61/2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Dale E. Beasley, et al.
Serial No.: 08/422,075
Filing Date: April 12, 1995
Group Art Unit: 2312
Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on August 31, 1995

[signature]
Name

August 31, 1995
Date of Signature

Honorable Assistant Commissioner
for Patents
Washington, D.C. 20231

Dear Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request, pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, that the art listed on the attached PTO-1449 form be considered and cited in the examination of the above-identified application. A copy of this art is enclosed for the convenience of the Examiner. Furthermore, pursuant to 37 C.F.R. § 1.97(h), no representation is made that this art is material to patentability of the present application.

Applicants respectfully submit that the claims of Applicants' above-referenced patent application are patentably distinguishable from these references.

Respectfully submitted,
BAKER & BOTTS, L.L.P.
Attorneys for Applicants

[signature]
Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue
Dallas, Texas 75201-2980
(214) 953-6509
Date: August 31, 1995

Petitioner Microsoft Corporation - Ex. 1002, p. 106

FORM PTO-1449 (REV. 7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 019743.0165	SERIAL NO. 08/422,075
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)		APPLICANT Beasley, et al.	
		FILING DATE April 12, 1995	GROUP ~~3712~~ 2603

MAIL ROOM FEB 6 1997 PATENT AND TRADEMARK OFFICE

U.S. PATENT DOCUMENTS

*EXAMINER		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	AA	5 3 9 2 4 5 8	02/95	Sasuta, et al.	455	54.1	04/28/93
	AB	5 3 9 6 5 4 0	03/95	Gooch	379	59	04/22/94
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR		
	AS		
	AT		

EXAMINER	DATE CONSIDERED
[signature]	4/24/97

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

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/422,075	04/12/95	BEASLEY D	19743-0165

26M1/0429

BAKER & BOTTS
2001 ROSS AVENUE
DALLAS TX 75201-2980

EXAMINER	
YAO,K	
ART UNIT	**PAPER NUMBER**
2603	7

DATE MAILED: 04/29/97

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

Commissioner of Patents and Trademarks

PTO-90C (REV. 2/95)

1 - File Copy

Notice of Allowability

Application No.	Applicant(s)
08/422,075	Beasley et al.
Examiner	**Group Art Unit**
Kwang Bin Yao	2603

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 and Issue Fee Due or other appropriate communication will be mailed in due course.

☒ This communication is responsive to *Amendment filed on 1/27/97*.

☒ The allowed claim(s) is/are *1-42, renumbered 1-18, 22, 23, 19, 20, 21, 24-32, 34,33,35-42*.

☒ The drawings filed on *Apr 12, 1995* are acceptable.

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

☐ Applicant MUST submit NEW FORMAL DRAWINGS

☐ because the originally filed drawings were declared by applicant to be informal.

☐ including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. _____.

☐ including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.

☐ including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal lettter addressed to the Official Draftsperson.

☐ Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *3*

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☐ Interview Summary, PTO-413

☐ Examiner's Amendment/Comment

☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

☒ Examiner's Statement of Reasons for Allowance

Petitioner Microsoft Corporation - Ex. 1002, p. 109

1. The following is an examiner's statement of reasons for allowance:

None of the prior art discloses the following features in a system for remote patching of operating code: a manager host is operable to address at least one discrete patch message such that at least one discrete patch message is transmitted to a first mobile unit but not to a second mobile unit recited in claim 1; a processor is operable to store patch information provided by at least one discrete patch message in a second memory and to store a patched operating code in a third memory after the patched operating code is created recited in claim 17; a new patch file message comprises information including a patch file ID, a software version, a number of patches, and first patch data recited in claim 24; steps of copying boot code into a first memory, executing a system reset from the first memory, restarting using patched operating code in the third memory recited in claim 28; step of addressing at least one discrete patch message such that the least one discrete patch message is transmitted to a first mobile unit but not to a second mobile unit recited in claim 35.

