

**Exhibit B-01**

Based on Headwater's apparent positions as to the scope of the patent's claims, as best they can be deciphered, the reference(s) charted below anticipate(s) or at least render(s) obvious the identified claims. The portions of the prior art reference cited below are not exhaustive but are exemplary in nature. Where Samsung identifies a portion of the prior art reference's text, the identification should be understood as referencing any corresponding figure or diagram, and vice versa.

This disclosure is not an admission that Samsung concedes any claim construction implied or suggested by Headwater's apparent positions as to the scope of the patent's claims, nor is it an admission by Samsung that any of its products are covered by or infringe the patent's claims, particularly when they are properly construed and applied. Samsung is not taking any claim construction positions through this disclosure, including whether the preamble is a limitation.

Samsung reserves the right to rely on additional citations or sources of evidence that also may be applicable, or that may become applicable in light of claim construction, changes in Headwater's infringement contentions, and/or information obtained during discovery as the case progresses. Samsung further reserves the right to amend or supplement this claim chart at a later date as more fully set forth in the Invalidity Contentions.

International Patent Application Publication No. 2006/077283 A1 ("Houghton") qualifies as prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and/or (b). Houghton is a Patent Application that was filed on or before January 19, 2006, and published on or before July 27, 2006.

To the extent it is argued that Houghton does not disclose or include each and every asserted claim limitation, either expressly or inherently, it would have been obvious to a POSITA to incorporate any of the teachings from the other "B" Exhibits (whose exemplary citations for each limitation are incorporated herein) into Houghton. Indeed, it would have been obvious to make such combinations and a POSITA would have had reason and motivation to make such combinations at least for reasons described herein and in the cover pleading.

| '117 Claims                           | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1 pre]. A network system comprising: | <p>To the extent the preamble is a limitation, Houghton discloses and/or renders obvious this element. For example, see the following passages and/or figures, as well as related disclosures:</p> <p>Houghton at Abstract</p> <p>“A server outside a wireless network security entity is adapted to push messages to a mobile terminal located in the wireless network and thereby cause programs to start to a specified operating state or, if already started, change operating state to the state indicated by the message thereby presenting a new application view to the user of the mobile terminal. The mobile terminal is provided with means, such as software, which initiates and maintains contact with the server using Internet technologies. This mobile-initiated permanent connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time.”</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Figure 1</p> </div> <div style="text-align: center;"> <p>Figure 2</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>Figure 3</p> </div> <div style="text-align: center;"> <p>Figure 4</p> </div> </div> <p>Houghton at Abstract</p> |

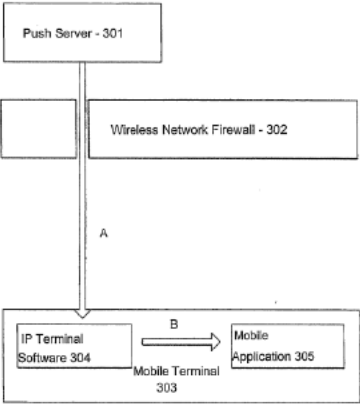
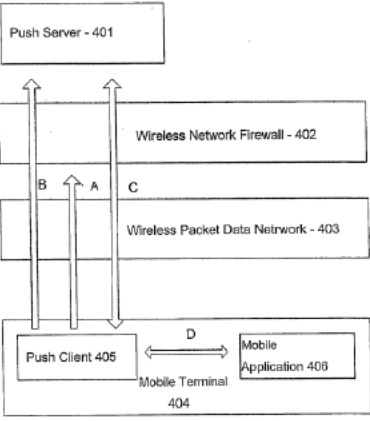
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|             | <p>“After attempting login, if the login is not successful the client 405 may automatically or under supervision of the user of the mobile terminal 404 try several different techniques for contacting the server 401. Since there are numerous variations between mobile terminals and in network connectivity, more than one connection attempt may be needed to contact the push server 401. Differences in wireless network terminal characteristics, individual push server availability and accessibility, firewall and gateway permissions, connection timeouts, connection level stateful (such as TCP) and stateless (such as UDP) transport protocol availability (such as IP4, IP6, SSL, HTTP, HTTPS) and alternate mobile terminal network settings mean that a sequence of connection establishment attempts and connection maintaining steps may required to be made using variations in relevant network parameters.”</p> <p>Houghton at 1-3</p> <p>“Description of the Related Art<br/>The Internet is a collection of networks which exchange messages using IP protocol (Internet Protocol) and associated protocols which run on top of IP such as TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Gateways between IP networks automatically route and transmit information over primarily the IP4 and IP6 protocols between two or more end points on any of the connected fixed and mobile networks. Each of these networks may also include or run on top of other network transport protocols such as ATM (Asynchronous Transfer Mode) or a wireless protocol which in turn carry the IP packets over that section of the Internet. Currently, the most common method of starting applications on a mobile terminal it to manually launch them by clicking on an icon or selecting a menu item. If the application, dynamically loaded program module or user interface feature is already launched, these applications must also be manually commanded by the user to change state to display newly available information provided by a</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|             | <p>telecommunications network. Some applications are also launched automatically when the terminal is started. This automatic start includes both applications that were installed on the phone before delivery to the customer including the basic terminal operating system software and programs installed by service providers and users and which by various means ask the terminal software to start them automatically after the terminal is powered up.</p> <p>Remote launch to a known state as specified in a network command of programs on mobile terminals is supported in various telecommunications standards. Voice Over IP (VoIP) and other multimedia sessions can be started remotely using Session Initiation Protocol (SIP). Wireless Application Protocol Push (WAP Push) is another standard for launching programs on mobile terminals based on remote events. Java Mobile Information Device Profile (MIDP) and various native mobile terminal operating systems also support remote application launch based on receipt of a text message (Short Message Service, SMS) or incoming Internet (IP) packet of information to a designated communications port number. However it is important to note from an economics and practical service deployment standpoint that each of these technologies either requires payment to the mobile network operator for sending an SMS or privileged access to the mobile phone from inside the operator's firewall in order for IP data to actually reach the phone.</p> <p>Mobile phones and similar mobile communication devices where originally not permanently connected to the Internet. Instead, for the transmission and display of visual information they have relied on different telecommunications standards and proprietary communication systems such as SMS (Short Message Service, also known as text messaging) and MMS (Multimedia Message Service), which were built into mobile terminals.</p> <p>Various techniques have been proposed for remotely commanding applications on a mobile terminal using push technologies:</p> <p>US20020183051 relates to remote application management of a wireless device.</p> <p>US20030208602 relates to pushing data in an internet protocol network environment.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|             | <p>US20010020255 relates to remote control and interaction with a mobile run time environment component.</p> <p>US6687743 relates to client server communications for a mobile computing device.</p> <p>US6779019 relates pushing information from a host to a mobile data communications device.</p> <p>US6701378 relates pushing information from a host to a mobile data communications device.</p> <p>US6463464 relates pushing information from a host to a mobile data communications device.</p> <p>US6463463 relates pushing information from a host to a mobile data communications device.</p> <p>US6389457 relates pushing information from a host to a mobile data communication device.</p> <p>US2004122907 relates to secure interaction between a mobile client device and an enterprise application in a communication system.</p> <p>WO0195695 discloses a system for wireless push and pull based services.</p> <p>US2002187775 discloses a WAP service personalization, management and billing object oriented platform</p> <p>US2003106022 relates to outputting dynamic local content on mo-bile terminals</p> <p>US2004185834 discloses a method for enabling IP push capability to wireless devices on a wireless network.</p> <p>US2002174184 shows a mailbox access mechanism using SMS push and WAP technologies on mobile terminals</p> <p>WO02077842 shows a push method for delivering data to mobile device.</p> <p>Wireless Application Protocol Forum, Ltd., "Wireless Application Environment Specification, Version 2.0", Version 7-Feb-2002, 2002. <a href="http://www.wapforum.org">www.wapforum.org</a>.</p> <p>Sun Microsystems, Ltd, "The MIDP 2.0 Push Registry", Network and Timer MIDlet activation developers. <a href="http://sun.com/techtopics/mobility/midp/articles">sun.com/techtopics/mobility/midp/articles</a></p> <p>Nokia, Ltd., "SIP Session Initiation Protocol", Forum Nokia 2005 <a href="http://www.forum.nokia.com/main/0,6566,144,00.html">www.forum.nokia.com/main/0,6566,144,00.html</a>.</p> |

| '117 Claims                                                                                                                                                                                                      | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|                                                                                                                                                                                                                  | <p>Nokia, Ltd , "SIP Frequently Asked Questions", Forum Nokia 2004 SIP FAQ v1 0 en.<br/>RFC 3261 , "SIP: Session Initiation Protocol", 2002. <a href="http://www.faqs.org/rfcs/rfc3261.html">www.faqs.org/rfcs/rfc3261.html</a><br/>Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of push technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of "push" messaging in the mobile industry. These store and forward messaging systems run by mobile telecommunications operators push all or part of the data to the mobile terminal over closed telecommunications signaling networks such as SS7 (Signaling System Seven) These signaling networks are closed, they are not part of the Internet Each operator controls and encrypts this traffic, charging high prices for their use and limiting their use and usefulness."</p> <p>Houghton at 10</p> <p>"Given the shortcomings in the prior art, there is a need for a method whereby a computer on the Internet can rapidly and at reasonable cost be permitted to at any time initiate control of one or more applications on an individual's mobile terminal to deliver through that mobile application real time in- formation, interactivity and rich media content, regardless of which mobile operator is being used and where the mobile user happens to be at that moment."</p> |
| [1a] a plurality of device messaging agents, each executable on a respective one of a plurality of mobile end-user devices configured to exchange Internet data via a data connection to a wireless network; and | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|             | <p>Houghton at Abstract</p> <p>“A server outside a wireless network security entity is adapted to push messages to a mobile terminal located in the wireless network and thereby cause programs to start to a specified operating state or, if already started, change operating state to the state indicated by the message thereby presenting a new application view to the user of the mobile terminal. The mobile terminal is provided with means, such as software, which initiates and maintains contact with the server using Internet technologies. This mobile-initiated permanent connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time.”</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Figure 1</p> </div> <div style="text-align: center;"> <p>Figure 2</p> </div> </div> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|             | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Figure 3</p>  </div> <div style="text-align: center;"> <p>Figure 4</p>  </div> </div> <p>Houghton at 18</p> <p>“After attempting login, if the login is not successful the client 405 may automatically or under supervision of the user of the mobile terminal 404 try several different techniques for contacting the server 401. Since there are numerous variations between mobile terminals and in network connectivity, more than one connection attempt may be needed to contact the push server 401. Differences in wireless network terminal characteristics, individual push server availability and accessibility, firewall and gateway permissions, connection timeouts, connection level stateful (such as TCP) and stateless (such as UDP) transport protocol availability (such as IP4, IP6, SSL, HTTP, HTTPS) and alternate mobile terminal network settings mean that a sequence of connection establishment attempts and connection maintaining steps may required to be made using variations in relevant network parameters.”</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|             | <p>Houghton at 1-3</p> <p>“Description of the Related Art</p> <p>The Internet is a collection of networks which exchange messages using IP protocol (Internet Protocol) and associated protocols which run on top of IP such as TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Gateways between IP networks automatically route and transmit information over primarily the IP4 and IP6 protocols between two or more end points on any of the connected fixed and mobile networks. Each of these networks may also include or run on top of other network transport protocols such as ATM (Asynchronous Transfer Mode) or a wireless protocol which in turn carry the IP packets over that section of the Internet. Currently, the most common method of starting applications on a mobile terminal is to manually launch them by clicking on an icon or selecting a menu item. If the application, dynamically loaded program module or user interface feature is already launched, these applications must also be manually commanded by the user to change state to display newly available information provided by a telecommunications network. Some applications are also launched automatically when the terminal is started. This automatic start includes both applications that were installed on the phone before delivery to the customer including the basic terminal operating system software and programs installed by service providers and users and which by various means ask the terminal software to start them automatically after the terminal is powered up.</p> <p>Remote launch to a known state as specified in a network command of programs on mobile terminals is supported in various telecommunications standards. Voice Over IP (VoIP) and other multimedia sessions can be started remotely using Session Initiation Protocol (SIP). Wireless Application Protocol Push (WAP Push) is another standard for launching programs on mobile terminals based on remote events. Java Mobile Information Device Profile (MIDP) and various native mobile terminal operating systems also support remote application launch based on receipt of a text message (Short Message Service, SMS) or incoming Internet (IP) packet of</p> |

