

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESIDEO TECHNOLOGIES, INC.

Petitioner

v.

UBIQUITOUS CONNECTIVITY, LP,

Patent Owner

Case: IPR2019-01335

U.S. Patent No. 8,064,935

DECLARATION OF KEVIN JEFFAY

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LIST OF EXHIBITS

Exhibit	Short Name	Description
Ex. 1001	935 Patent	U.S. Patent No. 8,064,935
Ex. 1002	655 File History	File History of U.S. Patent No. 9,602,655
Ex. 1003	Jeffay Declaration	Declaration of Kevin Jeffay under 37 C.F.R. § 1.68
Ex. 1004	Jeffay CV	<i>Curriculum Vitae</i> of Kevin Jeffay
Ex. 1005		Provisional Patent Application No. 60,522,887 File History
Ex. 1006	335 File History	U.S. Patent No. 6,990,335 File History
Ex. 1007	397 File History	U.S. Patent No. 7,257,397 File History
Ex. 1008	532 File History	U.S. Patent No. 7,668,532 File History
Ex. 1009	823 File History	U.S. Patent No. 7,643,823 File History
Ex. 1010	935 File History	U.S. Patent No. 8,064,935 File History
Ex. 1011		15/405,793 Application File History
Ex. 1012	Motion	CPS Energy Motion to Dismiss
Ex. 1013	Complaint	Complaint for Patent Infringement
Ex. 1014		Zatkovich Declaration
Ex. 1015		Ubiquitous Response to CPS Energy MTD
Ex. 1016	Oinonen	U.S. Patent No. 6,275,710 (Oinonen)

Exhibit	Short Name	Description
Ex. 1017	Bielski	European Patent Application No. 1391861 (Bielski)
Ex. 1018	Wu	<i>System integration of WAP and SMS for home network system</i> (Wu)
Ex. 1019	Sears	U.S. Patent Pub. 2002/0069263 (Sears)
Ex. 1020	Menard	US Patent Pub. 2002/0177428 (Menard)
Ex. 1021	Antila	US Patent No. 6,583,770 (Antila)
Ex. 1022	Ehlers	US Patent Pub. 2004/0117330 (Ehlers)
Ex. 1023	Whitley	WIPO Publication No. 99/49680 (PCT/US99/06429) (Whitley)
Ex. 1024	Song	U.S. Patent No. 6,393,297 (Song)
Ex. 1025	SMS Specification	Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS) (3G TS 23.040 version 3.5.0 Release 1999)
Ex. 1026		RESERVED
Ex. 1027	Kanma	<i>Home Appliance Control System over Bluetooth with a Cellular Phone</i> (Kanma)
Ex. 1028	Lee Declaration	Statutory Declaration of Rupert Lee

DECLARATION OF KEVIN JEFFAY

I, Dr. Kevin Jeffay, hereby declare under penalty of perjury that the following statements are made based on my personal knowledge and are true and correct.

I. Professional Background

1. I am a tenured professor in the Department of Computer Science at the University of North Carolina at Chapel Hill, where I currently hold the position of Gillian T. Cell Distinguished Professor of Computer Science. I also currently serve as the Chairman of the Department. I have been a faculty member at UNC since 1989.

2. I received a Ph.D. in computer science from the University of Washington in 1989. Before that I received a M.Sc. degree in computer science from the University of Toronto in 1984, and a B.S. degree with Highest Distinction in mathematics from the University of Illinois at Urbana-Champaign in 1982.

3. I have been involved in the research and development of networked computing systems for over 35 years. During this time I have performed research, and I have taught in the areas of computer networks, distributed systems, real-time and embedded systems, operating systems, multimedia networking, network traffic analysis, and network performance evaluation, among others. A major theme of my research has been the development of computer and communications

technology for the effective control of processes in the environment external to the control computer. I have worked on control systems for applications as diverse as avionics, robotics, manufacturing, and communication systems for wireless and wireline telephony as well as interactive real-time services such as video teleconferencing.

4. For example, in the latter realm, my research has examined problems ranging from network support for real-time multimedia applications such as audio and video streaming, voice-over-Internet protocol (VoIP) and Internet videoconferencing, to the design of congestion control mechanisms in network routers, to measurements and analysis of network traffic to passively assess the performance of servers on the Internet. In addition, I have also explored problems in the design and implementation of operating systems for real-time control of devices connected to the controlling computer.

5. I have authored or co-authored over 100 articles in peer-reviewed journals, conference proceedings, texts, and monographs in the aforementioned areas of computer science and others. I have previously served as Editor-in-Chief for the journal *Multimedia Systems* and Associate Editor for the journal *Real-Time Systems*. In addition, I have edited and co-edited numerous published proceedings of technical conferences and have edited a book of readings in multimedia computing and networking (with Hong-Jiang Zhang) published by Morgan

Kaufman. I am a co-author (with Long Le and F. Donelson Smith) of a monograph related to computer network protocols, and a co-author (with Jay Aikat and F. Donelson Smith) of a second monograph related to experimental computer networking.

6. I have served on numerous proposal review panels for the National Science Foundation and other international funding agencies in the aforementioned areas of computer science. I have served as a program chair or member of the technical program committee for over 100 professional, international, and technical conferences, workshops, and symposia. I have also served on the technical steering committee for the IEEE working group on real-time and embedded systems.

7. I am a named inventor on four U.S. Patents. These patents are generally related to computer networking and the delivery of services over networks.

8. I attach as Exhibit 1004 my curriculum vitae, which includes a more detailed list of my qualifications. My C.V. also contains a list of all other cases in which, during the previous 4 years, I testified as an expert at trial or by deposition.

II. Scope of the Engagement

9. I have been retained by Alston & Bird, LLP on behalf of Resideo Technologies, Inc. (“Resideo” or “Petitioner”) to provide analysis and opinion. I have also been asked to evaluate whether a POSITA would have considered certain

technologies and prior art to be relevant or material to determining the validity of the claims at issue of U.S. Patent No. 8,064,935 (the “935 Patent”).

10. All of the opinions I express in this Declaration have been made from the standpoint of a person of ordinary skill. I understand that Patent Owner proposed a definition of a POSITA in the district court litigation. In particular, I understand that Patent Owner proposed that a POSITA would be expected to have at least a bachelor’s degree in electrical engineering or computer science and at least two years of industry experience in the field of computers and communications. Ex. 1014, 50. While I do not disagree with this definition, I believe a better, more precise definition of a POSITA would be a person who has at least a bachelor’s degree in electrical engineering or computer science and at least two years of industry experience in the field of embedded systems and/or process control. Under either definition, I was a POSITA as of at least the earliest priority date of the 935 Patent. The opinions I express herein would not change based on whether Patent Owner’s or my definition of a POSITA is adopted.

11. My opinions are based on my experience and knowledge and the information I have reviewed as of the date of this Declaration. In connection with my analysis, I have reviewed the exhibits listed in the above list of exhibits above as well as each of the items referenced herein.

12. I am being compensated at my standard hourly rate of \$700 per hour for my time. My compensation is not in any way contingent on my performance, the result of this proceeding, or any of the issues involved therein. I am also being reimbursed for expenses incurred as a result of activities performed as an expert.

III. Legal Understandings

A. Claim Interpretation

13. My opinions concern what I believe a POSITA would have understood the meaning of certain claim terms to be based on the patent documents. I use the legal principles below, of which I have been informed by counsel as a guide in formulating my opinions.

14. I understand that it is a basic principle of patent law that assessing the validity of a patent claim involves a two-step analysis. In the first step, the claim language must be properly construed to determine its scope and meaning. In the second step, the claim as properly construed, must be compared to the alleged prior art to determine whether the claim is valid.

15. My methodology for determining the meaning of claim phrases was first to study the patent. In particular, I studied the claims themselves, followed by the specification, figures, and other patent content. Next, I reviewed the prosecution history looking for any clarifications or limitations that might be attached to claim terms.

16. I understand that in an *inter partes* review, claim terms are to be given their ordinary and customary meaning as understood by a POSITA in the context of the entire specification and prosecution history at the time of the invention. I understand that one must be careful not to read a specific embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. I further understand that any special definition for a claim term must be set forth with reasonable clarity, deliberateness, and precision.

17. I understand that this standard is the same as that used in United States district courts, in which claim terms are given their ordinary and customary meaning, as would be understood by a POSITA at the time of the invention having taken into consideration the language of the claims, the specification, and the prosecution history of record under the *Phillips* claim construction standard.

B. Prior Art

18. It is my understanding that information which satisfies one of the categories of prior art set forth in 35 U.S.C. § 102 may be used in an invalidity analysis under §§ 102 or 103. If information is not properly classified as prior art under one of the subsections of § 102 of the Patent Code, then it may not form the basis of an anticipation or obviousness determination. It is also my understanding that, for *inter partes* review, applicable prior art is limited to patents and printed publications.

C. Anticipation

19. I understand that to anticipate a patent claim under 35 U.S.C. § 102, a single asserted prior art reference must disclose each and every element of the claimed invention, either explicitly or inherently, to a POSITA. I understand that a disclosure of an asserted prior art reference can be “inherent” if the missing element is necessarily present or is the inevitable outcome of the process and/or thing that is explicitly described in the asserted prior art reference.

D. Obviousness

20. I am also informed and understand that a patent claim is invalid under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a POSITA to which the subject matter pertains. Obviousness, as I understand, is determined based on the scope and content of the prior art, the differences between the prior art and the claim, the level of ordinary skill in the art, and secondary indications of non-obviousness to the extent they exist.