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

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Bin Yao whose telephone number is (703) 308-7583. The examiner can normally be reached on Monday through Friday from 7:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Olms, can be reached on (703) 305-4703. The fax phone number for this Group is (703) 305-9509.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Kwang Bin Yao

April 23, 1997

HASSAN KIZOU
PRIMARY EXAMINER
GRO[illegible]2600

BEST COPY

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: Box ISSUE FEE
ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

BAKER & BOTTS
2001 ROSS AVENUE
DALLAS TX 75201-2980

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/4[illegible].075	04/127[illegible]	04[illegible]	[illegible] 2603	[illegible]/29/97

First Named Applicant BEASLEY, [illegible]

TITLE OF INVENTION SYSTEM AND METHOD FOR [illegible] OF OPERATING CODE LOCATED IN A MOBILE UNIT

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]/29/97

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE 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.

HOW TO RESPOND 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 changed, pay twice the amount of the FEE DUE shown and notify the Patent and Trademark Office of the change in status, or

B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay FEE DUE shown above, or

B. File verified statementof Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "6b" of Part B should be completed.

III. All communications regarding this application must give application number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: 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.

Petitioner Microsoft Corporation - Ex. 1002, p. 112

242-645
561-[illegible]

PART B—ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 6 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to addresses entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block 3 below; or (b) providing the PTO with a separate "FEE ADDRESS" for maintenance fee notifications with the payment of Issue Fee or thereafter. See reverse for Certificate of Mailing, below.

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.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231.
DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

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Publishing Division
JUL 18 1997

1. CORRESPONDENCE ADDRESS

26M1/0429

BAKER & BOTTS
2001 ROSS AVENUE
DALLAS TX 75201-2980

2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)

INVENTOR'S NAME
Street Address
City, State and Zip Code
CO-INVENTOR'S NAME
Street Address
City, State and Zip Code

04

☐ Check if additional changes are enclosed

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT		DATE MAILED
08/422,075	04/12/95	042	YAO, K	2603	04/29/97

First Named Applicant: BEASLEY, DALE E.

TITLE OF INVENTION: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 19743-0165	364-514.00R	M43	UTILITY	YES	$645.00	07/29/97

3. Correspondence address change (Complete only if there is a change)

08/18/1997 [illegible]
01 [illegible]
0[illegible]

4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.

1 Baker & Botts, L.L.P.
2
3

5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT (print or type)

(1) NAME OF ASSIGNEE: HIGHWAYMASTER COMMUNICATIONS, INC.
(2) ADDRESS: (CITY & STATE OR COUNTRY) Dallas, Texas

A. ☐ This application is NOT assigned.
☒ Assignment previously submitted to the Patent and Trademark Office.
☐ Assignment is being submitted under separate cover. Assignment should be directed to Box ASSIGNMENTS.
PLEASE NOTE: Unless an assignee is identified in Block 5, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been perviously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

6a. The following fees are enclosed:
☒ Issue Fee ☒ Advance Order - # of Copies 10

6b. The following fees should be charged to:
DEPOSIT ACCOUNT NUMBER 02-0384
(ENCLOSE A COPY OF THIS FORM)
☐ Issue Fee ☐ Advance Order - # of Copies
☒ Any Deficiencies in Enclosed Fees

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified above.

(Authorized Signature) [signature] (Date) 7/14/97

NOTE: The Issue Fee 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 Patent and Trademark Office.

Certificate of Mailing

Note: If this certificate of mailing is used, it can be used to transmit the Issue Fee. 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.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficent postage as first class mail in an envelope addressed to: **Box ISSUE FEE**
Assistant Commissioner for Patents
Washington, D.C. 20231

on: July 14, 1997 (Date)
Carol A. Donahue (Name of person making deposit)
[signature] (Signature)
July 14, 1997 (Date)

Petitioner Microsoft Corporation - EXH. 1002, p. 113

#9

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Dale E. Beasley, et al
Serial No.:	08/422,075
Filed:	April 12, 1995
Group No.:	2603
Examiner:	K, Yao
Notice of Allowance Mailed:	April 29, 1997
Batch No.:	M43
Title:	*System and Method for Remote Patching of Operating Code Located in a Mobile Unit*

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Publishing Division
JUL 18 1997
04

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on 7-14-97.