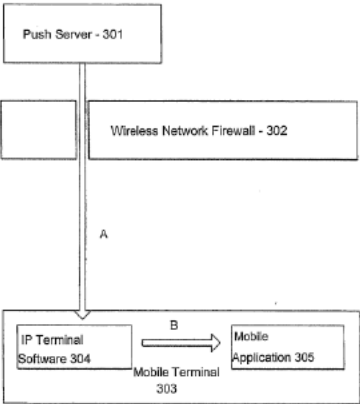
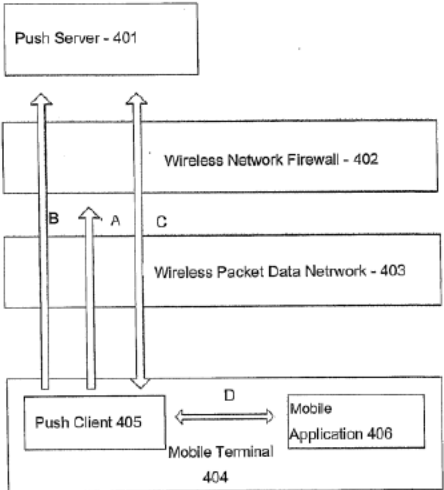
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|             | <p>information to a designated communications port number. However it is important to note from an economics and practical service deployment standpoint that each of these technologies either requires payment to the mobile network operator for sending an SMS or privileged access to the mobile phone from inside the operator's firewall in order for IP data to actually reach the phone.</p> <p>Mobile phones and similar mobile communication devices where originally not permanently connected to the Internet. Instead, for the transmission and display of visual information they have relied on different telecommunications standards and proprietary communication systems such as SMS (Short Message Service, also known as text messaging) and MMS (Multimedia Message Service), which were built into mobile terminals.</p> <p>Various techniques have been proposed for remotely commanding applications on a mobile terminal using push technologies:</p> <p>US20020183051 relates to remote application management of a wireless device.</p> <p>US20030208602 relates to pushing data in an internet protocol network environment.</p> <p>US20010020255 relates to remote control and interaction with a mobile run time environment component.</p> <p>US6687743 relates to client server communications for a mobile computing device.</p> <p>US6779019 relates pushing information from a host to a mobile data communications device.</p> <p>US6701378 relates pushing information from a host to a mobile data communications device.</p> <p>US6463464 relates pushing information from a host to a mobile data communications device.</p> <p>US6463463 relates pushing information from a host to a mobile data communications device.</p> <p>US6389457 relates pushing information from a host to a mobile data communication device.</p> <p>US2004122907 relates to secure interaction between a mobile client device and an enterprise application in a communication system.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>WO0195695 discloses a system for wireless push and pull based services.</p> <p>US2002187775 discloses a WAP service personalization, management and billing object oriented platform</p> <p>US2003106022 relates to outputting dynamic local content on mo-bile terminals</p> <p>US2004185834 discloses a method for enabling IP push capability to wireless devices on a wireless network.</p> <p>US2002174184 shows a mailbox access mechanism using SMS push and WAP technologies on mobile terminals</p> <p>WO02077842 shows a push method for delivering data to mobile device.</p> <p>Wireless Application Protocol Forum, Ltd., "Wireless Application Environment Specification, Version 2.0", Version 7-Feb-2002, 2002. <a href="http://www.wapforum.org">www.wapforum.org</a>.</p> <p>Sun Microsystems, Ltd, "The MIDP 2.0 Push Registry", Network and Timer MIDlet activation developers. <a href="http://sun.com/techtopics/mobility/midp/articles">sun.com/techtopics/mobility/midp/articles</a></p> <p>Nokia, Ltd., "SIP Session Initiation Protocol", Forum Nokia 2005 <a href="http://www.forum.nokia.com/maun/0,6566,1_44,00.html">www.forum.nokia.com/maun/0,6566,1_44,00.html</a>.</p> <p>Nokia, Ltd, "SIP Frequently Asked Questions", Forum Nokia 2004 SIP FAQ v1.0 en.</p> <p>RFC 3261, "SIP: Session Initiation Protocol", 2002. <a href="http://www.faqs.org/rfcs/rfc3261.html">www.faqs.org/rfcs/rfc3261.html</a></p> <p>Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of push technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of "push" messaging in the mobile industry. These store and forward messaging systems run by mobile telecommunications operators push all or part of the data to the mobile terminal over closed telecommunications signaling networks such as SS7 (Signaling System Seven) These signaling networks are closed, they are not part of the Internet Each operator controls and encrypts this traffic, charging high prices for their use and limiting their use and usefulness."</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|             | <p>Houghton at 10</p> <p>“Given the shortcomings in the prior art, there is a need for a method whereby a computer on the Internet can rapidly and at reasonable cost be permitted to at any time initiate control of one or more applications on an individual's mobile terminal to deliver through that mobile application real time in- formation, interactivity and rich media content, regardless of which mobile operator is being used and where the mobile user happens to be at that moment.”</p> <p>Houghton at 11</p> <p>“In a preferred embodiment of the present invention is a system and method for a server placed freely on a connected network outside the wireless network firewall or other corresponding wireless network security entity, to push messages to a mobile terminal located in the wireless network and thereby cause programs to start to a specified operating state or, if already started, change operating state to the state indicated by the message thereby presenting a new application view to the user of the mobile terminal. The mobile terminal is provided with means, such as software, which initiates and maintains contact with the server using Internet technologies, thereby avoiding cost, latency, contractual and firewall penetration issues of the server contacting the mobile terminals by telecommunications messaging or Internet technologies. This mobile-initiated permanent IP connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time. If the server would attempt to use IP to contact the mobile device directly, the attempt would fail due to the firewall(s).”</p> <p>Houghton at 15</p> <p>“Brief description of the drawings</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>In the following description, reference is made to the accompanying drawings which form a part hereof, and which illustrate several embodiments of the present invention. In the drawings:</p> <p>Figure 1 shows an implementation known in the art for pushing information including commands to an application through existing telecommunications SMS infrastructure to a mobile terminal and if necessary launching the application;</p> <p>Figure 2 shows an implementation known in the art for pushing information including commands from inside the mobile network firewall to an application to a mobile terminal and if necessary launching the application;</p> <p>Figure 3 shows an implementation known in the art for pushing information including commands from outside the mobile network firewall through a firewall hole opened by the mobile network operator to an application to a mobile terminal and if necessary launching the application;</p> <p>Figure 4 is a block diagram illustrating an exemplary implementation of the system for pushing mobile application launch commands to a mobile terminal based on server side events in accordance with one embodiment of the present invention;"</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton") |
|-------------|-----------------------------------------------------|
|             | <p>Figure 1</p> <p>Figure 2</p>                     |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>Figure 3</p>  <p>Figure 4</p>  |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|             | <p>Houghton at 16-17</p> <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security, encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|             | <p>firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> <p>Houghton at 18-20</p> <p>"A second reason for automatically adjusting the network parameters is not simply establishing the connection but establishing the connection in the most cost effective or highest performance configuration available for the individual mobile terminal user account service level. Connection types differ in speed, customer expensive, server resource usage and hence scalability, security and ability to penetrate gateway security devices. Some customers may be offered more secure or higher performance service while others receive the least cost connectivity from either the mobile terminal's or the push server's standpoint.</p> <p>As an example, such network parameters may include but are not limited to one or more of the following</p> <ul style="list-style-type: none"> <li>- Use of a connection-oriented protocol suitable to the wireless network such as TCP/IP protocol, which is generally preferred in the common situation where an intermediate firewall, Network Address Translation (NAT) or gateway device 402</li> <li>- Use of a connectionless protocol suitable to the wireless network 403, such as UDP/IP, which is generally preferred when no network device restricting terminal contact 402 is present as this reduces resource usage on the server when large number of mobile terminals is served</li> <li>- Use of an alternate connection-oriented protocol such as HTTP suitable for mobile push operation through more strict firewalls and proxy Internet connections</li> <li>- Use of a secure protocol such as HTTPS, IP-Sec, secure IP6 or a proprietary security protocol to identify the communicating parties, prevent message interception by 3rd parties, and prevent message modification by 3rd parties</li> </ul> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <ul style="list-style-type: none"><li>- Use of a periodic message from the client to the server or server to the client to the effect that client socket, server socket, intermediate Network Address Translation (NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection</li><li>- Use of configuration messages to the firewall (FIG 4, A) using a firewall or other security configuration protocol, such as Universal Plug and Play, to open a path for server-initiated connection-oriented or connectionless messaging to the client</li><li>- Use of periodic messages initiated by the client 405 or by the server 401 to the effect that the receiving application is informed that their messages are continuing to be received, as indicated by response data from the receiving party to the sending party</li><li>- Use of longer or shorter timing between such periodic messages to match the combined needs of all such network devices and protocols involved in transmitting communication, as adjusted based on the success or failure of earlier messages to successfully traverse the open network connection</li><li>- Use of an alternate push server network address such as an address accessible with fewer security and performance restrictions which may be more available, more accessible, lower cost, lower latency, less busy, higher bandwidth or otherwise preferred at the present time and from the present network location of mobile terminal 404.</li><li>- Use of one or more alternative mobile terminal network connection settings, or variation of the parameters within the settings.</li><li>- Use of an alternate connection route through a second mobile or fixed terminal accessible to the mobile terminal over an alternate wireless network or network connection and capable of communication with a push server."</li></ul> <p>Houghton at 20</p> <p>"At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|             | <p>message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time of transmission and thus delaying the transmission."</p> <p style="text-align: center;">Figure 7</p> <pre>graph TD     PS[Push Server - 701] &lt;--&gt; Event Trigger  AS[Application Server - 702]     PS ==&gt; MT[Mobile Terminal 703]     subgraph MT [Mobile Terminal 703]         PC[Push Client 704] &lt;--&gt; Event Trigger  MA[Mobile Application 705]     end</pre> <p>Houghton at 22</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|             | <p>“Figure 7 illustrates an example of an "COMMAND PUSH" procedure wherein the push server 701 is triggered by a trigger event as for example from an application server 702 to push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705, The trigger event from push client 704 to mobile application 705 may optionally include commands or data affecting the aspect of visual presentation of mobile application 705. The even trigger mechanism may be any electronic process mechanism as for example computer software calls to load or configure a class, library, dynamic link library, M I Diet, Symbian application, Linux daemon or other executable object. The trigger mechanism may be between separate parts of a larger application or application suite, or may be an IP-triggered application launch and data transfer as in the case of mobile application launched by contact to a specified IP port. The potential applications of the COMMAND PUSH include but are not limited to mobile applications for enterprise connectivity, back office integration, database access, scientific and industrial process and equipment monitoring and control, pictures transfer, mobile gaming, application data transfer, mobile electronic commerce, application alarms, reminders, multimedia interactivity, corporate calendaring, personal messaging and group messaging, etc.</p> <p>The push server 701 may in combination with user preferences stored in either the push server 701 or push client 704, optionally request the push client 704 to display or otherwise as appropriate for the mobile terminal or appliance notify the user asking permission for launching mobile application 705 prior to application launch. The preferred embodiment is for the behavior, language and content of this information to be configured on the server 701 based on the service and preferences of the individual receiving the message. In such cases an optional informational message will be presented to the user and such information messages are associated for instance with the menu option transmitted to the client 704 by the server 701.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|             | <p>In an embodiment of the invention, the client 704 is also capable of receiving and storing variables which configure behavior of the client 704. The server 701 may thus specify the network connection preferences, notification sounds, and other behavior of the client 704. These changes facilitate the efficient and manageable operation of the entire system and can be used for automated remote maintenance of push client 704, mobile applications as 705, and configurable aspects of underlying mobile terminal 703, for example changing the username, password, and security certificates stored in the mobile terminal.</p> <p style="text-align: center;">Figure 8</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|             | <p>Houghton at 23</p> <p>“Figure 8 illustrates an extension of the procedure in Figure 7, one known as "COMMAND PUSH WITH BIDIRECTIONAL DATA". This embodiment of the invention includes all aspects of "COMMAND PUSH" with the additional step that a data connection between application server 802 and mobile application 805 is established with the aid of the persistent managed, tested and configured data connection in Figure 4, arrow C between push server 401/801 and push client 405/804. An IP or other API (application programming interface) connection between application server 802 and push server 801 simplifies the work and cost of creating application server 802 by taking care of network details already established for the COMMAND PUSH procedure. Similarly, an IP or API connection between push client 804 and mobile application 805 completes the connection and reduces the number, cost and resource usage of a possible plurality of such connections for a corresponding plurality of mobile applications. Further, each mobile application 805 is now free to sleep, exit or otherwise release the limited resources of the mobile terminal 803 with the assurance it may be remotely commanded back into action provided at least one push client 804 from a possible plurality of such push clients remains active, connected to the push server 801 and configured to launch the mobile applications 805”</p> <p>Houghton at 29</p> <p>“In an embodiment of the invention, the push messages may include, for example, a message stimulating, triggering or commanding the launch, display or shift to foreground of a user interface feature of the terminal such as an application which is part of the basic terminal software or and an additional installed application beyond the base software supplied with the mobile terminal. In response to receiving such a message, a mobile terminal may spontaneously open the application, dynamically loaded module or user interface feature of the terminal thereof to a designed</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|             | <p>application view or location, present new information of the availability of new information, a new feature or operating state. If such application, module or user interface features is already operating in the mobile terminal, the action of such a message would instead stimulate the application or user interface feature to present itself to the foreground of the user interface and change state as specified in the application-specific message received from the server. In further embodiments of the invention, push messages may include, for example, messages triggering the mobile terminal to play a sound notifying the recipient of the application command or state change, or display notification providing event information from which the user may select or decline to display the application."</p> <p>Houghton at Claim 1</p> <p>"1. A method of pushing commands and data to a wireless terminal from a push server located outside a wireless system serving the wireless terminal, comprising the push client initiates and maintains over an extended period of time a packet-based data connection through at least one communication security or inter-network connection device of the serving wireless system to the push server using Internet technologies; the push server sends, in response to predetermined trigger events, at any time push application installation, updates, commands or data messages to be directed to a push application or dynamically loaded module or user interface feature from among a plurality of such applications, modules and features by means of said client-initiated or client-opened and client-maintained permanent connection, whereby avoiding blocking of said server-originated push messages by the security device, and launching said application, application module or dynamically loaded module or user interface feature as needed, the push client, in response to receiving a push message containing application installation, updates, application commands or data from the push server, forwards such application commands or data or stores such application installation or updates within the mobile terminal to a mobile application from among a plurality of such applications so as to initiate launch</p> |