21. I understand that whether there are any relevant differences between the prior art and the claimed invention is to be analyzed from the view of a POSITA at the time of the invention. A POSITA is a hypothetical person who is presumed to be aware of all of the relevant art at the time of the invention. A POSITA is not an automaton, and may be able to fit together the teachings of

multiple patents employing ordinary creativity and the common sense that familiar items may have obvious uses in another context or beyond their primary purposes.

22. In analyzing the relevance of the differences between the claimed invention and the prior art, I understand that I must consider the impact, if any, of such differences on the obviousness or non-obviousness of the invention as a whole, not merely some portion of it. A POSITA faced with a problem is able to apply his or her experience and ability to solve the problem and also look to any available prior art to help solve the problem.

23. I understand that an invention would have been obvious if a POSITA, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to the solutions tried by the applicant. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it would be obvious to a POSITA to try the known options. If a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique would have been obvious.

24. I understand that I do not need to look for precise teaching in the prior art directed to the subject matter of the claimed invention. I understand that I may take into account the inferences and creative steps that a POSITA would have employed in reviewing the prior art at the time of the invention. For example, if the

claimed invention combined elements known in the prior art and the combination yielded results that were predictable to a POSITA at the time of the invention, then this evidence would make it more likely that the claim was obvious. On the other hand, if the combination of known elements yielded unexpected or unpredictable results, or if the prior art teaches away from combining the known elements, then this evidence would make it more likely that the claim that successfully combined those elements was not obvious. I understand that hindsight must not be used when comparing the prior art to the invention for obviousness.

i. Motivation to Combine

25. I understand that obviousness may be shown by demonstrating that it would have been obvious to modify what is taught in a single piece of prior art to create the patented invention. Obviousness may also be shown by demonstrating that it would have been obvious to combine the teachings of more than one item of prior art. I understand that a claimed invention may be obvious if some teaching suggestion or motivation exists that would have led a POSITA to combine the invalidating references. I also understand that this suggestion or motivation may come from sources such as explicit statements in the prior art, or from the knowledge of a POSITA. Alternatively, any need or problem known in the field at the time and addressed by the patent may provide a reason for combining elements of the prior art. I also understand that when there is a design need or market

pressure, and there are a finite number of predictable solutions, a POSITA may be motivated to apply both his skill and common sense in trying to combine the known options in order to solve the problem.

26. In determining whether a piece of prior art could have been combined with other prior art or with other information within the knowledge of a POSITA, the following are examples of approaches and rationales that may be considered:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices, methods, or products in the same way;
- Applying a known technique to a known device, method, or product ready for improvement to yield predictable results;
- Applying a technique or approach that would have been “obvious to try” (choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success);
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to a POSITA; or
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

E. Date of Invention

27. I understand that absent clear and convincing evidence of invention date prior to the filing date of a patent, the invention date of the patent is presumed to be its filing date. A prior invention requires a complete conception of the invention and a reduction to practice of that invention. The patentee has the burden of establishing by clear and convincing evidence a date of conception earlier than the filing date of the patent.

28. I understand that conception is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention. I also understand that conception must be proved by corroborating evidence which shows that the inventor disclosed to others his complete thought expressed in such clear terms as to enable those skilled in the art to make the claimed invention. The inventor must also show possession of every feature recited in the claims, and that every limitation was known to the inventor at the time of the alleged conception. Furthermore, the patentee must show that he or she has exercised reasonable diligence in later reducing the invention to practice, either actual or constructive. The filing of a patent application can serve as a constructive reduction to practice.

29. I understand that a continuation-in-part is an application filed during the lifetime of an earlier nonprovisional application, repeating some substantial portion or all of the earlier nonprovisional application and adding matter not

disclosed in the earlier nonprovisional application. A continuation-in-part application allows an applicant to claim later additional enhancements or embodiments after the parent application was filed. For a continuation-in-part application, claims to subject matter that was also disclosed in the parent are entitled to the parent's priority date, while claims to the additional subject matter that is present in the continuation-in-part application are only entitled to the filing date of the continuation-in-part application.

IV. Summary of Opinions

30. Based on my review of the 935 patent and its prosecution history, the materials I have considered, and my knowledge and experience, my opinions are as follows:

- Claims 1, 2, 3, 7, 11, 12, 13, 14, 15, 17, 18, 19, and 21 are obvious in view of the combination of Oinonen and Whitley.
- Claims 4, 5, 6, and 16 are obvious in view of the combination of Oinonen, Whitley and Sears.
- Claim 8 is obvious in view of the combination of Oinonen, Whitley, and Antila.
- Claims 9, 10 are obvious in view of the combination of Oinonen, Whitley, Antila, and Ehlers.

- Claims 20, 22 are obvious in view of the combination of Oinonen, Whitley and Menard.
- Claims 1, 2, 3, 4, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, 19, and 21 are also obvious in view of the combination of Bielski and Wu.
- Claims 5, 6, and 16 are also obvious in view of the combination of Bielski, Wu, and Sears.
- Claim 10 is also obvious in view of the combination of Bielski, Wu, and Ehlers.
- Claims 20 and 22 are also obvious in view of the combination of Bielski, Wu, and Menard.

V. Technical Background

31. To better understand my opinions on the validity of the claims of the 935 Patent, in this section I provide some background on cellular networking and mobile computing with a particular focus on the protocols used for data transmission in these networks.

A. Overview of Cellular Networks

32. Cellular telephone networks as we know them today have existed in the United States since the 1970s. While the original conception of these networks was primarily designed to carry only voice traffic, the use of cellular networks for applications other than voice transmission began shortly after the first deployment

of these networks. For example, SMS text messaging dates to the early 1990s when it was realized that unused transmission capacity in the network could be used to transmit small amounts of data (text in this case). Shortly thereafter, general purpose data transmission was a separate, commercially available service. Indeed, by the mid-1990s PDAs such as the Apple Newton, and early smartphones such as the IBM Simon used the cellular network infrastructure to enable users to send and receive emails and browse the world-wide web.

33. Thus, by 2004, the use of mobile cellular devices to perform functions previously thought to be the exclusive domain of desktop computers had been steadily evolving for well over 10 years. Commercial mobile (cellular) broadband data services were widely available and becoming cheaper and faster. Correspondingly, mobile devices were fully functional Internet-connected computing and communication appliances. These services were enabled by the steady and continual development and deployment of various network protocols and services in cellular networks from the “primitive” pager-like messaging services to mobile devices being fully functional computers on the Internet. Thus, by 2004, the mobile computing landscape was quite mature. For example, in 2004 I owned a Blackberry 7000 series smartphone with a color display that supported web browsing, email, text messaging, and many other applications, all operating over commercial digital cellular networks.

B. Data Transmission in Cellular Networks

34. SMS is one of the oldest mechanisms for sending text data between two mobile phones across a cellular network. *See e.g.*, Ex. 1025. During design of the networks in the 1980s, it was recognized that there were small amounts of spare capacity in the signaling channel of the network in which non-voice data (such as alphanumeric text data) could occupy. The first SMS message was sent in 1992, but a decade later, in 2002, more than 250 billion SMS messages were sent.

35. Because of the way that SMS messages are generated and sent, SMS is essentially a generic data transport mechanism and that can be (and is) used to send general purpose data between endpoints on the cellular network. For example, in the late 1990s and early 2000s it was popular to send and receive ringtones via SMS messaging.

36. When used as a generic data transport mechanism, it is possible to send SMS messages to specific applications on a cellular endpoint. This is similar to the way communication protocols on the Internet work where, as a technical matter, messages are not sent to simply “a computer,” but rather are sent to a specific application executing on a computer. This is done on the Internet by having messages carry two types of destination addresses: a destination IP address that identifies the destination computer, and a destination “port number” (an integer) that identifies the destination application on the destination computer. For

example, when you request content from a web server on the Internet, your web browser addresses its request message to the IP address of the desired web server and also to port 80 on that web server (port 80 being the “well known” or “reserved” port number used by web servers).

37. Data communications using SMS messaging as the delivery mechanism employ the same two-part destination addressing framework used on the Internet. A data SMS message is sent to a destination address (a phone number representing a cellular endpoint such as a mobile phone) and to a port number (an integer representing the application on the destination cellular endpoint that should receive the message).

38. In this manner, one can develop applications for cellular endpoints that can transfer arbitrary data object over the SMS messaging infrastructure. Although SMS messages have a finite maximum length, applications can segment large data objects into multiple messages and therein transfer objects that are larger than an individual SMS message. This technique derives from the communication paradigm on the Internet where individual messages (“packets”) also have a finite, relatively small, maximal size and applications segment large data objects into smaller units for sequential transmission to the recipient that reassembles the packets back into the original data object.

39. There are many instances where SMS has been used to send data objects over the SMS messaging infrastructure. Various prior art references that I reviewed disclose nearly identical systems and components to those claimed in the 935 Patent.

40. For example, WO Pub. No 99/49680 to Whitley et al., which was published in September 1999, describes a method for remotely monitoring and controlling network devices through a mobile device. Ex. 1023, Abstract. In Whitley's system, users can receive information about devices in their home and send commands for these same devices. *Id.* Whitley discloses using SMS messages to transfer data and commands between devices. *Id.*

41. Shortly thereafter, in early 2000, U.S. Patent No. 6,393,297 to Song was issued, which disclosed "[a] method for remotely controlling an external appliance via a mobile terminal in a mobile radio system supporting a short message service (SMS)." Ex. 1024, Abstract.