Carol A Donahue
Name

July 14, 1997
Date of Signature

Honorable Commissioner of
Patents and Trademarks
Washington, DC 20231

Dear Sir:

TRANSMITTAL OF SUPPLEMENTAL DECLARATION

A Supplemental Declaration is transmitted herewith for filing in the above-identified patent application.

Respectfully submitted,

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Jerry W. Mills
Registration No. 23,005

Date: July 14, 1997
2001 Ross Avenue
Dallas, TX 75201
(214) 953-6665
Attorney Docket No.: 019743.0165

DAL01A:300923.1

SUPPLEMENTAL
DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention, design or discovery entitled *System and Method for Remote Patching of Operating Code Located in a Mobile Unit* the specification of which (check one):

___ is attached hereto; or

__x__ was filed on 04/12/95 as Application Serial No. 08/422,075 ___ and was amended on 01/27/97 (if applicable);

that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; that I do not know and do not believe that said invention, design or discovery was ever known or used in the United States of America before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application; that said invention, design or discovery has not been patented or made the subject of an inventor's certificate issued prior to the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns; and that I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with 37 C.F.R. § 1.56(a).

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed
N/A			

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial Number	Date Filed	Status
N/A		

I hereby appoint:

Jerry W. Mills	Reg. No. 23,005
Robert M. Chiaviello	Reg. No. 32,461
Ann C. Livingston	Reg. No. 32,479
Kevin J. Meek	Reg. No. 33,738
Rodger L. Tate	Reg. No. 27,399
Scott F. Partridge	Reg. No. 28,142
William N. Hulsey III	Reg. No. 33,402
Wei Wei Jeang	Reg. No. 33,305
Charles S. Fish	Reg. No. 35,870
Thomas R. Felger	Reg. No. 28,842
James B. Arpin	Reg. No. 33,470
James Remenick	Reg. No. 36,902
Robert H. Johnston III	Reg. No. 37,364
Jay B. Johnson	Reg. No. 38,193

Petitioner Microsoft Corporation - Ex. 1002, p. 116

Anthony A. Peterman	Reg. No. 38,270
Barton E. Showalter	Reg. No. 38,302
David G. Wille	Reg. No. 38,363
Robert J. Ward	Reg. No. 38,652
Chris J. Rourk	Reg. No. 39,348
Philip W. Woo	Reg. No. 39,880
Terry J. Stalford	Reg. No. 39,522
Bradley P. Williams	Reg. No. 40,227
Robert W. Holland	Reg. No. 40.020
Christopher W. Kennerly	Reg.No. P40,675
Steven R. Sprinkle	Reg. No. P40,825
Daniel P. Stewart	Reg. No. P41,332

all of the firm of BAKER & BOTTS, L.L.P., my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities under the Patent Cooperation Treaty.

Send Correspondence To:	Direct Calls To:
BAKER & BOTTS, L.L.P. 2001 Ross Avenue Dallas, Texas 75201	Barton E. Showalter (214) 953-6509

Atty. Docket No. 019743.0165

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon. This Supplemental Declaration supplements the Declaration filed April 12, 1995.