| '117 Claims                                                                                                                                                                                                                                                                      | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                                                                                                                                                                                                                                                                                  | <p>optionally to a specified state or if already running initiate or change presentation to the user according to the push message."</p> <p>Houghton at Claim 33</p> <p>"33. A method as claimed in any one of claims 1-32, wherein the push client and push server establish a secure connection and unwrap such security on behalf of the mobile application."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>[1b] a network message server supporting a plurality of secure Internet data connections, each secure Internet data connection between the network message server and a respective one of the mobile end-user devices via a device data connection to a wireless network,</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g., the disclosures identified for [1pre] – [1a].</i></p> <p>Houghton at 1-3</p> <p>"Description of the Related Art<br/>The Internet is a collection of networks which exchange messages using IP protocol (Internet Protocol) and associated protocols which run on top of IP such as TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Gateways between IP networks automatically route and transmit information over primarily the IP4 and IP6 protocols between two or more end points on any of the connected fixed and mobile networks. Each of these networks may also include or run on top of other network transport protocols such as ATM (Asynchronous Transfer Mode) or a wireless protocol which in turn carry the IP packets over that section of the Internet. Currently, the most common method of starting applications on a mobile terminal it to manually launch them by clicking on an icon or selecting a menu item. If the application, dynamically loaded program module or user interface feature is already launched, these applications must also be manually commanded by the user to</p> |

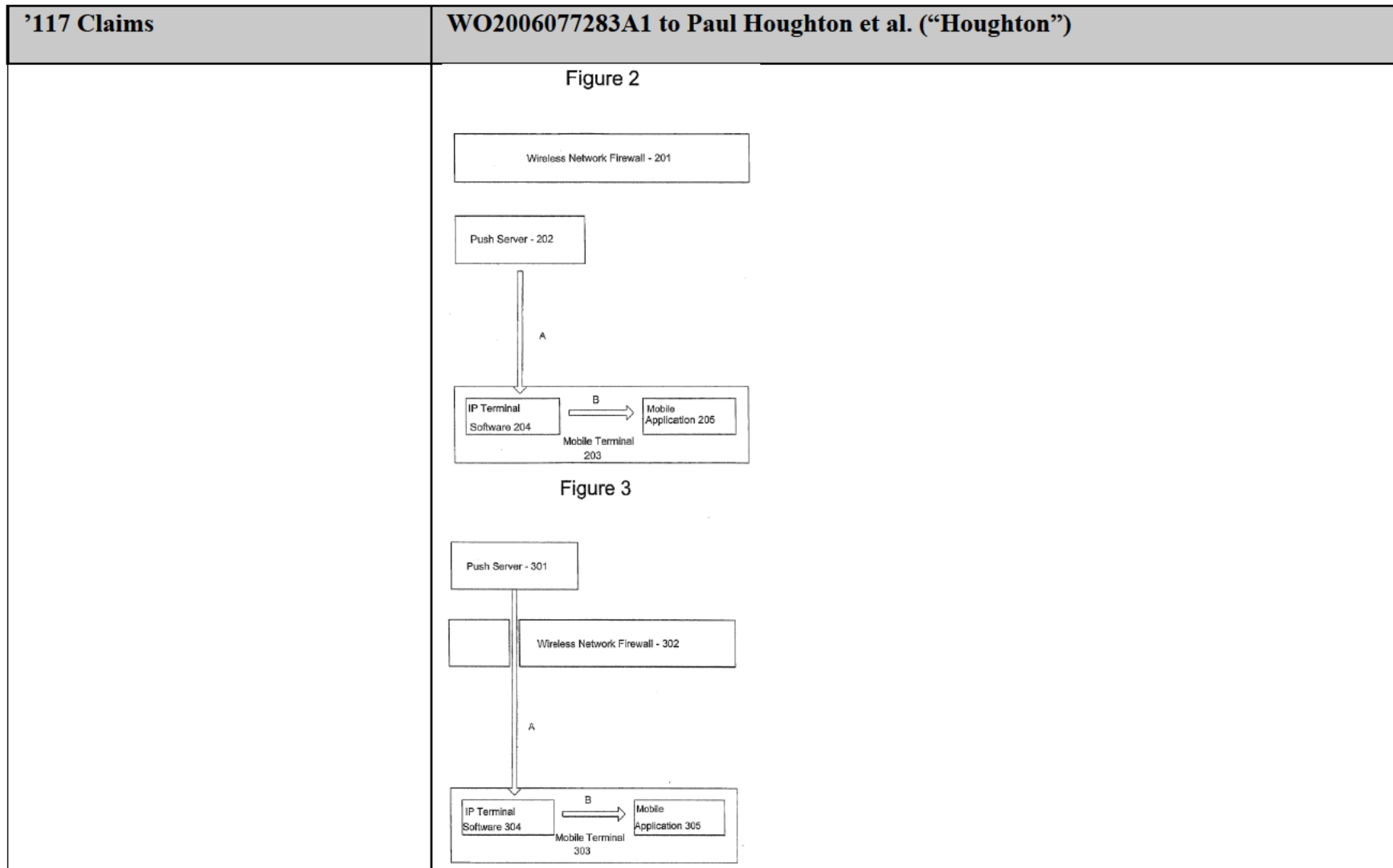
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|             | <p>change state to display newly available information provided by a telecommunications network. Some applications are also launched automatically when the terminal is started. This automatic start includes both applications that were installed on the phone before delivery to the customer including the basic terminal operating system software and programs installed by service providers and users and which by various means ask the terminal software to start them automatically after the terminal is powered up.</p> <p>Remote launch to a known state as specified in a network command of programs on mobile terminals is supported in various telecommunications standards. Voice Over IP (VoIP) and other multimedia sessions can be started remotely using Session Initiation Protocol (SIP). Wireless Application Protocol Push (WAP Push) is another standard for launching programs on mobile terminals based on remote events. Java Mobile Information Device Profile (MIDP) and various native mobile terminal operating systems also support remote application launch based on receipt of a text message (Short Message Service, SMS) or incoming Internet (IP) packet of information to a designated communications port number. However it is important to note from an economics and practical service deployment standpoint that each of these technologies either requires payment to the mobile network operator for sending an SMS or privileged access to the mobile phone from inside the operator's firewall in order for IP data to actually reach the phone.</p> <p>Mobile phones and similar mobile communication devices where originally not permanently connected to the Internet. Instead, for the transmission and display of visual information they have relied on different telecommunications standards and proprietary communication systems such as SMS (Short Message Service, also known as text messaging) and MMS (Multimedia Message Service), which were built into mobile terminals.</p> <p>Various techniques have been proposed for remotely commanding applications on a mobile terminal using push technologies:<br/> US20020183051 relates to remote application management of a wireless device.<br/> US20030208602 relates to pushing data in an internet protocol network environment.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|             | <p>US20010020255 relates to remote control and interaction with a mobile run time environment component.</p> <p>US6687743 relates to client server communications for a mobile computing device.</p> <p>US6779019 relates pushing information from a host to a mobile data communications device.</p> <p>US6701378 relates pushing information from a host to a mobile data communications device.</p> <p>US6463464 relates pushing information from a host to a mobile data communications device.</p> <p>US6463463 relates pushing information from a host to a mobile data communications device.</p> <p>US6389457 relates pushing information from a host to a mobile data communication device.</p> <p>US2004122907 relates to secure interaction between a mobile client device and an enterprise application in a communication system.</p> <p>WO0195695 discloses a system for wireless push and pull based services.</p> <p>US2002187775 discloses a WAP service personalization, management and billing object oriented platform</p> <p>US2003106022 relates to outputting dynamic local content on mo-bile terminals</p> <p>US2004185834 discloses a method for enabling IP push capability to wireless devices on a wireless network.</p> <p>US2002174184 shows a mailbox access mechanism using SMS push and WAP technologies on mobile terminals</p> <p>WO02077842 shows a push method for delivering data to mobile device.</p> <p>Wireless Application Protocol Forum, Ltd., "Wireless Application Environment Specification, Version 2.0", Version 7-Feb-2002, 2002. <a href="http://www.wapforum.org">www.wapforum.org</a>.</p> <p>Sun Microsystems, Ltd, "The MIDP 2.0 Push Registry", Network and Timer MIDlet activation developers. <a href="http://sun.com/techtopics/mobility/midp/articles">sun.com/techtopics/mobility/midp/articles</a></p> <p>Nokia, Ltd., "SIP Session Initiation Protocol", Forum Nokia 2005 <a href="http://www.forum.nokia.com/main/0,6566,144,00.html">www.forum.nokia.com/main/0,6566,144,00.html</a>.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|             | <p>Nokia, Ltd , "SIP Frequently Asked Questions", Forum Nokia 2004 SIP FAQ v1 0 en.<br/>RFC 3261 , "SIP: Session Initiation Protocol", 2002. <a href="http://www.faqs.org/rfcs/rfc3261.html">www.faqs.org/rfcs/rfc3261.html</a><br/>Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of push technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of "push" messaging in the mobile industry. These store and forward messaging systems run by mobile telecommunications operators push all or part of the data to the mobile terminal over closed telecommunications signaling networks such as SS7 (Signaling System Seven) These signaling networks are closed, they are not part of the Internet Each operator controls and encrypts this traffic, charging high prices for their use and limiting their use and usefulness."</p> <p>Houghton at 10</p> <p>"Given the shortcomings in the prior art, there is a need for a method whereby a computer on the Internet can rapidly and at reasonable cost be permitted to at any time initiate control of one or more applications on an individual's mobile terminal to deliver through that mobile application real time in- formation, interactivity and rich media content, regardless of which mobile operator is being used and where the mobile user happens to be at that moment."</p> <p>Houghton at 11</p> <p>"In a preferred embodiment of the present invention is a system and method for a server placed freely on a connected network outside the wireless network firewall or other corresponding wireless network security entity, to push messages to a mobile terminal located in the wireless network and thereby cause programs to start to a</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|             | <p>specified operating state or, if already started, change operating state to the state indicated by the message thereby presenting a new application view to the user of the mobile terminal. The mobile terminal is provided with means, such as software, which initiates and maintains contact with the server using Internet technologies, thereby avoiding cost, latency, contractual and firewall penetration issues of the server contacting the mobile terminals by telecommunications messaging or Internet technologies. This mobile-initiated permanent IP connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time. If the server would attempt to use IP to contact the mobile device directly, the attempt would fail due to the firewall(s)."</p> <p>Houghton at 15</p> <p>"Brief description of the drawings<br/>In the following description, reference is made to the accompanying drawings which form a part hereof, and which illustrate several embodiments of the present invention. In the drawings:<br/>Figure 1 shows an implementation known in the art for pushing information including commands to an application through existing telecommunications SMS infrastructure to a mobile terminal and if necessary launching the application;<br/><br/>Figure 2 shows an implementation known in the art for pushing information including commands from inside the mobile network firewall to an application to a mobile terminal and if necessary launching the application;<br/><br/>Figure 3 shows an implementation known in the art for pushing information including commands from outside the mobile network firewall through a firewall hole opened by the mobile network operator to an application to a mobile terminal and if necessary launching the application;</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|             | <p>Figure 4 is a block diagram illustrating an exemplary implementation of the system for pushing mobile application launch commands to a mobile terminal based on server side events in accordance with one embodiment of the present invention;"</p> <p>Figure 1</p> <pre>graph TD; 101[Push Server Software - 101] -- A --&gt; 102[SMS Gateway - 102]; 102 --- 103[Signaling Network - 103]; 103 -- B --&gt; 104[Mobile Terminal 104]; subgraph 104 [Mobile Terminal 104]; 105[SMS Terminal Software 105]; 106[Mobile Application 106]; end; 105 -- C --&gt; 106;</pre> |