42. On August 14, 2001, U.S. Patent No. 6,275,710 was issued to Oinonen. Oinonen describes the use of SMS messages to monitor and control devices such as a door locking system, alarm, and lights. In one example, Oinonen discloses that users could send a SMS message such as "lock the door" from their mobile device to a base unit in their home. Ex. 1016, 11:62-64. Upon receipt, this SMS message is interpreted, and "the locking relay 22 is supplied with an

operating voltage by setting the status line DSR of the communication device in the logical 1 state,” which ultimately results in the locking relay being closed. *Id.* at 11:62-12:4.

43. Additional references such as *System integration of WAP and SMS for home network system* by Wu and Jan, and European Patent Application No. 1391861 to Bielski, further describe SMS-based monitoring and control systems. For example, Wu discloses a wide variety of devices to which the SMS monitoring and control systems disclosed by the prior references could be used. These devices include refrigeration systems, ovens, televisions, air-conditioning units, as well as others. Ex. 1018, Table 1.

44. Bielski further discloses a variety of mobile devices, such as a Pocket PC and/or PDA with graphical user interfaces that allow users to send and receive messages wirelessly through customized interfaces. Moreover, Kanma discloses customizable applications for mobile devices to control appliances. Ex. 1027.

VI. Overview of the 935 Patent

45. The 935 Patent is broadly directed to a control system in which environmental characteristics of a building can be monitored and controlled by a user using his/her mobile device. More specifically, the 935 Patent is directed to the use of SMS messages exchanged between a mobile device and a base station to control and monitor environmental devices. Further, the 935 Patent is directed to

situations where the home environmental system to be controlled is in a “geographically remote location.” Ex. 1001, 1:19-22.

A. Challenged Claims of the 935 Patent

46. The challenged claims of the 935 Patent are Claims 1-22. I have reproduced the challenged claims below.

1. A wireless system comprising:
 - an environmental device;
 - a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device;
 - a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and
 - a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,
 - wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,
 - wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and
 - wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.

2. The system as recited in claim 1 wherein said environmental device includes electronic and electromechanical switching portions interfaced with said environmental device.

3. The system as recited in claim 1 wherein said base unit is a microcontroller-based processing unit having customizable application specific software.

4. The system as recited in claim 1 wherein said remote unit is a cellular telephone handset with custom programmability.

5. The system as recited in claim 4 wherein said custom programmability is a JAVA programming kernel.

6. The system as recited in claim 4 wherein said custom programmability is a J2ME programming kernel.

7. The system as recited in claim 1 wherein said wireless connectivity includes a transmitting and receiving module in said base unit and a transmitting and receiving unit in said remote unit operatively communicating with each other over a cellular telephone network.

8. The system as recited in claim 1 wherein the remote unit includes a liquid crystal display module.

9. The system as recited in claim 8 wherein said liquid crystal module includes selectable graphic icons corresponding to current environmental information being monitored or controlled.

10. The system as recited in claim 1, wherein the remote unit is configured to selectively disable transmission of SMS messages from the base unit.

11. A wireless system comprising:

an environmental device configured to send environmental information, and adapted to receive a command to control an operation of the environmental device;

a remote unit having wireless connectivity and being configured to:

receive a first short message service (SMS) message, wherein the first SMS message includes the environmental information;

notify a user of said remote unit of receipt of the first SMS message; and

send a second SMS message, wherein the second SMS message includes the command; and

a wireless base unit configured to:

receive the environmental information from the environmental device;

transmit the first SMS message to the remote unit;

receive the second SMS message from the remote unit; and

send the command to the environmental device.

12. The system of claim 11 wherein the wireless connectivity connection further comprises a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing between the first wireless connection and the second wireless connection.

13. The system of claim 11 wherein the environmental device includes electronic and electromechanical switching portions for controlling the environmental information.

14. The system of claim 11 wherein the base unit further comprises a microcontroller-based processing unit having customizable application specific software.

15. The system of claim 11 wherein the remote unit further comprises a cellular telephone handset.

16. The system of claim 15 wherein the cellular telephone handset includes at least one of a customizable JAVA programming kernel and a customizable J2ME programming kernel.

17. The system of claim 11 further comprising a cellular telephone network.

18. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

- a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device;

- a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message is a first short message service (SMS) message including the environmental information, and wherein the second message is a second short message service (SMS) message including the command to the environmental device; and

- a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

19. A communication system having wireless connectivity, the communication system comprising:

a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;

a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity, wherein the first message is a wireless message including the current status of the environmental device;

a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message including a command for the environmental device; and

a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.

20. A wireless system comprising:

a base unit operatively interfaced with an environmental device for controlling an environmental condition in a structure;

a receiver associated with said base unit, and adapted for receiving a first wireless message from a remote unit having wireless connectivity, wherein the first wireless message includes a command for the environmental device;

a controller operatively associated with said base unit, and operatively connected with the environmental device for executing the command; and

a transmitter operatively associated with the controller for sending a second wireless message to the remote unit, wherein the second wireless message includes information indicating that the command has been executed.

21. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

- a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device;

- a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message includes the environmental information and travels via short message and/or data bearer services, and wherein the second message includes the command to the environmental device and travels via short message and/or data bearer services; and

- a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

22. A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

- a controller configured to communicate with the environmental device; and

- a wireless module configured to:

- receive a control message from the remote unit via short message and/or data bearer services, said control message comprising control information for controlling the environmental device;

- create a control command for the environmental device based on the control information;

send the control command to the environmental device via the controller; and

send a status message indicating execution of said control information to the remote device.

B. Priority Date of the 935 Patent

47. I am informed and understand that the earliest possible priority date the claims of the 935 Patent is November 18, 2004—the filing date of U.S. Provisional Patent Application No. 60/522,887 to which the 935 Patent claims priority.

VII. File History

A. Provisional Application

48. On November 18, 2004, Patent Owner filed United States Provisional Patent Application No. 60,522,887 (the “Provisional Application,” Ex. 1005).

49. The Provisional Application disclosed a direct-connect ubiquitous system characterized by “bidirectional communication between a remote access unit and a multifunctional base unit in a geographically remote building.” Ex. 1005, p. 7. The Provisional Application defines the present invention as relying on an on-demand digital, private, and direct ubiquitous communications interface to overcome the shortcomings and limitations of current communications interface. Ex. 1005, p. 8. The Provisional Application continues:

A digital, private, and direct-connect ubiquitous controller provides instant wireless private direct connectivity to the home from anywhere in the world without dialing a number or waiting for a number of tones to send a command or to know the status of conditions in the home; provides silent and constant direct two-way communication privately and globally, with home for control and monitoring of key functions; eliminates limitations, immobility, and in opportunities to connect, monitor and control your home, globally; can be configured to interface with many existing and future home automation systems and technologies; providing instant ubiquitous control for the end-user; and eliminates the need for the PC, modems and interconnected wiring.

Id.

50. The Provisional Application discloses a mobile unit that can communicate with a base unit to effectuate control of various peripheral equipment such as thermostats, hot water heaters, and air handling systems. Ex. 1005, pp. 13-14. Specifically, the Provisional Application discloses the use of a “short message and/or the data bearer cellular telephone network”:

Referring to the drawings, Figure 1 illustrates a ubiquitous connectivity and control system 10 wherein certain parameters are controlled from a geographically remote location 12 by a remote unit 14 on demand interfacing with a base unit 16 in a structure 18 at a local location 20 through a short message and/or the data bearer cellular telephone network 22 including control towers 24.

Ex. 1005, p. 9.

51. The Provisional Application states that the present invention is directed to monitoring, controlling, and securing various environment functions and characteristics attendant the interior and exterior of a building. Ex. 1005, pp. 14-15. Specifically, the provisional confirms that the system monitors a number of environmental functions of the building, which include “temperature, power status for the building and discrete applications therein, humidity/moisture, smoke/toxic gases, structural breaches, security status, visual conditions and a host of other natural and non-natural phenomena.” *Id.* at p. 15. The provisional also discloses that sensors provide continuous measurement and status of target environmental characteristics. Ex. 1005, p. 15. Specifically:

Examples of sensor applications include utilities status, moisture and humidity detection, door and window condition, and the like. Associated controlled devices providing operational functions refrigeration, water heating, security cameras, illumination devices, and the like.

Id.

B. Non-provisional Application / U.S. Patent No. 6,990,335

52. On June 6, 2005, Patent Owner filed United States Non-provisional Application No. 11/160,006, which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as U.S. Patent No. 6,990,335 (the “335 Patent,” Ex. 1006). The 335 Patent was filed with 25 claims,

with Claims 1, 12, and 21 being independent. Ex. 1006, pp. 39-43. Exemplary claim 21 recited:

21. A system for enabling select individuals to selectively control environmental conditions of a structure, comprising:
a plurality of devices for controlling discrete environmental conditions in the structure; control means for operating each device to control a select environmental condition; a base unit in said structure; a mobile master remote unit operable by a first party; a mobile associate remote unit operable by a second party, said associate mobile unit transmitting an identification signal; receiving means associated with said base unit for receiving said identification signal when said associate remote unit is within a proximate distance to the structure; selection means operatively associated with said base unit for establishing an authorized user status to said associate remote device based on said identification signal; instant wireless connectivity means; connectivity means providing an on-demand, private and direct communications interface between said base unit, said master remote unit and an associate remote unit having said authorized user status enabling instant wireless connectivity therebetween; means for providing a indication of current status of each of said devices to said base unit; means for transmitting said indication of current status of each of said devices through said connectivity means to said master remote device and for transmitting said indication of current status of select devices to said associate remote device; display means at said remote devices for indicating said current status of said devices transmitted thereto; input means at each of said remote devices for prescribing an indication of revised status for

device displayed thereat; means for transmitting said indication of revised status through said connectivity means to said base unit; means operatively associated with said base unit and operatively connected with said devices for effecting revised status for a prescribed device.