Petitioner Microsoft Corporation - Ex. 1002, p. 117

Full name of the sole or first inventor

Dale E. Beasley

Inventor's signature

Date 6/9/97

Residence (City, County, State) Flower Mound, Denton County, Texas

Citizenship United States of America

Post Office Address 2709 Ridgemere Drive
Flower Mound, Texas 75028

Full name of second joint inventor, if any

William C. Kennedy III

Inventor's signature

Date 6/9/97

Residence (City, County, State) Dallas, Dallas County, Texas

Citizenship United States of America

Post Office Address 9049 Church Road
Dallas, Texas 75231

Petitioner Microsoft Corporation - Ex. 1002, p. 118

Full name of third joint inventor, if any

Kenneth R. Westerlage

Inventor's signature

Date 6-9-97

Residence (City, County, State) Fort Worth, Tarrant County, Texas
Citizenship United States of America
Post Office Address 3605 Scranton Drive
Fort Worth, Texas 76118

Petitioner Microsoft Corporation - Ex. 1002, p. 119

Transaction History Date 1997-12-1
Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

PTO UTILITY GRANT
Paper Number 10

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to an statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

Bruce Lehman
Commissioner of Patents and Trademarks

Attest

Form PTO-1584 (Rev. 2/97)

(RIGHT INSIDE)

COFC

AUSTIN
HOUSTON
MOSCOW
NEW YORK
WASHINGTON, D.C.

BARTON J. SHOWALTER
(214) 953-6500

FEB 05 1998
PATENT & TRADEMARK OFFICE
JC17

BAKER & BOTTS
L.L.P.

DALLAS, TEXAS 75201-2980
2001 ROSS AVENUE

TELEPHONE: (214) 953-6500
FACSIMILE: (214) 953-6503

E-MAIL ADDRESS:
BARTON_SHOWALTER@BAKERBOTTS.COM

January 29, 1998

Honorable Commissioner of
Patents and Trademarks
Washington, DC 20231

Re:	U.S. Patent No.	5,699,275
	Issue Date:	December 16, 1997
	Serial No.:	08/422,075
	Filing Date:	April 12, 1995
	Title:	SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT
	Our File:	019743.0165

ATTENTION: CERTIFICATE OF CORRECTION BRANCH

Dear Sir:

U. S. Patent No. 5,699,275 has been proofread against our file for printing errors. The printing errors which are noted on the enclosed Certificate of Correction (Form PTO-1050) have been found.

These corrections are not due to Applicants' error. The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker & Botts, L.L.P.

Respectfully submitted

03/25/1998 GEZE11 00000073 DAM:020384 5699275
01 FC:145 100.00 CH

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

APPROVED
APR 14 1998
FOR THE PA., & T.M.

Barton J. Showalter
Registration No. 38,302

Enclosure

DAL01A:355349.1
016041.0252

Staple Here Only

PRINTER'S TRIM LINE

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275

DATED : December 16, 1997

INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 15, line 13, delete "executing", and insert -- execution --.

Column 15, line 58, delete "execution", and insert -- executing --.

MAILING ADDRESS OF SENDER:

Baker & Botts, L.L.P.
2001 Ross Avenue
Dallas, Texas 75201-2980

PATENT NO. 5,699,275

No. of add'l. copies @ 30¢ per page

FORM PTO 1050 (REV. 3-82)

NOTICE RE: CERTIFICATES OF CORRECTION Paper No. _____

DATE : 3-26-98

TO : Supervisor, Art Unit 2603

SUBJECT : Certificate of Correction Request in Patent No. 5699275

A response to the following question(s) is requested with respect to the accompanying request for a certificate of correction.

☑ 1. Would the change(s) requested under 37 CFR 1.323 constitute new matter or require reexamination of the application?

☑ 2. Would the change(s) requested under 37 CFR 1.323 materially affect the scope or meaning of the claims allowed by the examiner in the patent?

☐ 3. Applicant disagrees with change(s) initialed and dated by Examiner in lieu of an Examiner's Amendment. Should the change request be granted?

☐ 4. With respect to the change(s) requested, correcting Office errors, should the patent read as shown in the certificate of correction?

☐ 5. If the amendment filed _____ had been considered by the Examiner, would the amendment have been entered?

PLEASE RESPOND WITHIN 7 DAYS AND RETURN THE FILE TO ROOM 809, PKI

E. Jones
Patent Assistant

TO: CERTIFICATES OF CORRECTION BRANCH | DATE: 4/2/98

The decision regarding the change(s) requested in the certificate of correction is shown below.