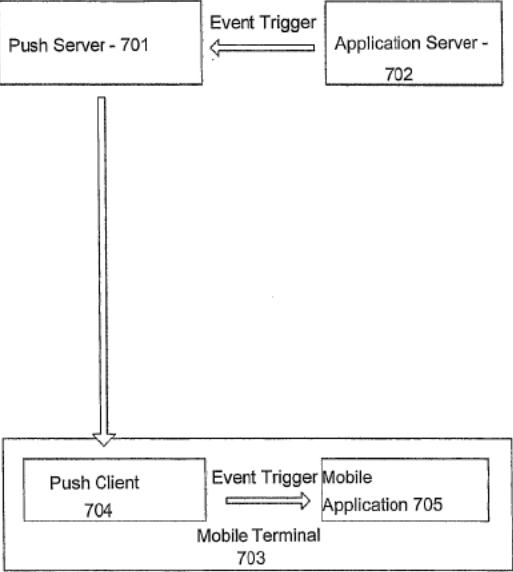
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|             | <p style="text-align: center;">Figure 4</p> <p style="text-align: center;">Houghton at 16-17</p> <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|             | <p>operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security, encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <p>individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> <p>Houghton at 18-20</p> <p>"A second reason for automatically adjusting the network parameters is not simply establishing the connection but establishing the connection in the most cost effective or highest performance configuration available for the individual mobile terminal user account service level. Connection types differ in speed, customer expensive, server resource usage and hence scalability, security and ability to penetrate gateway security devices. Some customers may be offered more secure or higher performance service while others receive the least cost connectivity from either the mobile terminal's or the push server's standpoint.</p> <p>As an example, such network parameters may include but are not limited to one or more of the following</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|             | <ul style="list-style-type: none"><li>- Use of a connection-oriented protocol suitable to the wireless network such as TCP/IP protocol, which is generally preferred in the common situation where an intermediate firewall, Network Address Translation (NAT) or gateway device 402</li><li>- Use of a connectionless protocol suitable to the wireless network 403, such as UDP/IP, which is generally preferred when no network device restricting terminal contact 402 is present as this reduces resource usage on the server when large number of mobile terminals is served</li><li>- Use of an alternate connection-oriented protocol such as HTTP suitable for mobile push operation through more strict firewalls and proxy Internet connections</li><li>- Use of a secure protocol such as HTTPS, IP-Sec, secure IP6 or a proprietary security protocol to identify the communicating parties, prevent message interception by 3rd parties, and prevent message modification by 3rd parties</li><li>- Use of a periodic message from the client to the server or server to the client to the effect that client socket, server socket, intermediate Network Address Translation (NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection</li><li>- Use of configuration messages to the firewall (FIG 4, A) using a firewall or other security configuration protocol, such as Universal Plug and Play, to open a path for server-initiated connection-oriented or connectionless messaging to the client</li><li>- Use of periodic messages initiated by the client 405 or by the server 401 to the effect that the receiving application is informed that their messages are continuing to be received, as indicated by response data from the receiving party to the sending party</li><li>- Use of longer or shorter timing between such periodic messages to match the combined needs of all such network devices and protocols involved in transmitting communication, as adjusted based on the success or failure of earlier messages to successfully traverse the open network connection</li><li>- Use of an alternate push server network address such as an address accessible with fewer security and performance restrictions which may be more available, more accessible, lower cost, lower latency, less busy, higher bandwidth or otherwise</li></ul> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|             | <p>preferred at the present time and from the present network location of mobile terminal 404.</p> <ul style="list-style-type: none"><li>- Use of one or more alternative mobile terminal network connection settings, or variation of the parameters within the settings.</li><li>- Use of an alternate connection route through a second mobile or fixed terminal accessible to the mobile terminal over an alternate wireless network or network connection and capable of communication with a push server."</li></ul> <p>Houghton at 20</p> <p>"At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time or transmission and thus delaying the transmission."</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|             | <p style="text-align: center;"><b>Figure 7</b></p>  <p>Houghton at 22</p> <p>“Figure 7 illustrates an example of an "COMMAND PUSH" procedure wherein the push server 701 is triggered by a trigger event as for example from an application server 702 to push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705, The trigger event from push client 704 to mobile application 705 may optionally include commands or data affecting the aspect of visual</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|             | <p>presentation of mobile application 705. The even trigger mechanism may be any electronic process mechanism as for example computer software calls to load or configure a class, library, dynamic link library, M I Diet, Symbian application, Linux daemon or other executable object. The trigger mechanism may be between separate parts of a larger application or application suite, or may be an IP-triggered application launch and data transfer as in the case of mobile application launched by contact to a specified IP port. The potential applications of the COMMAND PUSH include but are not limited to mobile applications for enterprise connectivity, back office integration, database access, scientific and industrial process and equipment monitoring and control, pictures transfer, mobile gaming, application data transfer, mobile electronic commerce, application alarms, reminders, multimedia interactivity, corporate calendaring, personal messaging and group messaging, etc.</p> <p>The push server 701 may in combination with user preferences stored in either the push server 701 or push client 704, optionally request the push client 704 to display or otherwise as appropriate for the mobile terminal or appliance notify the user asking permission for launching mobile application 705 prior to application launch. The preferred embodiment is for the behavior, language and content of this information to be configured on the server 701 based on the service and preferences of the individual receiving the message. In such cases an optional informational message will be presented to the user and such information messages are associated for instance with the menu option transmitted to the client 704 by the server 701.</p> <p>In an embodiment of the invention, the client 704 is also capable of receiving and storing variables which configure behavior of the client 704. The server 701 may thus specify the network connection preferences, notification sounds, and other behavior of the client 704. These changes facilitate the efficient and manageable operation of the entire system and can be used for automated remote maintenance of push client 704, mobile applications as 705, and configurable aspects of underlying</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|             | <p>mobile terminal 703, for example changing the username, password, and security certificates stored in the mobile terminal."</p> <p style="text-align: center;"><b>Figure 8</b></p> <p style="text-align: center;">Houghton at 23</p> <p>"Figure 8 illustrates an extension of the procedure in Figure 7, one known as "COMMAND PUSH WITH BIDIRECTIONAL DATA". This embodiment of the invention includes all aspects of "COMMAND PUSH" with the additional step that a data connection between application server 802 and mobile application 805 is established with the aid of the persistent managed, tested and configured data</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|             | <p>connection in Figure 4, arrow C between push server 401/801 and push client 405/804. An IP or other API (application programming interface) connection between application server 802 and push server 801 simplifies the work and cost of creating application server 802 by taking care of network details already established for the COMMAND PUSH procedure. Similarly, an IP or API connection between push client 804 and mobile application 805 completes the connection and reduces the number, cost and resource usage of a possible plurality of such connections for a corresponding plurality of mobile applications. Further, each mobile application 805 is now free to sleep, exit or otherwise release the limited resources of the mobile terminal 803 with the assurance it may be remotely commanded back into action provided at least one push client 804 from a possible plurality of such push clients remains active, connected to the push server 801 and configured to launch the mobile applications 805"</p> <p>Houghton at 29</p> <p>"In an embodiment of the invention, the push messages may include, for example, a message stimulating, triggering or commanding the launch, display or shift to foreground of a user interface feature of the terminal such as an application which is part of the basic terminal software or and an additional installed application beyond the base software supplied with the mobile terminal. In response to receiving such a message, a mobile terminal may spontaneously open the application, dynamically loaded module or user interface feature of the terminal thereof to a designed application view or location, present new information of the availability of new information, a new feature or operating state. If such application, module or user interface features is already operating in the mobile terminal, the action of such a message would instead stimulate the application or user interface feature to present itself to the foreground of the user interface and change state as specified in the application-specific message received from the server. In further embodiments of the invention, push messages may include, for example, messages triggering the mobile</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <p>terminal to play a sound notifying the recipient of the application command or state change, or display notification providing event information from which the user may select or decline to display the application."</p> <p>Houghton at Claim 1</p> <p>"1. A method of pushing commands and data to a wireless terminal from a push server located outside a wireless system serving the wireless terminal, comprising the push client initiates and maintains over an extended period of time a packet-based data connection through at least one communication security or inter-network connection device of the serving wireless system to the push server using Internet technologies; the push server sends, in response to predetermined trigger events, at any time push application installation, updates, commands or data messages to be directed to a push application or dynamically loaded module or user interface feature from among a plurality of such applications, modules and features by means of said client-initiated or client-opened and client-maintained permanent connection, whereby avoiding blocking of said server-originated push messages by the security device, and launching said application, application module or dynamically loaded module or user interface feature as needed, the push client, in response to receiving a push message containing application installation, updates, application commands or data from the push server, forwards such application commands or data or stores such application installation or updates within the mobile terminal to a mobile application from among a plurality of such applications so as to initiate launch optionally to a specified state or if already running initiate or change presentation to the user according to the push message."</p> <p>Houghton at Claim 33</p> |

| '117 Claims                                                                                                                                                                                                                                                                                    | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|                                                                                                                                                                                                                                                                                                | <p>"33. A method as claimed in any one of claims 1-32, wherein the push client and push server establish a secure connection and unwrap such security on behalf of the mobile application."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>[1c] the network message server configured to receive, from each of a plurality of network application servers, multiple requests to transmit application data, each such request indicating a corresponding one of the mobile end-user devices and one of a plurality of applications,</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1b].</p> <p>Houghton at 1-3</p> <p>"Description of the Related Art<br/>The Internet is a collection of networks which exchange messages using IP protocol (Internet Protocol) and associated protocols which run on top of IP such as TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Gateways between IP networks automatically route and transmit information over primarily the IP4 and IP6 protocols between two or more end points on any of the connected fixed and mobile networks. Each of these networks may also include or run on top of other network transport protocols such as ATM (Asynchronous Transfer Mode) or a wireless protocol which in turn carry the IP packets over that section of the Internet. Currently, the most common method of starting applications on a mobile terminal is to manually launch them by clicking on an icon or selecting a menu item. If the application, dynamically loaded program module or user interface feature is already launched, these applications must also be manually commanded by the user to change state to display newly available information provided by a telecommunications network. Some applications are also launched automatically when the terminal is started. This automatic start includes both applications that were installed on the phone before delivery to the customer including the basic terminal operating system software and programs installed by service providers and users and</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|             | <p>which by various means ask the terminal software to start them automatically after the terminal is powered up.</p> <p>Remote launch to a known state as specified in a network command of programs on mobile terminals is supported in various telecommunications standards. Voice Over IP (VoIP) and other multimedia sessions can be started remotely using Session Initiation Protocol (SIP). Wireless Application Protocol Push (WAP Push) is another standard for launching programs on mobile terminals based on remote events. Java Mobile Information Device Profile (MIDP) and various native mobile terminal operating systems also support remote application launch based on receipt of a text message (Short Message Service, SMS) or incoming Internet (IP) packet of information to a designated communications port number. However it is important to note from an economics and practical service deployment standpoint that each of these technologies either requires payment to the mobile network operator for sending an SMS or privileged access to the mobile phone from inside the operator's firewall in order for IP data to actually reach the phone.</p> <p>Mobile phones and similar mobile communication devices where originally not permanently connected to the Internet. Instead, for the transmission and display of visual information they have relied on different telecommunications standards and proprietary communication systems such as SMS (Short Message Service, also known as text messaging) and MMS (Multimedia Message Service), which were built into mobile terminals.</p> <p>Various techniques have been proposed for remotely commanding applications on a mobile terminal using push technologies:</p> <p>US20020183051 relates to remote application management of a wireless device.</p> <p>US20030208602 relates to pushing data in an internet protocol network environment.</p> <p>US20010020255 relates to remote control and interaction with a mobile run time environment component.</p> <p>US6687743 relates to client server communications for a mobile computing device.</p> <p>US6779019 relates pushing information from a host to a mobile data communications device.</p> |