Ex. 1006, p. 39.

53. On September 26, 2005 the USTPO issued a first action Notice of Allowance finding all pending claims (21-25) allowable and cancelling, by Examiner amendment, Claims 1-20. Ex. 1006, pp. 73-80. The Examiner noted that the closest prior art references were Kanazawa (U.S. Pub. No. 2003/0210126), Kim et al. (U.S. Pub. No. 2004/0092282), and Ota et al. (US Pub. No. 2005/0044225), but that none of these references, alone or in combination, taught all limitations of the pending claims. Ex. 1006, pp. 78-79. Specifically, the Examiner stated:

However, the closest prior arts, Kanazawa (US 2003/0210126 A1), Kim et al. (US 2004/0092282 A1), and Ota et al. (US 2005/0044225), either singularly or in combination, fail to teach a base unit in said structure; a mobile master remote unit operable by a first party; a mobile associate remote unit operable by a second party, said mobile associate remote unit transmitting an identification signal; receiving means associated with said base unit for receiving said identification signal when said associate remote unit is within a proximate distance to the structure; selection means operatively associated with said base unit for establishing an authorized user status to said mobile associate remote unit based on said identification signal; instant wireless connectivity

means; connectivity means providing an on-demand, private and direct communications interface between said base unit, said mobile master remote unit and said mobile associate remote unit having said authorized user status enabling instant wireless connectivity therebetween; means for transmitting said indication of current status of each of said devices through said connectivity means to said mobile master remote unit and for transmitting said indication of current status of select devices to said mobile associate remote unit, in combination with all of other limitations in the claim.

Ex. 1006, pp. 78-79.

C. Non-provisional Application / U.S. Patent No. 7,257,397

54. On October 7, 2005, Patent Owner filed United States Non-provisional Application No. 11/163,372, which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as U.S. Patent No. 7,257,397 (the “397 Patent,” Ex. 1007). The 397 Patent was filed with 20 claims, with Claims 1 and 12 being independent. Ex. 1007, pp. 41-43. Exemplary Claim 1 recited:

1. A ubiquitous connectivity and communications system for controlling operation of an environmental condition in a structure, comprising:

a device for controlling an environmental condition in the structure;
a base unit in said structure and operatively interfaced with said device to control the operation thereof; at least one remote device; connectivity means providing an on-demand, private and direct communications

interface between said base unit and said remote device enabling instant wireless connectivity therebetween; means for providing a indication of current status of said device to said base unit; means for transmitting said indication of current status through said connectivity means to said remote device; display means at said remote device for indicating said current status of said device; input means at said remote device for prescribing an indication of revised status for said device; means for transmitting said indication of revised status through said connectivity means to said base unit; means operatively associated with said base unit and operatively connected with said device for effecting said revised status for said device

Ex. 1007, p. 41.

55. The Examiner issued a first Office Action on March 9, 2006 rejecting all claims under 35 U.S.C. § 103 as being unpatentable over Kanazawa (U.S. Pub. No. 2003/0210126), in view of Kim et al. (U.S. Pub. No. 2004/0092282), Flaherty et al. (U.S. Pub. No. 2004/0235446), and/or Song (U.S. Pat. No. 6,393,297). Ex. 1007, pp. 76-82. On August 9, 2006, the Patent Owner filed an Amendment amending the claims. Ex. 1007, pp. 91-113. Specifically, the Patent Owner amended the claims to *specifically require the use of an SMS message for communication for direct connectivity without use of the Internet*. Ex. 1007, pp. 94-105. In particular, Claim 1 was amended as follows:

1. (Currently Amended) A ubiquitous connectivity and communications system for controlling operation of an environmental condition in a structure, comprising:

- a device for controlling [[an]] the environmental condition in the structure;
- a base unit in said structure and operatively interfaced with said device to control the operation thereof;
- ~~at least one~~ a remote device adapted to send and receive short message service (SMS) messages;
- wireless connectivity means providing an on-demand, private and direct communications interface between said base unit and said remote device enabling instant wireless connectivity therebetween without use of an Internet connection;
- means for providing an indication of current status of said device to said base unit;
- means for transmitting said indication of current status through said connectivity means from the base unit to said remote device as a first SMS message;
- display means at said remote device for indicating said current status of said device;
- input means at said remote device for prescribing an indication of revised status for said device as a second SMS message, wherein the second SMS message includes information associated with the remote device;
- means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit

is adapted to authenticate the second SMS message using the information associated with the remote device;

means operatively associated with said base unit and operatively connected with said device for effecting said revised status for said device.

Ex. 1007, p. 94.

56. The Patent Owner also added new Claims 21-58 and argued that the prior art identified by the Examiner did not disclose the limitations of the amended claims. Ex. 1007, pp. 98-105. Specifically, I understand that the Patent Owner provided an explicit summary of the invention. The Patent Owner stated:

Prior to addressing the merits of the rejection, Applicant offers the following *summary of the invention*. The *present invention* provides for wireless remote control of home appliances associated with a structure via a wireless base station within the home. ***The Internet is not required.*** Remote wireless devices may be individually authorized or may be authorized as a group to control appliances within the home. ***Short message service (SMS) messages are used between the wireless base station and the remote wireless devices to communicate status of the home appliances and control commands via the wireless connection.*** The wireless base station authenticates received SMS messages and only allows control of the home appliances via SMS messages received from authorized remote devices belonging to authorized individuals or groups. The SMS messages are authenticated by verifying that information within the SMS messages is associated with the authorized remote devices. The wireless base station can detect

the presence of an authorized remote device proximate to a structure and can control the home appliances and generate SMS messages to other remote devices based upon detecting the presence of the remote device. The wireless base station can also access remote information, such as weather information, and can control the home appliances based upon the remote information.

Ex. 1007, p. 107 (emphasis added).

57. Patent Owner used the aforementioned arguments to distinguish references that disclosed the “use messaging *other than SMS* messaging for communication with and control of an electronic appliance.” Ex. 1007, p. 108 (emphasis added). For example, Patent Owner distinguished Kanazawa by stating: “Kanazawa uses communication over the Internet for communication between the cellular phone 3 with web browser functionality and controller 2 that has a World Wide Web (WWW) server functionality” and Kim by stating: “Kim uses an Internet connection and DTMF through the public switched telephone network (PSTN) to communicate between the user terminal 7 to communicate with a remote server 5 and an electronic appliance 10.” Ex. 1007, p. 108. Patent Owner also argued that Song taught away from the invention because it requires “each external appliance to have an SMS interface.” Ex. 1007, p. 111.

58. On September 6, 2006, the Examiner issued a final Office Action rejecting some claims under 35 U.S.C. § 103 as being unpatentable over Kanazawa, Song, Haughawout et al. (U.S. Pub. No. 2004/0263349), Mizuta (U.S.

Pub. No. 2001/0035817), and Robinson et al. (U.S. Pub. No. 2002/0177109), while allowing Claims 1-11 on the basis that the prior art did not teach means for transmitting a second SMS message with a revised status. Ex. 1007, 129-138.

Specifically, the Examiner stated:

However, the cited prior arts, either alone or in combination, fail to teach means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit is adapted to authenticate the second SMS message using the information associated with the remote device, in combination with all of other limitations in the claim.

Ex. 1007, p. 136.

59. On February 6, 2007, the Patent Owner filed a response cancelling Claims 12-58. Ex. 1007, pp. 143-147. In this response, Patent Owner again clarified that its invention did not require an Internet or PSTN connection outside of the structure. Ex. 1007, p. 149. Patent Owner stated:

Moreover, Applicant's invention, as recited in claims 1 through 11, provides for a base unit capable of direct wireless communication with a wireless remote device without requiring an Internet or PSTN connection outside the structure. More particularly, Applicant's Figure 4 shows that the base control unit 16 includes a wireless module 70. Applicant's Figure 1 shows the base control unit 16, in the structure, in direct communication with a cellular tower 24, which is likewise in communication with a cellular network 22. A master control unit 12

and a remote control unit 26, which may include a cell phone 30 depicted within Figure 3, are also illustrated within Figure 1 to be in direct wireless communication with other cell towers 24 within the cellular network 22. Accordingly, Applicant's invention provides for a base unit, in the structure, capable of direct wireless communication with a wireless remote device without requiring an Internet or PSTN connection outside the structure in the communication to the remote control unit.

Ex. 1007, pp. 149-150.