1.	☐ YES	☑ NO	☐ Comments below
2.	☐ YES	☑ NO	☐ Comments below
3.	☐ YES	☐ NO	☐ Comments below
4.	☐ YES	☐ NO	☐ Comments below
5.	☐ YES	☐ NO	☐ Comments below

☐ Comments _____

Supervisor 2731 Art Unit

PTOL-306 (REV. 10/87) U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 1998-04-14

Document Title - Certificate of Correction - Post Issue Communication

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275
DATED : December 16, 1997
INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5, line 41, after "message.", delete "application", and insert -- Application --.

Column 5, line 47, after "in", delete "application" and insert -- Application --.

Column 15, line 13, delete "execution" and insert -- executing --.

Signed and Sealed this

Twelfth Day of May, 1998

Bruce Lehman

Attest:

BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks

NOTICE RE: CERTIFICATES OF CORRECTION Paper No. _____

DATE : 6-18-98

TO : Supervisor, Art Unit 2603

SUBJECT : Certificate of Correction Request in Patent No. 5699275

A response to the following question(s) is requested with respect to the accompanying request for a certificate of correction.

☑ 1. Would the change(s) requested under 37 CFR 1.323 constitute new matter or require reexamination of the application?

☑ 2. Would the change(s) requested under 37 CFR 1.323 materially affect the scope or meaning of the claims allowed by the examiner in the patent?

☐ 3. Applicant disagrees with change(s) initialed and dated by Examiner in lieu of an Examiner's Amendment. Should the change request be granted?

☐ 4. With respect to the change(s) requested, correcting Office errors, should the patent read as shown in the certificate of correction?

☐ 5. If the amendment filed _____ had been considered by the Examiner, would the amendment have been entered?

PLEASE RESPOND WITHIN 7 DAYS AND RETURN THE FILE TO ROOM 809, PKI

E. James
Patent Assistant

TO: CERTIFICATES OF CORRECTION BRANCH | DATE: 6/29/98

The decision regarding the change(s) requested in the certificate of correction is shown below.

1.	☐ YES	☒ NO	☐ Comments below
2.	☐ YES	☒ NO	☐ Comments below
3.	☐ YES	☐ NO	☐ Comments below
4.	☐ YES	☐ NO	☐ Comments below
5.	☐ YES	☐ NO	☐ Comments below

☐ Comments _____

Supervisor SPE 2731 — Art Unit 2731 6/29/98

PTOL-306 (REV. 10/87) U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office

#1
13
E1

AUSTIN
HOUSTON
MOSCOW
NEW YORK
WASHINGTON, D.C.

BARTON E. SHOWALTER
(214) 953-6509

BAKER & BOTTS
L.L.P.
2001 ROSS AVENUE
DALLAS, TEXAS 75201-2980

APPROVED
JUL 7 1998
OFFICE OF THE COMMISSIONER OF PAT & TM

TELEPHONE: (214) 953-6500
FACSIMILE: (214) 953-6503

E-MAIL ADDRESS:
BARTON_SHOWALTER@BAKERBOTTS.COM

May 20, 1998

Honorable Commissioner of
Patents and Trademarks
Washington, DC 20231

Second Request

Re: U.S. Patent No. 5,699,275
Issue Date: December 16, 1997
Serial No.: 08/422,075
Filing Date: April 12, 1995
Title: SYSTEM AND METHOD FOR REMOTE PATCHING OF OPERATING CODE LOCATED IN A MOBILE UNIT
Our File: 019743.0165

JUN - 2 1998

ATTENTION: CERTIFICATE OF CORRECTION BRANCH

Dear Sir:

On the attached Certificate of Correction, please note the change to Column 15, line 13. We previously incorrectly requested a change to this word. We have requested with this Certificate of Correction to change the text to read as originally published.

We are also requesting a change to Column 15, line 58. This correction is not due to Applicants' error.