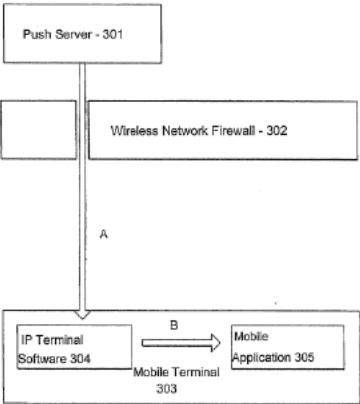
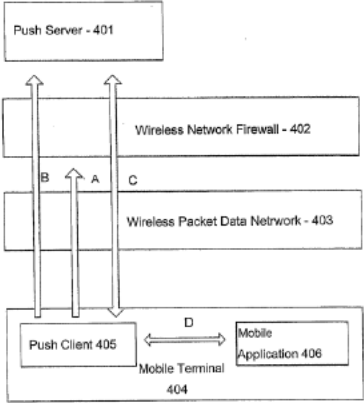
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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|             | <p>US6701378 relates pushing information from a host to a mobile data communications device.</p> <p>US6463464 relates pushing information from a host to a mobile data communications device.</p> <p>US6463463 relates pushing information from a host to a mobile data communications device.</p> <p>US6389457 relates pushing information from a host to a mobile data communication device.</p> <p>US2004122907 relates to secure interaction between a mobile client device and an enterprise application in a communication system.</p> <p>WO0195695 discloses a system for wireless push and pull based services.</p> <p>US2002187775 discloses a WAP service personalization, management and billing object oriented platform</p> <p>US2003106022 relates to outputting dynamic local content on mo-bile terminals</p> <p>US2004185834 discloses a method for enabling IP push capability to wireless devices on a wireless network.</p> <p>US2002174184 shows a mailbox access mechanism using SMS push and WAP technologies on mobile terminals</p> <p>WO02077842 shows a push method for delivering data to mobile device.</p> <p>Wireless Application Protocol Forum, Ltd., "Wireless Application Environment Specification, Version 2.0", Version 7-Feb-2002, 2002. <a href="http://www.wapforum.org">www.wapforum.org</a>.</p> <p>Sun Microsystems, Ltd, "The MIDP 2.0 Push Registry", Network and Timer MIDlet activation developers. <a href="http://sun.com/techtopics/mobility/midp/articles">sun.com/techtopics/mobility/midp/articles</a></p> <p>Nokia, Ltd., "SIP Session Initiation Protocol", Forum Nokia 2005 <a href="http://www.forum.nokia.com/main/0,6566,144,00.html">www.forum.nokia.com/main/0,6566,144,00.html</a>.</p> <p>Nokia, Ltd, "SIP Frequently Asked Questions", Forum Nokia 2004 SIP FAQ v1.0 en.</p> <p>RFC 3261, "SIP: Session Initiation Protocol", 2002. <a href="http://www.faqs.org/rfcs/rfc3261.html">www.faqs.org/rfcs/rfc3261.html</a></p> <p>Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>push technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of "push" messaging in the mobile industry. These store and forward messaging systems run by mobile telecommunications operators push all or part of the data to the mobile terminal over closed telecommunications signaling networks such as SS7 (Signaling System Seven) These signaling networks are closed, they are not part of the Internet Each operator controls and encrypts this traffic, charging high prices for their use and limiting their use and usefulness."</p> <p>Houghton at 8</p> <p>"FIG 2 shows a generic implementation known in the art for pushing launch and operational commands to applications on mobile terminals using Internet technologies. Symbian, Linux, Microsoft and other mobile IP terminal operating system software all include application launch capabilities based on this socket-based triggering mechanism. Each mobile application 205 has a fixed IP port number such as TCP/IP or UDP/IP port numbers. When a remote program such as a push server 202 sitting inside the operator's firewall 201 and with permission to contact ports on the mobile terminal 203 sends an IP packet to the terminal (A), the IP terminal software 204 routes the packet with it's commands or application-specific data to the mobile application 205 (B), launching the application if it is not already running. Java applications sitting on top of the lower levels of IP terminal software can be similarly launched based on Java MIDP 2.0 and later "push registry" settings.</p> <p>FIG 3 shows the same steps A and B shown in FIG 2, however the push server 301 may be located outside the firewall 302 because the wireless network firewall has been configured by the mobile network operator to allow communications from that particular push server. This allows IP traffic to flow from the push server 301 to the IP terminal 303 and be internally routed 304 to the mobile application 305.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>The important point to note in the standard methods shown in both FIG 2 and FIG 3 is that the permission of the wireless network operator is required to either locate a push server within their firewall or open a firewall hole to a given push server. This permission is in practice expensive for an arbitrary push server to achieve with a given operator. It is virtually impossible to achieve with all mobile network operators in all markets. A viable market alternative to the state of the art methods shown in FIGURES 1, 2 and 3 for the mobile terminal and push server to initiate and maintain contact for push application launch and configuration commands without explicit arrangements with each mobile network operator is thus needed and described in the invention below"</p> <p>Houghton at 10</p> <p>"Given the shortcomings in the prior art, there is a need for a method whereby a computer on the Internet can rapidly and at reasonable cost be permitted to at any time initiate control of one or more applications on an individual's mobile terminal to deliver through that mobile application real time information, interactivity and rich media content, regardless of which mobile operator is being used and where the mobile user happens to be at that moment."</p> <p>Houghton at 11</p> <p>"In a preferred embodiment of the present invention is a system and method for a server placed freely on a connected network outside the wireless network firewall or other corresponding wireless network security entity, to push messages to a mobile terminal located in the wireless network and thereby cause programs to start to a specified operating state or, if already started, change operating state to the state indicated by the message thereby presenting a new application view to the user of the mobile terminal. The mobile terminal is provided with means, such as software, which initiates and maintains contact with the server using Internet technologies,</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>thereby avoiding cost, latency, contractual and firewall penetration issues of the server contacting the mobile terminals by telecommunications messaging or Internet technologies. This mobile-initiated permanent IP connection allows the server to pass or push messages from outside the operator's firewall to the mobile terminal at any time. If the server would attempt to use IP to contact the mobile device directly, the attempt would fail due to the firewall(s)."</p> <p>Houghton at 15</p> <p>"Brief description of the drawings<br/>In the following description, reference is made to the accompanying drawings which form a part hereof, and which illustrate several embodiments of the present invention. In the drawings:<br/>Figure 1 shows an implementation known in the art for pushing information including commands to an application through existing telecommunications SMS infrastructure to a mobile terminal and if necessary launching the application;<br/><br/>Figure 2 shows an implementation known in the art for pushing information including commands from inside the mobile network firewall to an application to a mobile terminal and if necessary launching the application;<br/><br/>Figure 3 shows an implementation known in the art for pushing information including commands from outside the mobile network firewall through a firewall hole opened by the mobile network operator to an application to a mobile terminal and if necessary launching the application;<br/><br/>Figure 4 is a block diagram illustrating an exemplary implementation of the system for pushing mobile application launch commands to a mobile terminal based on server side events in accordance with one embodiment of the present invention;"</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <p>Figure 1</p> <p>Figure 2</p> <pre>graph TD     subgraph Figure_1 [Figure 1]         P101[Push Server Software - 101] -- A --&gt; S102[SMS Gateway - 102]         S102 --- SN103[Signalling Network - 103]         SN103 -- B --&gt; MT104[Mobile Terminal 104]         subgraph MT104_Box [ ]             direction LR             STS105[SMS Terminal Software 105] -- C --&gt; MA106[Mobile Application 106]         end     end      subgraph Figure_2 [Figure 2]         WNF201[Wireless Network Firewall - 201]         P202[Push Server - 202] -- A --&gt; MT203[Mobile Terminal 203]         subgraph MT203_Box [ ]             direction LR             ITS204[IP Terminal Software 204] -- B --&gt; MA205[Mobile Application 205]         end     end</pre> |

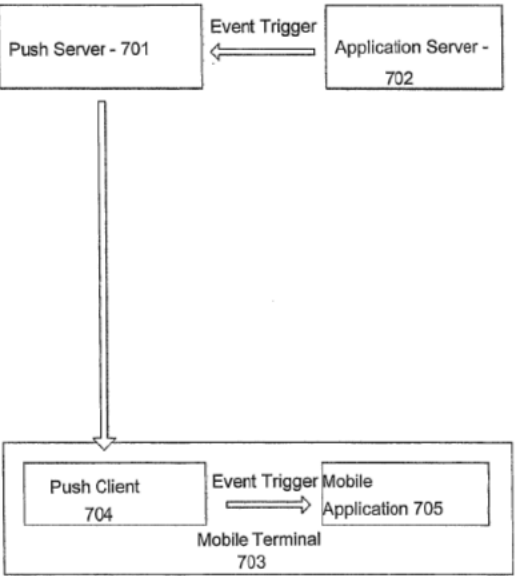
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                 |
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|             | <p style="text-align: center;">Figure 3</p>  <p style="text-align: center;">Figure 4</p>  <p style="text-align: center;">Houghton at 16-17</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|             | <p>in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security, encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|             | <p>Houghton at 18-20</p> <p>“A second reason for automatically adjusting the network parameters is not simply establishing the connection but establishing the connection in the most cost effective or highest performance configuration available for the individual mobile terminal user account service level. Connection types differ in speed, customer expensive, server resource usage and hence scalability, security and ability to penetrate gateway security devices. Some customers may be offered more secure or higher performance service while others receive the least cost connectivity from either the mobile terminal's or the push server's standpoint.</p> <p>As an example, such network parameters may include but are not limited to one or more of the following</p> <ul style="list-style-type: none"><li>- Use of a connection-oriented protocol suitable to the wireless network such as TCP/IP protocol, which is generally preferred in the common situation where an intermediate firewall, Network Address Translation (NAT) or gateway device 402</li><li>- Use of a connectionless protocol suitable to the wireless network 403, such as UDP/IP, which is generally preferred when no network device restricting terminal contact 402 is present as this reduces resource usage on the server when large number of mobile terminals is served</li><li>- Use of an alternate connection-oriented protocol such as HTTP suitable for mobile push operation through more strict firewalls and proxy Internet connections</li><li>- Use of a secure protocol such as HTTPS, IP-Sec, secure IP6 or a proprietary security protocol to identify the communicating parties, prevent message interception by 3rd parties, and prevent message modification by 3rd parties</li><li>- Use of a periodic message from the client to the server or server to the client to the effect that client socket, server socket, intermediate Network Address Translation</li></ul> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <p>(NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection</p> <ul style="list-style-type: none"> <li>- Use of configuration messages to the firewall (FIG 4, A) using a firewall or other security configuration protocol, such as Universal Plug and Play, to open a path for server-initiated connection-oriented or connectionless messaging to the client</li> <li>- Use of periodic messages initiated by the client 405 or by the server 401 to the effect that the receiving application is informed that their messages are continuing to be received, as indicated by response data from the receiving party to the sending party</li> <li>- Use of longer or shorter timing between such periodic messages to match the combined needs of all such network devices and protocols involved in transmitting communication, as adjusted based on the success or failure of earlier messages to successfully traverse the open network connection</li> <li>- Use of an alternate push server network address such as an address accessible with fewer security and performance restrictions which may be more available, more accessible, lower cost, lower latency, less busy, higher bandwidth or otherwise preferred at the present time and from the present network location of mobile terminal 404.</li> <li>- Use of one or more alternative mobile terminal network connection settings, or variation of the parameters within the settings.</li> <li>- Use of an alternate connection route through a second mobile or fixed terminal accessible to the mobile terminal over an alternate wireless network or network connection and capable of communication with a push server."</li> </ul> <p>Houghton at 20</p> <p>"At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as</p> |

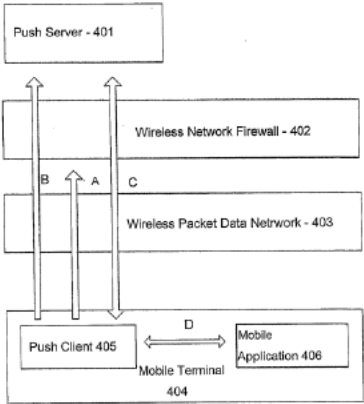
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|             | <p>TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time or transmission and thus delaying the transmission."</p> <p style="text-align: center;">Figure 7</p>  <p>Houghton at 22</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>“Figure 7 illustrates an example of an "COMMAND PUSH" procedure wherein the push server 701 is triggered by a trigger event as for example from an application server 702 to push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705, The trigger event from push client 704 to mobile application 705 may optionally include commands or data affecting the aspect of visual presentation of mobile application 705. The even trigger mechanism may be any electronic process mechanism as for example computer software calls to load or configure a class, library, dynamic link library, M I Diet, Symbian application, Linux daemon or other executable object. The trigger mechanism may be between separate parts of a larger application or application suite, or may be an IP-triggered application launch and data transfer as in the case of mobile application launched by contact to a specified IP port. The potential applications of the COMMAND PUSH include but are not limited to mobile applications for enterprise connectivity, back office integration, database access, scientific and industrial process and equipment monitoring and control, pictures transfer, mobile gaming, application data transfer, mobile electronic commerce, application alarms, reminders, multimedia interactivity, corporate calendaring, personal messaging and group messaging, etc.</p> <p>The push server 701 may in combination with user preferences stored in either the push server 701 or push client 704, optionally request the push client 704 to display or otherwise as appropriate for the mobile terminal or appliance notify the user asking permission for launching mobile application 705 prior to application launch. The preferred embodiment is for the behavior, language and content of this information to be configured on the server 701 based on the service and preferences of the individual receiving the message. In such cases an optional informational message will be presented to the user and such information messages are associated for instance with the menu option transmitted to the client 704 by the server 701.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|             | <p>In an embodiment of the invention, the client 704 is also capable of receiving and storing variables which configure behavior of the client 704. The server 701 may thus specify the network connection preferences, notification sounds, and other behavior of the client 704. These changes facilitate the efficient and manageable operation of the entire system and can be used for automated remote maintenance of push client 704, mobile applications as 705, and configurable aspects of underlying mobile terminal 703, for example changing the username, password, and security certificates stored in the mobile terminal.</p> <p style="text-align: center;"><b>Figure 8</b></p> <p style="text-align: center;">Houghton at 23</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|             | <p>“Figure 8 illustrates an extension of the procedure in Figure 7, one known as "COMMAND PUSH WITH BIDIRECTIONAL DATA". This embodiment of the invention includes all aspects of "COMMAND PUSH" with the additional step that a data connection between application server 802 and mobile application 805 is established with the aid of the persistent managed, tested and configured data connection in Figure 4, arrow C between push server 401/801 and push client 405/804. An IP or other API (application programming interface) connection between application server 802 and push server 801 simplifies the work and cost of creating application server 802 by taking care of network details already established for the COMMAND PUSH procedure. Similarly, an IP or API connection between push client 804 and mobile application 805 completes the connection and reduces the number, cost and resource usage of a possible plurality of such connections for a corresponding plurality of mobile applications. Further, each mobile application 805 is now free to sleep, exit or otherwise release the limited resources of the mobile terminal 803 with the assurance it may be remotely commanded back into action provided at least one push client 804 from a possible plurality of such push clients remains active, connected to the push server 801 and configured to launch the mobile applications 805”</p> <p>Houghton at 29</p> <p>“In an embodiment of the invention, the push messages may include, for example, a message stimulating, triggering or commanding the launch, display or shift to foreground of a user interface feature of the terminal such as an application which is part of the basic terminal software or and an additional installed application beyond the base software supplied with the mobile terminal. In response to receiving such a message, a mobile terminal may spontaneously open the application, dynamically loaded module or user interface feature of the terminal thereof to a designed application view or location, present new information of the availability of new</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>information, a new feature or operating state. If such application, module or user interface features is already operating in the mobile terminal, the action of such a message would instead stimulate the application or user interface feature to present itself to the foreground of the user interface and change state as specified in the application-specific message received from the server. In further embodiments of the invention, push messages may include, for example, messages triggering the mobile terminal to play a sound notifying the recipient of the application command or state change, or display notification providing event information from which the user may select or decline to display the application."</p> <p>Houghton at Claim 1</p> <p>"1. A method of pushing commands and data to a wireless terminal from a push server located outside a wireless system serving the wireless terminal, comprising the push client initiates and maintains over an extended period of time a packet-based data connection through at least one communication security or inter-network connection device of the serving wireless system to the push server using Internet technologies; the push server sends, in response to predetermined trigger events, at any time push application installation, updates, commands or data messages to be directed to a push application or dynamically loaded module or user interface feature from among a plurality of such applications, modules and features by means of said client-initiated or client-opened and client-maintained permanent connection, whereby avoiding blocking of said server-originated push messages by the security device, and launching said application, application module or dynamically loaded module or user interface feature as needed, the push client, in response to receiving a push message containing application installation, updates, application commands or data from the push server, forwards such application commands or data or stores such application installation or updates within the mobile terminal to a mobile application from among a plurality of such applications so as to initiate launch</p> |