60. Patent Owner also argued that Kanazawa and Kim did not teach a base unit capable of wireless communication/connectivity. Ex. 1007, pp. 151-152. Patent Owner also argued that Song failed to teach or suggest the limitations of the claims because the Song environmental devices communicate via SMS without the need for a base station. Ex. 1007, p. 151. Patent Owner stated:

However, Applicant notes that Song requires the external appliance 100 to encode/decode SMS messages directly. As such, Song also does not provide a base unit capable of wireless communication. Further, a data input/output port is required to communicate between the external appliance 100 and the mobile terminal 110. (See Song, Figure 1; col. 2, lines 34-42). An external appliance of Song requires extensive modifications to provide an appliance capable of performing SMS messaging and does not do so in a wireless fashion. Accordingly, any combination of Song with Kanazawa and Kim still does not teach at least a base unit in a structure operatively interfaced with a device to control the operation thereof and does not teach wireless connectivity

means providing an on-demand, private and direct communications interface between a base unit and a remote device enabling instant wireless connectivity therebetween.

Ex. 1007, pp. 151. The Examiner issued a notice of allowance on May 4, 2007 without further comment. Ex. 1007, pp. 167-172.

D. Non-provisional Application / U.S. Patent No. 7,668,532

61. On August 15, 2006, Patent Owner filed United States Non-provisional Application No. 11/309,508, which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as U.S. Patent No. 7,668,532 (the “532 Patent,” Ex. 1008). The 532 Patent issued with 8 claims, Claim 1 being the sole independent claim. Ex. 1008, pp. 182-187. I understand that Claim 1 issued with a requirement that “said remote units and said base unit having geographical dependent bidirectional communications modules with limited transmission range of about 100 m or less.” Ex. 1008, pp. 172-174.

E. Non-provisional Application / U.S. Patent No. 7,643,823

62. On March 16, 2007, Patent Owner filed United States Non-provisional Application No. 11/686,984, which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as U.S. Patent No. 7,643,823 (the “823 Patent,” Ex. 1009). Patent Owner originally presented 35 claims with Claim 1 below being exemplary. Ex. 1009, pp. 40-51.

1. A method for environmental control and information processing associated with a structure, the method comprising:
providing a user with a remote control unit, said remote control unit:
receiving through short message service (SMS) from a control unit in the structure a status message directly over a cellular network related to the status of an environmental unit at said structure,
notifying said user of receipt of said status message' and displaying said status message on said remote control unit;
providing by said user at said remote control unit in response to said status message a control message containing control information to use for controlling said environmental control units;
delivering said control message from said remote control unit to the cellular network as a SMS message and relaying said control message to said control unit;
creating a control command for said environmental control unit based on the control information of the control message; and
delivering the control commands to the plurality of environmental control units.

Ex. 1009, p 40.

63. Additional Claims 36-37 were added by preliminary amendment on April 20, 2007. Ex. 1009, pp. 94-96. On July 14, 2008 the Examiner issued a non-final Office Action rejecting Claims 1, 4-6, 10-13, 20-23, 27-29, and 36 under 35 U.S.C. § 102 based on Sabie (WO 01/65875) and the remainder of the claims under 35 U.S.C. § 103 based on combinations of Sabie either alone or with Cannon et al. (U.S. Pat. No. 7,058,358), Richton (U.S. Pat. No. 6,400,956) or Wang (U.S.

Pub. No. 2006/0025164). Ex. 1009, pp. 115-122. The Examiner did note, however, that Claims 15-17 and 31-33 would be allowable if written in independent form. Ex. 1009, p. 121. On January 14, 2009, the Patent Owner responded, making minor claim amendments and presenting new Claims 38-42, based on the allowable subject matter previously identified. Ex. 1009, pp. 154-172.

64. The Patent Owner also filed a Declaration under Rule 132, authored by B. Wade Baker and argued that Sabie did not invalidate the claims because, as noted in the declaration, the disclosure regarding loading a particular program into the flash memory of a cellular phone of Sabie was not possible in view of security, propriety, and copyright issues and also that there was insufficient memory space on the device disclosed by Sabie to function according to the claims presented. Ex. 1009, pp. 178-181. The declaration also noted that cell phones and pagers at the time did not have available access to supplemental components, which would have been necessary to receive and process data from the Sabie reception interface. Ex. 1009, p. 180.

65. On March 4, 2009, the Examiner issued a final Office Action maintaining the previous rejections and stating that cellphones with flash memory were known. Ex. 1009, pp. 196-204. Claims 39-40 were deemed allowable. Ex. 1009, p. 202.

66. On September 4, 2009 the Patent Owner responded with minor claim amendments and argued that the Examiner only superficially responded to Patent Owner's previous response. Ex. 1009, pp. 221-248. Patent Owner pointed out that the Examiner did not address accessing flash memory in Sabie or that the required components to interface the memory and microprocessor in Sabie were not available before the priority date. Ex. 1009, pp. 245-246. Patent Owner further argued that Sabie was not an enabled reference. Ex. 1009, p. 247.

67. On September 17, 2009, the Examiner issued a Notice of Allowance stating:

Regarding claims 1, 20, 36-37, 42-43, the cited prior arts, either alone or in combination fail to teach receiving through short message service (SMS) from a control unit in the structure a status message directly over a cellular network related to a status of an environmental control unit at said structure, notifying said user of receipt of said status message and displaying said status message on said remote control unit; providing by said user at said remote control unit in response to said status message a control message containing control information to use for controlling said environmental control unit; delivering said control message from said remote control unit to the cellular network as a SMS message and relaying said control message to said control unit, in combination with all of other limitations in the claims.

Ex. 1009, p. 255.

F. Non-provisional Application / U.S. Patent No. 9,602,655

68. On October 11, 2011, Patent Owner filed United States Non-provisional Application No. 13/271,203, which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as U.S. Patent No. 9,602,655 (the “655 Patent,” Ex. 1002). Patent Owner originally presented 7 claims, with Claims 1 and 5 being independent. Ex. 1002, pp. 42-44. Claim 1 is exemplary:

1. A slave remote unit configured to receive a command from a master remote unit via a base unit, the slave remote unit comprising:
a wireless interface module configured to receive a tower cell identification (ID) information associated with a tower location information;
a microprocessor configured to determine a present location of the slave remote unit based upon the tower cell identification (ID) information, and to determine a command based upon the present location;
a wireless interface module configured to send the command via the base unit wherein the base unit is further configured to obey a master set of commands from the master remote unit upon a determination that the master remote unit is the master remote unit, and to obey a slave set of commands from the slave remote unit upon a determination that the slave remote unit is slave remote unit; and wherein the master set of commands includes at least one command which is not in the slave set of commands.

Id. at 42.

69. In the first Office Action mailed on February 7, 2013, the Examiner rejected all claims under 35 U.S.C. § 112(a) as failing to comply with the enablement requirement, specifically identifying that the limitations “two cell identification (ID) information” and “determine an identity of the unknown remote unit” were not supported by the specification. Ex. 1002, pp. 113-116.

70. On August 6, 2013, the Patent Owner responded by canceling the original claims and presenting new Claims 8-10, which did not include the previously rejected language. Ex. 1002, pp. 130-134. On September 17, 2013, an interview was held between the Examiner and Patent Owner where terms and support for Claim 8 were discussed, but no agreement was reached. Ex. 102, pp. 163-167.

71. On November 18, 2013, the Examiner issued a final Office Action rejecting the new Claims 8-10 based on double patenting in view of U.S. Patent No. 8,023,947. Ex. 1002, pp. 171-178. Patent Owner responded that they did not agree with the rejection, but filed a terminal disclaimer over U.S. Patent No. 8,064,935. Ex. 1010, pp. 183-187. On March 8, 2014, the Examiner initiated an interview and proposed amendments to place the application in condition for allowance, but the proposal was rejected by the Patent Owner. Ex. 1002, p. 203. A new Office Action was filed on April 10, 2014 rejecting Claim 8 under 35 U.S.C. § 102 as anticipated by Kates (U.S. Pub. No. 2005/0275530) and Claim 10 under

35 U.S.C. § 103 as being unpatentable in view of Kates and Oh (U.S. Pat. No. 7,565,106). Ex. 1010, pp. 195-202. Claim 9 was found to be allowable if written in independent form. *Id.* at p. 201.

72. On May 22, 2014, the Patent Owner filed an Amendment amending Claim 8 as follows:

8. (Currently Amended) A base unit configured to communicate with an environmental device and to communicate with a ~~master~~ remote unit having wireless connectivity, the base unit comprising:
a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;
a wireless communication interface configured to send a first message to the ~~master~~ remote unit via a communications network and to receive a second message from the ~~master~~ remote unit via the communications network,
wherein the first message is a first digital communications message including a representation of the environmental information, and
wherein the second message is a second digital communications message including a command ~~[[to]]~~ regarding the environmental device; and
a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control

instruction ~~based on the command~~ to the environmental device via the first communication interface ~~to the environmental device~~.

Ex. 1002, p. 218.

73. The Patent Owner also added new Claims 11-24, which recited previously identified allowable subject matter. Ex. 1002, pp. 218-221.

74. Regarding the amendments, Patent Owner stated:

The command is processed by the microcontroller which generates a control instruction that is sent to the environmental device. For example, the command may be a command to "enter an energy conservation mode." See paragraph [0038] of Patent Application Publication 2012/0094638. Upon receiving this command, the microprocessor may send a control instruction to a hot water heater to "adjust operation" and "to conserve power consumption of the home." See paragraph [0038] of Patent Application Publication 2012/0094638.

...

Thus, the microcontroller in the base unit may process a single command in the second message, such as an SMS message, and generate one or more control instructions that a hot water heater and/or an air handling system can understand. In general, environmental devices such as a hot water heater and an air handling system may be manufactured by different companies and in different countries, and may communicate with the microcontroller using completely different control instructions and/or codes.

Ex. 1002, p. 222.