The fee for the correction under 37 CFR §1.20(a) is $100.00 and paid with the enclosed check for $100.00 for the correction to Column 15, line 13. The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker & Botts, L.L.P.

Respectfully submitted

06/02/1998 LBERGER 00000204 5699275
01 FC:145 100.00 OP

BAKER & BOTTS, L.L.P.
Attorneys for Applicants

Barton E. Showalter
Registration No. 38,302

Enclosure

Staple Here Only !

PRINTER'S TRIM LINE

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275
DATED : December 16, 1997
INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5, line 41, after "message.", delete "application", and insert -- Application --.

Column 5, line 47, after "in", delete "application" and insert -- Application --.

Column 15, line 13, delete "execution" and insert -- executing --.

MAILING ADDRESS OF SENDER:
Barton J. Showalter
Baker & Botts, L.L.P.
2001 Ross Avenue
Dallas, Texas 75201

PATENT NO. 5,699,275

No. of add'l. copies @ 30¢ per page

FORM PTO 1050 (REV. 3-82)

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 1998-07-08

Document Title - Certificate of Correction - Post Issue Communication

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,699,275
DATED : December 16, 1997
INVENTOR(S) : Beasley, *et al.*

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 15, line 13, delete "executing", and insert -- execution --.

Column 15, line 58, delete "execution", and insert -- executing --.

Signed and Sealed this

FourthDay of August, 1998

Bruce Lehman

Attest:

BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2001-07-06

Document Title - USPTO Communication Re: Change of Address

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2001-07-06

Document Title - USPTO Communication Re: Power of Attorney

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2008-09-18

Document Title - USPTO Communication Re: Change of Address

This page is not part of the official USPTO record. It has been determined that content identified on this document is missing from the original file history record.

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 1994

Application or Docket Number: H22075

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	42 minus 20 =	* 22
INDEPENDENT CLAIMS	5 minus 3 =	* 2
MULTIPLE DEPENDENT CLAIM PRESENT		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
	365.00	OR		730.00
x$11=	242.00	OR	x$22=	
x38=	76.00	OR	x76=	
+120=		OR	+240=	
TOTAL	683.00	OR	TOTAL	

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	* 42	Minus	** 42	= —
Independent	* 5	Minus	*** 5	= —
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=	—	OR	x$22=	
x38=	—	OR	x76=	
+120=		OR	+240=	
TOTAL ADDIT. FEE	—	OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=		OR	x$22=	
x38=		OR	x76=	
+120=		OR	+240=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				

SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
x$11=		OR	x$22=	
x38=		OR	x76=	
+120=		OR	+240=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
*** If the Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

PTO 1330

PACK DATA ENTRY CODING SHEET

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

1ST EXAMINER Durand	DATE 5-17-95
2ND EXAMINER	DATE

APPLICATION NUMBER: 08 422075

TYPE APPL: 1

FILING DATE: MONTH 04 DAY 12 YEAR 95

SPECIAL HANDLING: Ø

GROUP ART UNIT: 2312

CLASS: 395

SHEETS OF DRAWING: 5

TOTAL CLAIMS: 42

INDEPENDENT CLAIMS: 5

SMALL ENTITY?: 2

FILING FEE: 685

FOREIGN LICENSE: Y

ATTORNEY DOCKET NUMBER: 19743-0165

CONTINUITY DATA

CONT STATUS	PARENT APPLICATION DATA	PCT APPLICATION SERIAL NUMBER	PARENT PATENT NUMBER	PARENT FILING DATE (MONTH DAY YEAR)
		PCT/ /		
		PCT/ /		
		PCT/ /		
		PCT/ /		
		PCT/ /		

PCT/FOREIGN APPLICATION DATA

FOREIGN PRIORITY CLAIMED	COUNTRY CODE	PCT/FOREIGN APPLICATION SERIAL NUMBER	FOREIGN FILING DATE (MONTH DAY YEAR)

☆U.S.G.P.O.: 1994 - 384-

Petitioner Microsoft Corporation - Ex. 1002, p. 135