| '117 Claims                                                                                                                                                                                                                                                                 | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|                                                                                                                                                                                                                                                                             | <p>optionally to a specified state or if already running initiate or change presentation to the user according to the push message."</p> <p>Houghton at Claim 33</p> <p>"33. A method as claimed in any one of claims 1-32, wherein the push client and push server establish a secure connection and unwrap such security on behalf of the mobile application."</p>                                                                                                                                                                                                                                                                                                                 |
| <p>[1d] the network message server to generate corresponding Internet data messages based on the requests, each such message containing at least one application identifier for an indicated application and application data corresponding to one of the requests, and</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g., the disclosures identified for [1pre] – [1c].</i></p> <p>Figure 4</p>  <pre> graph TD     PS[Push Server - 401]     WNF[Wireless Network Firewall - 402]     WPDN[Wireless Packet Data Network - 403]     subgraph MT [Mobile Terminal 404]         PC[Push Client 405]         MA[Mobile Application 406]     end     PS -- B --&gt; WNF     WNF -- A --&gt; PC     WNF -- C --&gt; PS     PC -- D --&gt; MA   </pre> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>Houghton at 21</p> <p>“In an embodiment of the invention, the mobile terminal 404 keeps a prioritized data structure listing the preferred communication protocols, server addresses, periodic message timings, network access settings, and alternate communication routes which it should use. Automated and manually assisted use of this structure should then result in a connection to one or more push servers, however if one of these connections which the mobile terminal is programmed to expect is not available, the mobile terminal can choose the sleep that function of the client software and attempt re-connection at a later time, repeating in like fashion with the same or different network connection parameters as described above until a connection is established or other user intervention.</p> <p>At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time of transmission and thus delaying the transmission.</p> <p>A connectionless protocol, such as UDP/IP, may also be used in cases where the connection-oriented protocol is not possible or not desirable because of the push server resources used by every static instance of a connection-oriented protocol. Connectionless communication is also used when a message needs to get through to the server 401 quickly, such as when occurs when the client 405 notifies the server 401 of an terminal event, user interface event or application event but the connection-oriented protocol connection is not connected or is already busy transferring</p> |

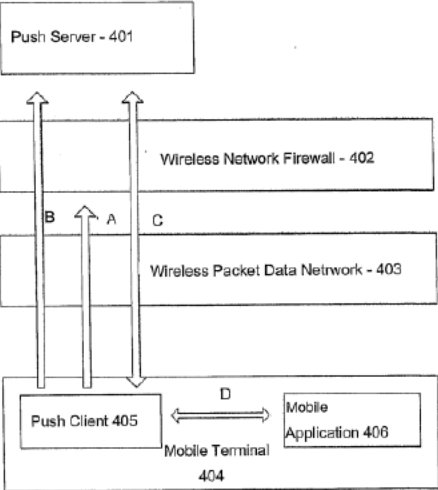
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p>information. Such a selective use of this high priority, low latency communication channel from terminal 404 to server 401 gives the server the opportunity to in return push to the client 405 a service triggered by the event begin communicated by the client 405 as will be described in more detail below. The sending of such a return message is frequently time critical and the fastest available combination of techniques will be used.</p> <p>In the preferred embodiment of the invention, the most basic message pushed from the server 401 to the client 405 is a data packet containing no information. Additional binary or text information specifying which mobile application 406 from a plurality of such applications may optionally be included. Additional binary or text information to be passed to the default or specified mobile application may optionally be included. Additional binary or text information specifying how upon receiving such a message the client 405 will notify and optionally ask the user if the action should be performed may optionally be included. Upon receiving such a message, appropriate automated actions and user interface media capabilities of the mobile terminal as specified in the command C from the server 401 are executed by the push client 405. The most common case is playing a sound, asking the user if the mobile application should be launched, and if affirmative passing the command details (arrow D) to the specified mobile application, module or additional feature within the same application suite, launching the application, module or feature if needed. Such action may include optionally proceed without audio, with network downloaded audio, or without first requesting confirmation from the user as specified by user preferences and command details.</p> <p>The push message from the push server 401 may be triggered by any trigger event, local or remote, defined at the server. The trigger may, among others, include an alarm, notification, or measurement result received to the push server 401 from another device or system. With a push message, the server 401 may direct the mobile application 406 to make use of additional network resources either on the push server</p> |

| '117 Claims                                                                                                                                                                                                                                                                                                | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                                                            | <p>or other server. The push client 405 may in turn at any time accept data D from each of a plurality of mobile applications 406 and direct such to the push server 401 , possibly for redirection through push server API to other servers, mobile terminals, push clients and computing devices."</p> <p>Houghton at Claim 22</p> <p>"22 A method as claimed in any one of claims 1-21 , wherein said trigger events include one or more of: the making, receiving, and termination of telephone calls, the transition from presence-to-absence or absence-to- presence of other devices in a physical contact, RF, near field, infrared, personal area, local area, metropolitan area or geographical area wireless communications network, an alarm, notification, videogame action or event, remote application user or application server event, remote user action or inaction, electronic or computing equipment change of state or measurement result."</p> |
| <p>[1e] the network message server to transmit each of the generated Internet data messages to the device messaging agent located on the device indicated in the corresponding request, using the corresponding secure Internet data connection for the device indicated in the corresponding request;</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1d].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|             | <p style="text-align: center;"><b>Figure 4</b></p> <p style="text-align: center;">Houghton at 16-17</p> <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For</p> |

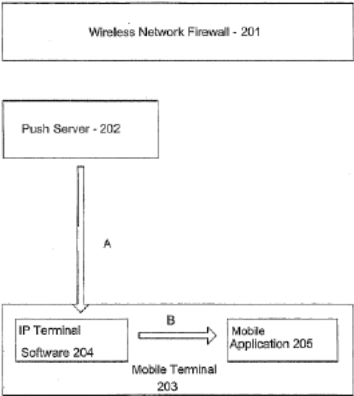
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security,</p> |

| '117 Claims                                                                                                                                                                                                   | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                               | <p>encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> |
| <p>[1f] each device messaging agent, when executing, to receive the Internet data messages from the secure Internet data connection corresponding to the device executing the device messaging agent, and</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g., the disclosures identified for [1pre] – [1e].</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

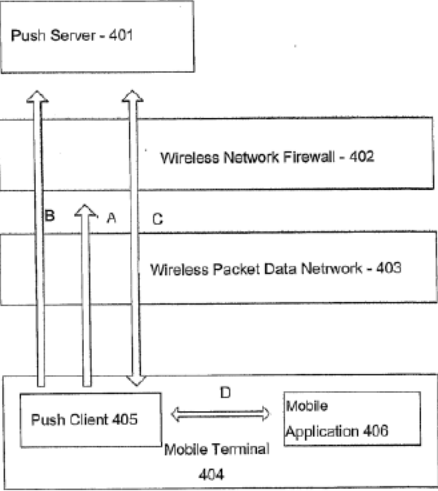
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|             | <p style="text-align: center;"><b>Figure 4</b></p>  <p style="text-align: center;">Houghton at 16-17</p> <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security,</p> |

| '117 Claims                                                                                                                                                                                                                                                                          | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                                      | <p>encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> |
| <p>[1g] to, for each received message, map the application identifier in the message to a software process corresponding to the application identifier, and forward the application data in the message to the software process via a secure interprocess communication service.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1f].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|             | <p>Figure 2</p>  <p>Houghton at 8</p> <p> “FIG 2 shows a generic implementation known in the art for pushing launch and operational commands to applications on mobile terminals using Internet technologies. Symbian, Linux, Microsoft and other mobile IP terminal operating system software all include application launch capabilities based on this socket-based triggering mechanism. Each mobile application 205 has a fixed IP port number such as TCP/IP or UDP/IP port numbers. When a remote program such as a push server 202 sitting inside the operator's firewall 201 and with permission to contact ports on the mobile terminal 203 sends an IP packet to the terminal (A), the IP terminal software 204 routes the packet with it's commands or application-specific data to the mobile application 205 (B), launching the application if it is not already running. Java applications sitting on top of the lower levels of IP terminal software can be similarly launched based on Java MIDP 2.0 and later "push registry" settings.” </p> <p>Houghton at 9</p> |