75. The Patent Owner asserted that Kates did not disclose the claimed base unit because Kates does not disclose a microprocessor that processes the command of the second message to provide a control instruction based on the command, noting that Kates discloses “simply relay[ing] messages between base unit [] and sensors []” which Patent Owner distinguished from the base unit in the claims that receives commands, processes the message, and sends instructions. Ex. 1002, pp. 224-225.

76. In an August 27, 2014 final Office Action, the Examiner rejected Claims 8, 12, 16, 17, and 23 under 35 U.S.C. § 102 over Kates; Claim 10 under 35 U.S.C. § 103 over Kates and Oh; Claims 14, 18, and 20 under 35 U.S.C. § 103 over Kates and Meada (US. Pub. No. 2001/0048376); Claim 15 under 35 U.S.C. § 103 over Kates and Naidoo (U.S. Pub. No. 2004/00866090); and Claims 19, 21, and 22 under 35 U.S.C. § 103 over Kates and Bailey (U.S. Pub. 2005/0107924). Claim 11, however, was allowed. Ex. 1002, pp. 232-244.

77. On September 25, 2014, the Patent Owner filed an Amendment, amending the independent claims to add two limitations: “wherein the command is an enter mode command for the base unit” and “wherein the control instruction to the environmental device is associated with the enter mode command for the base unit” and added new Claims 26-29. Ex. 1002, pp. 255-259. In its remarks, the Patent Owner provided illustrative examples of the new limitations, including that

the enter mode command could be an energy conservation mode. Ex. 1010, p. 260. The Patent Owner stated that Kates does disclose “repeat[ing] a control instruction, while making slight changes to a header that accompanies the control instruction,” but argued that Kates did not disclose the claimed enter command because Kates’ repeater unit does not receive the alert. Ex. 1002, pp. 265-266.

78. On December 22, 2014 the Examiner issued a non-final Office Action rejecting all claims except 11 under 35 U.S.C. § 103, including Claims 8, 10, 12, 15-18, 20, and 23 over Kates and Ko (U.S. Pub. No.2003/0186690); Claim 13 over Kates, Ko, and Shamoon (U.S. Pub. No. 2003/0034898); Claim 14 over Kates, Ko, and Meada; Claims 19, 21-22 over Kates, Ko, and Bailey; and Claims 19, 21, and 22 over Kates and Bailey (U.S. Pub. No. 2005/0107924). Ex. 1002, pp. 298-308.

79. On March 19, 2015 the Patent Owner filed an Amendment, amending the claims to recite cellular remote units and that the remote unit is capable of communicating from a geographically remote location. Ex. 1002, pp. 328-333. New claims 30-36 were added. Ex. 1010, pp. 332-333. In particular, Claim 8 was amended as follows:

8. (Currently Amended) A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:

a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;

a wireless communication interface configured to send a first message to the cellular remote unit via a communications network and to receive a second message from the cellular remote unit via the communications network,

wherein the first message is a first digital communications message including a representation of the environmental information, and

wherein the second message is a second digital communications message including a command regarding the environmental device; and

a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and

wherein the command is an enter mode command for the base unit initiated by a user from the cellular remote unit, and

wherein the control instruction to the environmental device is associated with the enter mode command for the base unit.

Ex. 1002, p. 329.

80. The Patent Owner noted that an interview had occurred on March 17, 2015 in which the Examiner agreed that the new claims would overcome the prior art but that new searching would be needed. Ex. 1010, p. 334. The Patent Owner argued that Kates does not teach two-way communications with a cellular remote unit (and specifically the use of a cell phone to send commands) and that the wired

sensors in in Kates are cost prohibitive and, moreover, solve a different problem than the instant claims. Ex. 1002, pp. 334-335. The Patent Owner stated that Ko does not teach a cellular remote unit that can control an environmental device from a geographically remote location or the use of an enter command because Ko only teaches a phone that provides DTMF tones to a transmitter. Ex. 1002, p. 335.

81. A new Office Action was issued on July 21, 2015. Ex. 1002, pp. 357-377. The Examiner rejected Claim 8 as anticipated by Bradfield (U.S. Pub. No. 2002/0198990) and by Kates. Ex. 1002, pp. 359-363. The Examiner also rejected, as obvious under 35 U.S.C. § 103, Claim 8 over Stenman (U.S. Pat. No. 6,223,029); Claims 31-33, 35 over Kates and Thibault (U.S. Pat. No. 7,502,656); Claim 36 over Kates, Thibault, and Ruutu (U.S. Pub. No. 2005/0131551); and Claim 31 over Bradfield and Thibault. Ex. 1002, pp. 364-374. Claims 10-30 were allowed. Ex. 1002, p. 374.

82. The Patent Owner filed an Amendment on October 21, 2015 and amended the claims to require a cellular communications network and remove limitations regarding an enter mode command. Ex. 1002, pp. 381-389. In particular, Claim 8 was amended as follows:

8. (Currently Amended) A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:

a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;

a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network,

wherein the first message is a first digital communications message including a representation of the environmental information, and

wherein the second message is a second digital communications message including a command regarding the environmental device; and

a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and

wherein the command is ~~an enter mode command~~ for the base unit initiated by a user from the cellular remote unit, and

wherein the control instruction to the environmental device is associated with

the ~~enter mode~~ command for the base unit.

Id. at pp. 382-383.

83. New Claims 37-45 were also added. Ex. 1002, pp. 388-389. Patent Owner then distinguished each of the prior art references. Patent Owner stated that the HTML and SNP messages disclosed in the Bradfield reference are transmitted over WiFi/local connections, not over cellular networks. Ex. 1002, p. 392. Patent

Owner then argued that in Kates, the user must actually enter data on a monitoring computer that communicates via Ethernet, USB port, or Bluetooth, none of which are a cellular network. *Id.* Finally Patent Owner argued that in Stenmen, the mobile device can issue commands over a local medium including electromagnetic waves (radio, infrared, optic, spectra microwaves, or magnetic waves), but none of these networks are cellular networks. *Id.* at 392-393.

84. After an Advisory Action, the Patent Owner filed a request for continued examination-prioritized examination with an amendment on January 13, 2016 using the same claim amendments as previously filed and added new Claims 37-45. Ex. 1002, pp. 426-442. In this amendment, Patent Owner reiterated that Kates disclosed manual entry and that, as seen in Kates Figure 1, the Kates computer cannot receive a second message from the remote unit. Ex. 1002, pp. 436-437. Regarding Thibault, the Patent Owner argued the reference only teaches a status message being sent to the user, which Patent Owner argued was not a disclosure of controlling a device by the remote unit. Ex. 1002, pp. 439-440. Regarding Bradfield, the Patent Owner argued that the reference only discloses sending messages over HTML or in SNP [sic, “SNMP”] messages, which, according to Patent Owner, is not over a cellular network. Ex. 1002, p. 440. Regarding Stenmen, the Patent Owner noted that the messages in this reference are

transmitted over electromagnetic waves, not over a cellular network. Ex. 1002, pp. 440-441.

85. Patent Owner also filed a declaration authored by Thomas Price III. Ex. 1002, pp. 443-458. The declaration stated that the wireless sensors, such as those in Kates, did not exist as of May 27, 2004 and also the monitoring computer in Kates could not send a shut-off instruction because it could not receive information from the cellular unit. Ex. 1002, p. 444. This is because, as Mr. Price argues, there is not sufficient detail in Kates to build the wireless sensors as mentioned and as a result, substantial experimentation would have been required. *Id.* Moreover, Mr. Price opines that, while phone modems were available at the relevant time, the detail in Kates would not enable a POSITA to design a system where a cellular phone would communicate with a base station by any means other than a voice system. Ex. 1002, p. 445. Finally, Mr. Price opines that Kates does not allow a POSITA to produce a control message over a cellular network without undue experimentation. *Id.*

86. On February 22, 2016 the Examiner mailed a non-final Office Action rejecting Patent Owner's arguments and the positions in the declaration. Ex. 1002, pp. 464-489. The Examiner first rejected Claims 31-33, 35, 36, and 38-41 under 35 U.S.C. § 112 as not complying with the written description requirement. Ex. 1002, pp. 473-477. The Examiner stated that the specification does not disclose a base

unit sending a second status message to the remote unit indicating a change in status of the environmental unit after execution of the command message, but only discloses sending a status message on a periodic or event driven basis. *Id.*

Regarding Claim 38, the Examiner stated that the specification did not disclose receiving a command regarding the environmental device responsive to determining that the remote unit is within a geo-fence. *Id.* Regarding Claim 40, the Examiner stated that the specification did not support sending the first message recited in Claim 8 based on information from the web/Internet. *Id.*

87. The Examiner also rejected the claims under 35 U.S.C. § 102 in view of Kates or under 35 U.S.C. § 103 based on Kates and Sinclair (U.S. Pat. No. 7,127,270), but noted that Claim 11 was allowable and Claim 39 would be allowable if written in independent form. Ex. 1002, pp. 477-488.

88. On April 6, 2016, the Patent Owner filed a response in which it made minor claim amendments. Ex. 1002, pp. 500-509. The Patent Owner amended “first status message” to simply recite a “first message” and also changed “sent to the cellular remote unit” to “received from the cellular remote unit.” *Id.* Patent Owner also added new Claims 45-47. *Id.* at pp. 507-509.

89. Regarding the prior art rejections, the Patent Owner argued that the system in Kates is a one way communication stream. Ex. 1002, p. 512. Patent Owner also argued that Kates did not provide an enabling disclosure for the

monitoring computer to both send and receive voice/text communications or to act on communications from a person outside the closed loop system of Kates. Ex. 1002, pp. 513-514. Patent Owner referenced the previous declaration to argue that the sensors of Kates are not enabled, and referenced a new declaration, submitted by Dale Young, which concludes (1) Kates does not provide an enabling technology for the monitoring computer to both send and receive voice/text communication to mobile devices and (2) Kates does not provide an enabling technology for a monitoring computer to act on communications from outside persons. Ex. 1002, pp. 522-524.

90. In the declaration, Mr. Young states that for the monitoring computer to be able to communicate with the mobile cellular device, a “gateway system” or “cellular interface” would be required. Ex. 1002, pp. 522-523. Mr. Young describes the cellular interface as an “electronic component installed in or with the monitoring computer, which would provide direct cellular capabilities.” *Id.* This could be “an interface board, a component, or something else,” but would have to be approved by the FCC. *Id.* Mr. Young describes the “gateway system” as an external system/service that is provided by a third party company such as a cellular carrier that would convert digital messages from the computer into, for example, an SMS message. *Id.* Mr. Young states that the gateway system “need[s]

specialized hardware, propriety software, and other components to perform this function.” *Id.*

91. Mr. Young also explained that “communication through the internet is standard technology that people with ordinary skill in the art could readily provide in the 2004 time frame” as long as “the message was standard internet protocols such as email” and “standard software exists at that time to handle those protocols.” *Id.* at p. 523.

92. In all, Mr. Young concluded that relying on the disclosure of Kates would result in the need for substantial experimentation by an expert in programming and propriety technology to produce a working system. *Id.* at p. 523.

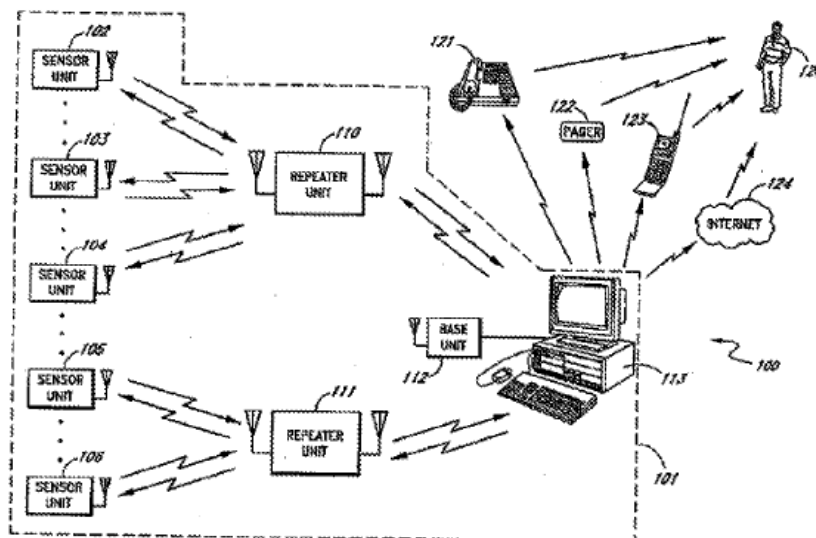
93. On June 27, 2016 the Examiner issued a final Office Action. Ex. 1002, pp. 530-554. The Examiner rejected Claims 8, 12, 14-22, 27, 28, 30, 33, 36, 37, 40, 42, and 44-47 as anticipated by Kates, Claim 38 as obvious over Kates in view of Olsen, III (U.S. Pub. No. 2006/0011721) and Claim 41 as obvious over Kates in view of Peek et al. (U.S. Pat. No. 6,343,255). *Id.* at pp. 540-552.

94. On July 28, 2016 Patent Owner held an interview with the Examiner in which the claims and amendments were discussed, but no agreement was reached. Ex. 1002, pp. 562-564. Attached to the interview summary were proposed amendments, which added “wherein the base unit is configured to operate without a personal computer” to Claim 8 and “wherein the first message is received from

the cellular remote unit before sending the second message to the cellular remote unit” to Claim 46. Ex. 1002, pp. 584-588.

95. In the proposed amendments, Patent Owner argued that Kates only discloses one way communication. Ex. 1010, pp. 586-587. Patent Owner attached Figure 1 of Kates (below) in support of its argument that Kates applied only to one-way communication:

Kates:



Ex. 1002, p. 586.

96. Patent Owner also argued that the interaction between the responsible party and the base station (computer) happens only *after* a leak is detected and after the sensor reports the condition to the base unit. Ex. 1002, p. 587.

Accordingly, Patent Owner argued that the disclosure of Kates regarding sending a

command after a leak is detected, is different from the timing recited in amended

Claim 46 (below):

46. A base unit configured to communicate with an environmental device and to communicate with a cellular remote unit having wireless connectivity capable of communicating from a geographically remote location, the base unit comprising:

a wireless communication interface configured to receive a first message from the cellular remote unit via a cellular communications network and to send a second message to the cellular remote unit, wherein the first message is received from the cellular remote unit before sending the second message to the cellular remote unit;

a second communication interface configured to send a control instruction from the base unit to the environmental device; and to receive an environmental status from the environmental device; wherein the first message is a first digital communications message including a command;

wherein the second message is a second digital communications message including the environmental status;

a microcontroller, at the base unit, configured to process the first message, to provide a control instruction based on the command, and to send the control instruction to the environmental device via the second communication interface; and

wherein the command is for the base unit initiated by a user from the cellular remote unit; and

wherein the control instruction to the environmental device is associated with the command for the base unit.

Id. at pp. 585-586.

97. On August 12, 2016 the Patent Owner filed an after final response to address “minor informalities” as well as a pre-appeal brief in which it reiterated its arguments about Kates. Ex. 1002, pp. 628-631. The Patent Owner emphasized that the Kates’ one way messages cannot anticipate two way messages. *Id.* After an Advisory Action, the Patent Owner filed an Appeal Brief, in which it reiterated its previous positions on Kates. Ex. 1002, pp. 649-676. In particular, the Patent Owner made the following arguments:

- **Kates does not disclose a base unit capable of bi-directional wireless communication with a cellular remote unit.** This is based on Patent Owner’s argument that Kates discloses one way message from the computer to the user, which cannot be bi-directional, and is highlighted in Fig. 1 of Kates. Ex. 1002, pp. 656-658.
- **The responsible party in Kates does not anticipate the claimed cellular unit.** According to Patent Owner, Kates does not disclose any communication received by the computer from the cellular unit because Kates only discloses that the user “sends instructions.” Ex. 1002, p. 659. In particular, the Patent Owner said that Kates “does not disclose how computer 113 would receive the instructions from ‘the responsible party.’” *Id.* (emphasis removed). Because of the lack of detail, therefore, according

to Patent Owner, “it cannot be inferred that these instructions are transmitted over a cellular network using a cellular device.” *Id.*

- **Kates does not disclose receiving a first message from the cellular remote unit via a cellular communications network.** Patent Owner suggested that the system of Kates requires first transmitting sensor data to the monitoring computer, which can then contact the responsible party. Ex. 1002, pp. 660-661. Patent Owner then noted that Kates discloses that “the responsible party 120 sends instruction to the monitoring computer 113 instructing the monitoring computer 113 to send water shut off instruction to the sensor unit 112,” but then stated that there was no suggestion that the instruction from the responsible party is a “first message.” *Id.* In contrast, A Patent Owner stated, “it is more likely that a responsible party would send water shut off instructions in response to (and after receiving) a first message from the monitoring computer indicating that a water leak was detected.” *Id.* at 661.
- **Kates requires undue experimentation.** Patent Owner argued that Kates does not provide an enabling disclosure for communication between a computer and cellular phone because Kates does not describe either a “gateway system” or “cellular interface,” one of which would be required. Ex. 1002, pp. 662-664. Patent Owner admitted that “cellular networks

existed at the time and enabled cellular communications for millions of users.” *Id.*

98. On November 16, 2016 the Examiner answered and traversed each of Patent Owner’s arguments regarding Kates. Ex. 1010, pp. 685-696. The Examiner stated that the base unit in Kates can both transmit messages and receive messages as it contains a unit and software that allow for transmitting/receiving. Ex. 1002, pp. 687-688. In response to Figure 1 with single arrows, the Examiner stated that Kates discloses text messages, which clearly is a bi-directional network. Ex. 1002, p. 688-689. Rather, Figure 1, according to the Examiner, was showing one transmission, but was not limiting. *Id.* Regarding the cellular remote unit, the Examiner stated that because the base unit will communicate directly with the remote unit via, for example, a cellular network, clear disclosure is provided regarding how the responsible party would send water shutoff instructions to the monitoring computer (via the cellular network). Ex. 1002, p. 690.

99. Regarding the first message, the Examiner stated that the first message does not indicate any unique content or distinct feature such that it needs to be interpreted differently than a digital communication message with a command from the remote unit to the base unit. Ex. 1002, pp. 690-691. Regarding undue experimentation, the Examiner stated that it would be clear to a POSITA

that any of the known cellular systems could have been employed in Kates. Ex. 1002, pp. 692-693.

100. On January 13, 2017 the Patent Owner filed a new Amendment amending independent Claim 8 to recite the allowable subject matter from Claim 39:

wherein the cellular remote unit is configured to determine position data of the cellular remote unit, and determine when the cellular remote unit is outside a geo-fence, wherein the cellular remote unit is configured to transmit a notification via a simple message service responsive to determining that the cellular remote unit is outside of the geo-fence.