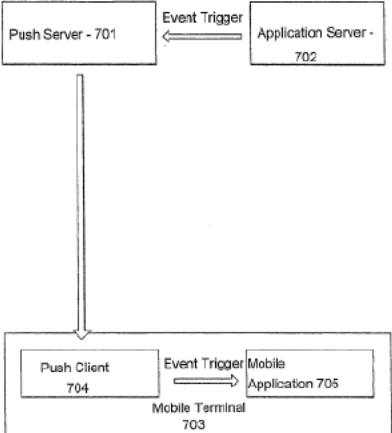
| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|             | <p>“Once such an IP connection is established between the server and one or more mobile terminals, the connection can be used to transfer messages to the mobile terminal The most interesting such messages for the present invention are event trigger messages to launch or command a mobile application Other interesting uses include the sending of data files, new applications and applications updates to replace or improve installed applications These messages, while simply inexpensive IP traffic can if sufficient in number result in significant costs or the user perception of their incurring significant data traffic costs For this reason it is also desirable to route such information including application updates, bug fixes, additional features, additional application data including multimedia, vector graphics, text and executable code through the lowest cost available network connection Further it is desirable but not generally possible to automatically do so only during those times that a lower cost network connection is available as through the presence of a broadband wireless access device”</p> <p>Houghton at 14</p> <p>“IP push command messages may be triggered either by events which the server is aware of, or events which a similar mobile application on another mobile terminal is aware of and which that push client makes the server aware of, the server in turn initiating a push command event. Such client-side events of which the server is informed for the possibility of delivering new web services include the making, receiving, and termination of telephone calls, the transition from presence-to-absence or absence-to-presence of other devices in a geographical area, metropolitan area, local area or personal area wireless communications network, mobile terminal creation of photographs video audio or other media, mobile terminal presence of files matching a given filtering criteria, changes in internal state of electronic equipment, taking of measurements, processing of such measurements to see if they match certain criteria, video game actions or events, application calculation events and</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|             | <p>messaging actions. In some cases a separate server such as a telecommunication service server, gaming environment server, and original equipment manufacturer device or business information system may notify the server directly of events or messages to be sent using an external application programming interface (API) Such a device connected by external API may also receive information including the results and responses of messages which the user has replied to by terminal software or web page interaction."</p> <p style="text-align: center;">Figure 4</p>  <p style="text-align: center;">Houghton at 16-17</p> <p style="text-align: center;">"Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|             | <p>events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security, encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> <p>Houghton at 21</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|             | <p>“In the preferred embodiment of the invention, the most basic message pushed from the server 401 to the client 405 is a data packet containing no information. Additional binary or text information specifying which mobile application 406 from a plurality of such applications may optionally be included. Additional binary or text information to be passed to the default or specified mobile application may optionally be included. Additional binary or text information specifying how upon receiving such a message the client 405 will notify and optionally ask the user if the action should be performed may optionally be included. Upon receiving such a message, appropriate automated actions and user interface media capabilities of the mobile terminal as specified in the command C from the server 401 are executed by the push client 405. The most common case is playing a sound, asking the user if the mobile application should be launched, and if affirmative passing the command details (arrow D) to the specified mobile application, module or additional feature within the same application suite, launching the application, module or feature if needed. Such action may include optionally proceed without audio, with network downloaded audio, or without first requesting confirmation from the user as specified by user preferences and command details.”</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <p>Figure 7</p>  <p>Houghton at 21-22</p> <p>“Figure 7 illustrates an example of an "COMMAND PUSH" procedure wherein the push server 701 is triggered by a trigger event as for example from an application server 702 to push an application command message to the push client 704 and thereby initiate a mobile terminal client trigger event in a mobile application 705 from a plurality of such applications, program modules and user interface features on the terminal 705, The trigger event from push client 704 to mobile application 705 may optionally include commands or data affecting the aspect of visual presentation of mobile application 705. The even trigger mechanism may be any electronic process mechanism as for example computer software calls to load or configure a class, library, dynamic link library, M I Diet, Symbian application, Linux daemon or other executable object. The trigger mechanism may be between separate parts of a larger application or application suite, or may be an IP-triggered application</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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|             | <p>launch and data transfer as in the case of mobile application launched by contact to a specified IP port. The potential applications of the COMMAND PUSH include but are not limited to mobile applications for enterprise connectivity, back office integration, database access, scientific and industrial process and equipment monitoring and control, pictures transfer, mobile gaming, application data transfer, mobile electronic commerce, application alarms, reminders, multimedia interactivity, corporate calendaring, personal messaging and group messaging, etc.”</p> <p>Houghton at 21</p> <p>“In the preferred embodiment of the invention, the most basic message pushed from the server 401 to the client 405 is a data packet containing no information. Additional binary or text information specifying which mobile application 406 from a plurality of such applications may optionally be included. Additional binary or text information to be passed to the default or specified mobile application may optionally be included. Additional binary or text information specifying how upon receiving such a message the client 405 will notify and optionally ask the user if the action should be performed may optionally be included. Upon receiving such a message, appropriate automated actions and user interface media capabilities of the mobile terminal as specified in the command C from the server 401 are executed by the push client 405. The most common case is playing a sound, asking the user if the mobile application should be launched, and if affirmative passing the command details (arrow D) to the specified mobile application, module or additional feature within the same application suite, launching the application, module or feature if needed. Such action may include optionally proceed without audio, with network downloaded audio, or without first requesting confirmation from the user as specified by user preferences and command details.”</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|             | <p style="text-align: center;"><b>Figure 8</b></p> <p style="text-align: center;">Houghton at 23</p> <p>“Figure 8 illustrates an extension of the procedure in Figure 7, one known as "COMMAND PUSH WITH BIDIRECTIONAL DATA". This embodiment of the invention includes all aspects of "COMMAND PUSH" with the additional step that a data connection between application server 802 and mobile application 805 is established with the aid of the persistent managed, tested and configured data connection in Figure 4, arrow C between push server 401/801 and push client 405/804. An IP or other API (application programming interface) connection between application server 802 and push server 801 simplifies the work and cost of creating application server 802 by taking care of network details already established for the</p> |

| '117 Claims                                                                                                                                                                          | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                                                                                                                                                                      | <p>COMMAND PUSH procedure Similarly, an IP or API connection between push client 804 and mobile application 805 completes the connection and reduces the number, cost and resource usage of a possible plurality of such connections for a corresponding plurality of mobile applications. Further, each mobile application 805 is now free to sleep, exit or otherwise release the limited resources of the mobile terminal 803 with the assurance it may be remotely commanded back into action provided at least one push client 804 from a possible plurality of such push clients remains active, connected to the push server 801 and configured to launch the mobile applications 805"</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>2. The network system of claim 1, the network message server further to collect and buffer multiple requests to transmit application data to a particular one of the devices.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1g].</p> <p>Houghton at 14</p> <p>"IP push command messages may be triggered either by events which the server is aware of, or events which a similar mobile application on another mobile terminal is aware of and which that push client makes the server aware of, the server in turn initiating a push command event. Such client-side events of which the server is informed for the possibility of delivering new web services include the making, receiving, and termination of telephone calls, the transition from presence-to-absence or absence-to-presence of other devices in a geographical area, metropolitan area, local area or personal area wireless communications network, mobile terminal creation of photographs video audio or other media, mobile terminal presence of files matching a given filtering criteria, changes in internal state of electronic equipment, taking of measurements, processing of such measurements to see if they match certain criteria, video game actions or events, application calculation events and</p> |

| '117 Claims                                                                                                                                                                                                                                                             | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|                                                                                                                                                                                                                                                                         | <p>messaging actions. In some cases a separate server such as a telecommunication service server, gaming environment server, and original equipment manufacturer device or business information system may notify the server directly of events or messages to be sent using an external application programming interface (API) Such a device connected by external API may also receive information including the results and responses of messages which the user has replied to by terminal software or web page interaction."</p> <p>Houghton at Claim 22</p> <p>"22 A method as claimed in any one of claims 1-21 , wherein said trigger events include one or more of: the making, receiving, and termination of telephone calls, the transition from presence-to-absence or absence-to- presence of other devices in a physical contact, RF, near field, infrared, personal area, local area, metropolitan area or geographical area wireless communications network, an alarm, notification, videogame action or event, remote application user or application server event, remote user action or inaction, electronic or computing equipment change of state or measurement result."</p> |
| <p>4. The network system of claim 1, the network message server further to encrypt the secure Internet data messages, the device messaging agents further to decrypt each received message to obtain the corresponding application identifier and application data.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g].</p> <p>Houghton at 18-20</p> <p>"A second reason for automatically adjusting the network parameters is not simply establishing the connection but establishing the connection in the most cost effective or highest performance configuration available for the individual mobile terminal</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|             | <p>user account service level. Connection types differ in speed, customer expensive, server resource usage and hence scalability, security and ability to penetrate gateway security devices. Some customers may be offered more secure or higher performance service while others receive the least cost connectivity from either the mobile terminal's or the push server's standpoint.</p> <p>As an example, such network parameters may include but are not limited to one or more of the following</p> <ul style="list-style-type: none"><li>- Use of a connection-oriented protocol suitable to the wireless network such as TCP/IP protocol, which is generally preferred in the common situation where an intermediate firewall, Network Address Translation (NAT) or gateway device 402</li><li>- Use of a connectionless protocol suitable to the wireless network 403, such as UDP/IP, which is generally preferred when no network device restricting terminal contact 402 is present as this reduces resource usage on the server when large number of mobile terminals is served</li><li>- Use of an alternate connection-oriented protocol such as HTTP suitable for mobile push operation through more strict firewalls and proxy Internet connections</li><li>- Use of a secure protocol such as HTTPS, IP-Sec, secure IP6 or a proprietary security protocol to identify the communicating parties, prevent message interception by 3rd parties, and prevent message modification by 3rd parties</li><li>- Use of a periodic message from the client to the server or server to the client to the effect that client socket, server socket, intermediate Network Address Translation (NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection</li><li>- Use of configuration messages to the firewall (FIG 4, A) using a firewall or other security configuration protocol, such as Universal Plug and Play, to open a path for server-initiated connection-oriented or connectionless messaging to the client</li><li>- Use of periodic messages initiated by the client 405 or by the server 401 to the effect that the receiving application is informed that their messages are continuing to</li></ul> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|             | <p>be received, as indicated by response data from the receiving party to the sending party</p> <ul style="list-style-type: none"> <li>- Use of longer or shorter timing between such periodic messages to match the combined needs of all such network devices and protocols involved in transmitting communication, as adjusted based on the success or failure of earlier messages to successfully traverse the open network connection</li> <li>- Use of an alternate push server network address such as an address accessible with fewer security and performance restrictions which may be more available, more accessible, lower cost, lower latency, less busy, higher bandwidth or otherwise preferred at the present time and from the present network location of mobile terminal 404.</li> <li>- Use of one or more alternative mobile terminal network connection settings, or variation of the parameters within the settings.</li> <li>- Use of an alternate connection route through a second mobile or fixed terminal accessible to the mobile terminal over an alternate wireless network or network connection and capable of communication with a push server."</li> </ul> <p>Houghton at 20</p> <p>"At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time or transmission and thus delaying the transmission."</p> |
|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| '117 Claims                                                                                                                                                                                                                                                            | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <p>5. The network system of claim 4, wherein the secure Internet data messages are transported to the device messaging agent on each device using one or more of encryption on a transport services stack, IP (Internet Protocol) layer encryption, and tunneling.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g], [4].</p> <p>Houghton at 18-20</p> <p>“A second reason for automatically adjusting the network parameters is not simply establishing the connection but establishing the connection in the most cost effective or highest performance configuration available for the individual mobile terminal user account service level. Connection types differ in speed, customer expensive, server resource usage and hence scalability, security and ability to penetrate gateway security devices. Some customers may be offered more secure or higher performance service while others receive the least cost connectivity from either the mobile terminal's or the push server's standpoint.</p> <p>As an example, such network parameters may include but are not limited to one or more of the following</p> <ul style="list-style-type: none"> <li>- Use of a connection-oriented protocol suitable to the wireless network such as TCP/IP protocol, which is generally preferred in the common situation where an intermediate firewall, Network Address Translation (NAT) or gateway device 402</li> <li>- Use of a connectionless protocol suitable to the wireless network 403, such as UDP/IP, which is generally preferred when no network device restricting terminal contact 402 is present as this reduces resource usage on the server when large number of mobile terminals is served</li> <li>- Use of an alternate connection-oriented protocol such as HTTP suitable for mobile push operation through more strict firewalls and proxy Internet connections</li> <li>- Use of a secure protocol such as HTTPS, IP-Sec, secure IP6 or a proprietary security protocol to identify the communicating parties, prevent message interception by 3rd parties, and prevent message modification by 3rd parties</li> </ul> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|             | <ul style="list-style-type: none"><li>- Use of a periodic message from the client to the server or server to the client to the effect that client socket, server socket, intermediate Network Address Translation (NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection</li><li>- Use of configuration messages to the firewall (FIG 4, A) using a firewall or other security configuration protocol, such as Universal Plug and Play, to open a path for server-initiated connection-oriented or connectionless messaging to the client</li><li>- Use of periodic messages initiated by the client 405 or by the server 401 to the effect that the receiving application is informed that their messages are continuing to be received, as indicated by response data from the receiving party to the sending party</li><li>- Use of longer or shorter timing between such periodic messages to match the combined needs of all such network devices and protocols involved in transmitting communication, as adjusted based on the success or failure of earlier messages to successfully traverse the open network connection</li><li>- Use of an alternate push server network address such as an address accessible with fewer security and performance restrictions which may be more available, more accessible, lower cost, lower latency, less busy, higher bandwidth or otherwise preferred at the present time and from the present network location of mobile terminal 404.</li><li>- Use of one or more alternative mobile terminal network connection settings, or variation of the parameters within the settings.</li><li>- Use of an alternate connection route through a second mobile or fixed terminal accessible to the mobile terminal over an alternate wireless network or network connection and capable of communication with a push server."</li></ul> <p>Houghton at 20</p> <p>"At any time after a connection is established between the client 405 and the server 401 , the client may push a message to the server or the server may send a push</p> |

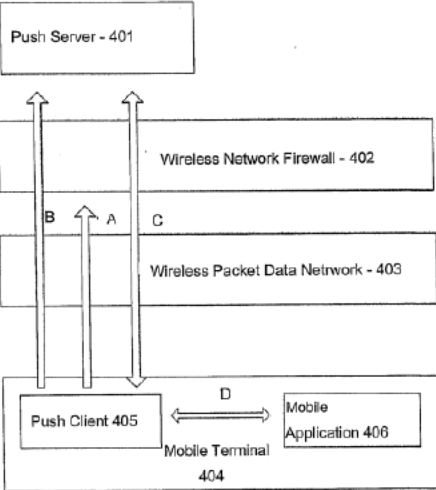
| '117 Claims                                                                                                                                                                                                                                                      | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                  | <p>message to the client. This is illustrated by means of the arrow C in Figure 4. These messages through a previously established, connection-oriented protocol such as TCP/IP, SSL, HTTP or HTTPS arrive quite rapidly, more rapidly than if the connection were established only when needed. The associated protocol overhead such as 3-way handshake during connection establishment thus occurs before the actual need for message transmission rather than needing to occur at time or transmission and thus delaying the transmission."</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>6. The network system of claim 1, wherein the device messaging agent executes in a secure execution environment on at least one of the devices, and at least one of the applications executes outside of the secure execution environment on that device.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1g].</p> <p>Houghton at 1-3</p> <p>"Description of the Related Art</p> <p>The Internet is a collection of networks which exchange messages using IP protocol (Internet Protocol) and associated protocols which run on top of IP such as TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Gateways between IP networks automatically route and transmit information over primarily the IP4 and IP6 protocols between two or more end points on any of the connected fixed and mobile networks. Each of these networks may also include or run on top of other network transport protocols such as ATM (Asynchronous Transfer Mode) or a wireless protocol which in turn carry the IP packets over that section of the Internet. Currently, the most common method of starting applications on a mobile terminal is to manually launch them by clicking on an icon or selecting a menu item. If the application, dynamically loaded program module or user interface feature is already launched, these applications must also be manually commanded by the user to change state to display newly available information provided by a</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|             | <p>telecommunications network. Some applications are also launched automatically when the terminal is started. This automatic start includes both applications that were installed on the phone before delivery to the customer including the basic terminal operating system software and programs installed by service providers and users and which by various means ask the terminal software to start them automatically after the terminal is powered up.</p> <p>Remote launch to a known state as specified in a network command of programs on mobile terminals is supported in various telecommunications standards. Voice Over IP (VoIP) and other multimedia sessions can be started remotely using Session Initiation Protocol (SIP). Wireless Application Protocol Push (WAP Push) is another standard for launching programs on mobile terminals based on remote events. Java Mobile Information Device Profile (MIDP) and various native mobile terminal operating systems also support remote application launch based on receipt of a text message (Short Message Service, SMS) or incoming Internet (IP) packet of information to a designated communications port number. However it is important to note from an economics and practical service deployment standpoint that each of these technologies either requires payment to the mobile network operator for sending an SMS or privileged access to the mobile phone from inside the operator's firewall in order for IP data to actually reach the phone.</p> <p>Mobile phones and similar mobile communication devices where originally not permanently connected to the Internet. Instead, for the transmission and display of visual information they have relied on different telecommunications standards and proprietary communication systems such as SMS (Short Message Service, also known as text messaging) and MMS (Multimedia Message Service), which were built into mobile terminals.</p> <p>Various techniques have been proposed for remotely commanding applications on a mobile terminal using push technologies:</p> <p>US20020183051 relates to remote application management of a wireless device.</p> <p>US20030208602 relates to pushing data in an internet protocol network environment.</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|             | <p>US20010020255 relates to remote control and interaction with a mobile run time environment component.</p> <p>US6687743 relates to client server communications for a mobile computing device.</p> <p>US6779019 relates pushing information from a host to a mobile data communications device.</p> <p>US6701378 relates pushing information from a host to a mobile data communications device.</p> <p>US6463464 relates pushing information from a host to a mobile data communications device.</p> <p>US6463463 relates pushing information from a host to a mobile data communications device.</p> <p>US6389457 relates pushing information from a host to a mobile data communication device.</p> <p>US2004122907 relates to secure interaction between a mobile client device and an enterprise application in a communication system.</p> <p>WO0195695 discloses a system for wireless push and pull based services.</p> <p>US2002187775 discloses a WAP service personalization, management and billing object oriented platform</p> <p>US2003106022 relates to outputting dynamic local content on mo-bile terminals</p> <p>US2004185834 discloses a method for enabling IP push capability to wireless devices on a wireless network.</p> <p>US2002174184 shows a mailbox access mechanism using SMS push and WAP technologies on mobile terminals</p> <p>WO02077842 shows a push method for delivering data to mobile device.</p> <p>Wireless Application Protocol Forum, Ltd., "Wireless Application Environment Specification, Version 2.0", Version 7-Feb-2002, 2002. <a href="http://www.wapforum.org">www.wapforum.org</a>.</p> <p>Sun Microsystems, Ltd, "The MIDP 2.0 Push Registry", Network and Timer MIDlet activation developers. <a href="http://sun.com/techtopics/mobility/midp/articles">sun.com/techtopics/mobility/midp/articles</a></p> <p>Nokia, Ltd., "SIP Session Initiation Protocol", Forum Nokia 2005 <a href="http://www.forum.nokia.com/main/0,6566,1_44,00.html">www.forum.nokia.com/main/0,6566,1_44,00.html</a>.</p> |

| '117 Claims                                                                                                                                                                                                                                                                                                          | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                      | <p>Nokia, Ltd , "SIP Frequently Asked Questions", Forum Nokia 2004 SIP FAQ v1 0 en.</p> <p>RFC 3261 , "SIP: Session Initiation Protocol", 2002. <a href="http://www.faqs.org/rfcs/rfc3261.html">www.faqs.org/rfcs/rfc3261.html</a></p> <p>Push technology is characterized by the server proactively sending documents or information to a client or user. E-mail (Electronic mail) is actually a special kind of push technology that has been prevalent for a long time. The first and most common general category of mobile content push technologies is SMS (Short Message Service) based technologies. SMS and MMS (Multimedia Messaging Service) are the most common forms of "push" messaging in the mobile industry. These store and forward messaging systems run by mobile telecommunications operators push all or part of the data to the mobile terminal over closed telecommunications signaling networks such as SS7 (Signaling System Seven) These signaling networks are closed, they are not part of the Internet Each operator controls and encrypts this traffic, charging high prices for their use and limiting their use and usefulness."</p> |
| <p>9. The network system of claim 1, further comprising, on at least one of the devices, the secure interprocess communication service, and wherein the secure interprocess communication service and the secure Internet data connection from that device to the network message server are separately secured.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p>10. The network system of claim 1, wherein at least one of the secure Internet data messages comprises multiple identifier/data pairs.</p>                                                                                                                                                                        | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

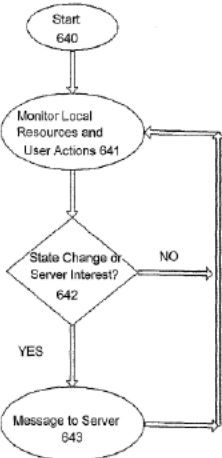
| '117 Claims                                                                                                                                                                              | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                        |
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|                                                                                                                                                                                          | <i>See, e.g.</i> , the disclosures identified for [1pre] – [1g].                                                                                                                                                           |
|                                                                                                                                                                                          |                                                                                                                                                                                                                            |
| 11. The network system of claim 1, wherein the secure interprocess communication service forwards the application data to at least one of the software processes in an encrypted format. | Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:<br><br><i>See, e.g.</i> , the disclosures identified for [1pre] – [1g]. |
|                                                                                                                                                                                          |                                                                                                                                                                                                                            |
| 12. The network system of claim 1, the device messaging agent on at least one of the devices further to initiate the secure connection to the network message server.                    | Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:<br><br><i>See, e.g.</i> , the disclosures identified for [1pre] – [1g]. |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|             | <p style="text-align: center;"><b>Figure 4</b></p>  <p style="text-align: center;">Houghton at 16-17</p> <p>“Figure 4 illustrates an exemplary implementation of the system for pushing application commands to a mobile terminal based on server side and client side events in accordance with one embodiment of the present invention. More specifically, Figure 4 illustrates a Push Client basic functionality 405 implemented in a mobile terminal 404 as part of a message passing system in cooperation with a Push Server 401. The push client 405 is preferably implemented in the form of a software run in a processor of the mobile terminal 404. The mobile terminal 404 is preferably a commercially available mobile terminal, such as a portable phone or appliance capable of running software or personal digital assistant, which provides a platform for downloading application software over air or from a personal computer, installing the software in the terminal, and running the software in the terminal. For</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|             | <p>example, the Symbian operating system is an open operating system, application framework, and application suite optimised for the needs of wireless information devices such as intelligent phones, smartphones and communicators, and open operating system and drives standards for the interoperation of data-enabled mobile phones with mobile networks, content applications, and services. The Symbian operating system also includes connectivity software for synchronisation with data on personal computers and servers. The application may be in an appropriate programming language, such as C++ or Java, which is an object-oriented programming language and virtual machine platform developed by Sun Microsystems.</p> <p>The push client software 405 preferably launches automatically when the mobile terminal 404 is turned on. The push client software 405 runs in the background and attempts to log into the push server 401 over a data network 403, normally a wireless network capable of transmitting Internet Protocol (IP) packets. The arrow A in Figure 4 illustrates an optional attempt by the push client 405 to communicate with the wireless network firewall 402 or other similar security or gateway device in order to open a connection for the push server 401 to directly contact the push client 401 as in FIG 3. If successful, operations can continue as described in FIG 3 or as below. Arrow B illustrates a login attempt.</p> <p>The wireless network 403 may be protected by means of a firewall or other appropriate security entity 402, which connects the wireless network to the public networks and filters and selectively discards the data packets entering and exiting the wireless network according to predefined rules. Thus, a firewall is a gateway device which operates at the same time as a connector and a separator between networks in a sense that it keeps track of the traffic that passes through it from one network to another and restricts connections and packets that are defined as unwanted by the administrator of the system. Additionally, IP connection techniques, such as Internet Protocol 4 (IP4) network address translation and Internet Protocol 6 (IP6) security,</p> |

| '117 Claims                                                                                                                                                                                                                                                             | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                                                                                                                                                                                                         | <p>encryption and/or authentication, may hide the actual address of the mobile terminal or make it otherwise difficult for a server to connect to directly to the mobile terminal. The public telecommunications operator, company, organization, or private individual setting up this mobile Internet space with one or more users having greater ability to contact one another and included servers does this to protect the mobile terminals from hostile or unwanted contact common on the public Internet. They may also do so to reduce background traffic, protect their control over this space and limit outside or undesired service providers through technical connection policies set in the firewall, gateway or other security device. Physically a firewall may be a machine with appropriate software to do the task assigned to it. 402 can be a firewall, router, a personal computer, a gateway server or whatever similar computing device, infrastructure or secure protocol such as IP6 can be used for such purposes. Consequently to the existence and configuration of 402, if a fixed or mobile computing device from outside the controlled mobile network tries to contact a mobile terminal 404 inside the controlled mobile network, the incoming connection is not generally permitted unless the organization or individual controlling the firewall, gateway server or security device 24 makes an adjustment to their security policy and explicitly allows the connection."</p> |
| <p>13. The network system of claim 1, at least one of the devices having a network stack in communication with the device messaging agent, wherein the secure connection between the network message server and that device is terminated within the network stack.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.,</i> the disclosures identified for [1pre] – [1g].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| '117 Claims                                                                                                                                                                                                                                                                                                                         | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p>14. The network system of claim 1, wherein at least one of the applications on at least one of the devices and the network application server corresponding to that application authenticate with each other prior to passing application data via the device messaging agent on that device and the network message server.</p> | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g].</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>16. The network system of claim 2, wherein the network message server transmits the collected and buffered requests to the particular device upon the occurrence of a transmission trigger.</p>                                                                                                                                  | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g], [2].</p> <p>Houghton at 26</p> <p>“Referring to steps 620 and 621 in Figure 6B, after the login and connection setup in Figure 6A, the push client 405 may send a periodic message (the arrow C in Figure 4) from the client 405 to the server 401 to the effect that client socket, server socket, intermediate Network Address Translation (NAT) devices, intermediate firewalls, and intermediate gateway devices do not time expire the connection The period of time (measured in seconds, minutes or hours and varying from mobile network to mobile network) between such periodic messages is set to match the combined needs of all such network devices and network protocols involved in transmitting communication (step 604) The client 405 may then wait for a reply or acknowledgement from the server 401 , and if the acknowledgement is received (step 622), the client 405 returns to step 620 to await the next combined connection refresh and test If the no acknowledgement is received, the client 405 may return to step 604</p> |

| '117 Claims | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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|             | <p>in Figure 6A to possibly automatically adjust network settings or, if it deems the settings correct but the network not available, simply re-attempt login to the server 401"</p> <p><b>Figure 6D</b></p>  <pre> graph TD     Start([Start 640]) --&gt; Monitor([Monitor Local Resources and User Actions 641])     Monitor --&gt; Decision{State Change or Server Interest? 642}     Decision -- YES --&gt; Message([Message to Server 643])     Message --&gt; Monitor     Decision -- NO --&gt; Monitor </pre> <p><b>Houghton at 26</b></p> <p>"Referring to Figure 6D, after the login and connection setup, the push client 405 may monitor the local resources for a state change (a trigger event) in step 641. If a state change or other event is detected in step 642, the push client 405 may send a message to the server 401 (step 643). The push server 401 can be server software run on any appropriate computing device. Figures 10A, 10B and 10C are flow diagrams showing examples of processes by which the server 401 maintains a connection with the client 405 and communicates push commands and other data to it."</p> |

| '117 Claims                                                                                                                                                     | WO2006077283A1 to Paul Houghton et al. ("Houghton")                                                                                                                                                                                    |
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| 17. The network system of claim 16, wherein the transmission trigger is the expiration of a periodic timer.                                                     | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g], [16].</p> |
| 18. The network system of claim 16, wherein the transmission trigger is the receipt of a transmission from the device messaging agent of the particular device. | <p>Houghton discloses and/or renders obvious this limitation. For example, see the following passages and/or figures, as well as related disclosures:</p> <p><i>See, e.g.</i>, the disclosures identified for [1pre] – [1g], [16].</p> |