Ex. 1002, pp. 699-708.

101. A notice of allowance was issued on February 7, 2017 and a corrected notice was issued on February 16, 2017. Ex. 1002, pp. 712-720, 738-746. The Examiner stated:

The following is an examiner's statement of reasons for allowance: Claims 8, 11-22, 27, 28, 30, 37, 38, 40-44, and 47 are indicated allowable in view the amendment to the claims and associated remarks submitted January 13, 2017, and the examiner's amendment approved by the applicants' representative on January 26, 2017.

Ex. 1002, p. 717.

G. Non-provisional Application / U.S. Patent Application No. 15/405,793

102. On January 13, 2017, Patent Owner filed United States Non-provisional Application No. 15/405,793 (the “793 Application,” Ex. 1011), which seeks the benefit of the filing date of the Provisional Application. The 793 Application was originally filed with 20 claims, with Claim 1 being exemplary:

1. A base unit configured to communicate with an environmental device and to communicate with a cellular remote the base unit comprising:
a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;
a wireless communication interface configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network,
wherein the first message is a first digital communications message including a representation of the environmental information, and
wherein the second message is a second digital communications message including a command regarding the environmental device; and
a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and
wherein the command is initiated by a user via the cellular remote unit to change an environmental characteristic controlled by the

environmental device, and wherein the base unit is configured to operate without a personal computer.

Ex. 1011, pp. 72-76.

103. On July 13, 2017 the Examiner mailed a first Office Action rejecting Claims 1-15 under 35 U.S.C. § 112(a) as failing to comply with the enablement requirement because those claims recited “wherein the base unit is configured to operate without a personal computer,” which the Examiner stated was not supported by the specification; Claims 1, 2, and 4-20 under 35 U.S.C. § 102 based on the disclosure of prior art reference Kates (U.S. Pub. No. 2005/0275530); and Claim 3 under 35 U.S.C. § 103 based on the disclosure of both Kates and Sinclair (U.S. Pat. No. 7,127,270). Ex. 1011, pp. 96-112.

104. On January 25, 2018, the Patent Owner filed an Amendment amending the claims to remove the language that the Examiner had identified as not supported by the specification and to distinguish the claims from the prior art. Ex. 1011, pp. 123-129. In particular, Claim 1 was amended as follows:

1. (Currently Amended) A base unit configured to communicate with an environmental device and to communicate with a cellular remote the base unit comprising:

~~a first communication interface configured to receive environmental information from the environmental device and to send a control instruction to the environmental device;~~

~~a wireless communication interface module in the base unit~~ configured to send a first message to the cellular remote unit via a cellular communications network and to receive a second message from the cellular remote unit via the cellular communications network, wherein the base unit is wall mountable,

a first communication interface configured to wirelessly receive environmental information from the environmental device and to wirelessly send a control instruction to the environmental device;

wherein the first message is a first digital communications message including a representation of the environmental information, and wherein the second message is a second digital communications message including a command regarding the environmental device; and a microcontroller configured to process the second message, to provide the control instruction based on the command, and to send the control instruction to the environmental device via the first communication interface, and

wherein the command is initiated by a user via the cellular remote unit to change an environmental characteristic controlled by the environmental device, ~~and wherein the base unit is configured to operate without a personal computer.~~

Ex. 1011, pp. 124-125.

105. The Patent Owner argued that Kates did not disclose the “wireless module in the base unit” in combination with a wall mountable base unit and stated the following about the invention: “because of the capabilities of a mounted base unit through wireless modules within the base unit, the base unit can be utilized

without an external interface, while being wirelessly coupled to a plurality of different devices, wherein the wireless module can wirelessly receive and transmit commands” and argued that the monitoring computer in Kates requires an external interface. Ex. 1011, p. 131.

106. The Patent Owner also noted that Kates does not disclose a second message that is a “second digital communications message including a command regarding the environmental device” because Kates only discloses a party sending instruction to a monitoring computer to send water shut off instructions. *Id.* The Patent Owner noted that “Kates is completely silent in regards to computer [] receiving anything from . . . cellular telephone.” Ex. 1011, pp. 131-132.

107. On March 13, 2018 the Examiner mailed a final Office Action first noting that the claims were being treated under 35 U.S.C. § 112(f) because of their recitation of various “wireless module[s].” Ex. 1011, pp. 142-146. The Examiner also rejected Claims 1, 2, 4-15, and 21 under 35 U.S.C. § 103 based on the combination of Kates and Hager (U.S. Pub. No. 2002/0024452); Claims 16-20 based on Kates, Rusch (U.S. Pub. No. 2003/0100308), and Hager; and Claims 3-22 based on the combination of Kates, Hager, and Sinclair (U.S. Pat. No. 7,127,270). Ex. 1011, pp. 147-162.

108. The Examiner rejected Patent Owner’s arguments about Kates because the Examiner asserted that Kates discloses a monitoring computer with

cellular communication capabilities and that the user can send instructions (command) to the monitoring computer. Ex. 1011, pp. 140-141.

109. On May 16, 2018 the Patent Owner filed an after-final response in which it made minor claim amendments to rebut the Examiner's statements regarding treatment of the claims under 35 U.S.C. § 112(f). Ex. 1011, pp. 177-183. In particular, Patent Owner changed the previously claimed "wireless module" to recite a "wireless circuit." *See e.g.*, Ex. 1011, p. 178.

110. In response to the 103 rejections, the Patent Owner noted that "Kates is not configured for two-way communication with a cellular remote" (emphasis removed) and relied on a figure in Kates showing a single (outbound) line from the base unit to the mobile unit, which was in contrast to the double arrows (bi-directional communication) from the base unit to other devices in the same figure. Ex. 1011, pp. 185-186. Patent Owner submitted that Kates was aware of two-way communications given that the referenced used this type of communication for certain devices and chose a different type of communication (mono-directional communication) for the remote unit. *Id.* The Patent Owner also reiterated that Kates is silent with regards to how the monitoring unit could receive a message from a cellular remote unit. *Id.* at 187. Regarding the Examiner's rejection of Claims 16-20, the Patent Owner noted that similar to the other references, Rush

does not disclose a base unit with an integrated wireless circuit to communicate with a cellular mobile device. Ex. 1011, pp. 188-189.

111. After an Advisory Action noting that the claims were not in condition for allowance, the Patent Owner filed a Request for Continued Examination (RCE) on June 13, 2018 and added new Claims 23-24. Ex. 1011, pp. 201-207. In the RCE, the Patent Owner argued that neither Kates nor Hager discloses a wireless circuit in the base unit that sends messages to the cellular remote unit and receives messages from the cellular remote unit. Ex. 1011, pp. 208-209. In particular, the Patent Owner argued that Kates does not teach or suggest how communications between a mobile phone and a monitoring computer occur and similarly does not teach a wireless circuit within the base station that is capable of messages to and from the mobile unit. *Id.* at 209. The Patent Owner pointed out that Kates could be connected via physical cable to a modem/other piece of telco equipment and did not necessarily comprise the wireless circuit within the base unit as recited by the claims. *Id.* Patent Owner further explained that Kates only discloses what occurs (such as general communication between 2 entities) rather than teaching how these communications occur and thus does not disclose both a first and second message to and from the base unit and remote unit. *Id.* at pp. 210-211.

112. The Patent Owner also specifically discussed Claim 3 noting that “when the user selects an icon, the remote device sends a command directly to the

object being controlled.” Ex. 1011, pp. 213-214 (emphasis in original). According to the Patent Owner, Kates and Sinclair would only teach controlling an object using a unique address instead of a wireless communication network. *Id.* The Patent Owner also pointed out that that new Claim 23 requires using icons to send a message and that new Claim 24 requires that the base unit does not have to do anything to receive the first message from the remote unit, which the Patent Owner said was not disclosed in Kates. Ex. 1011, pp. 215-216.

113. On July 2, 2018 the Examiner mailed a non-final Office Action rejecting Claims 1, 2, 4-21, and 24 under 35 U.S.C. § 103 based on the combination of Kates, Hager, and Seo (U.S. Pat. No. 7,209,487). Ex. 1011, pp. 223-243. The Examiner also rejected Claims 3 and 22 based on Kates, Seo, Hager, and Sinclair. Ex. 1011, pp. 239-241. Finally, Claim 23 was rejected under 35 U.S.C. § 103 based on the combination of Kates, Seo, Hater, and Lindsey (U.S. Pub. No. 2004/0116822). Ex. 1011, pp. 241-242.

114. The Patent Owner responded on September 14, 2018 with non-substantive amendments and the addition of new Claim 25. Ex. 1011, pp. 251-258. The Patent Owner argued that new reference Seo does not teach the first and second messages between remote unit and base unit because Seo discloses “voice-only communications with a CDMA network via a CDMA module – not data messages,” and instead Seo requires a separate LAN module for data messages,

which does not communicate with the CDMA network. Ex. 1011, p. 260. Patent Owner argued that this disclosure teaches away from the instant claims because it suggests a separate communication device is required for messages besides voice communications. *Id.*

115. The Examiner issued a final Office Action on October 22, 2018 rejecting the claims based on the same references and noting a rejection of new Claim 25 based on Kates and Seo. Ex. 1011, pp. 271-294. The Examiner rejected Patent Owner's arguments stating that the mobile chip in Seo is a Qualcomm chip with 3G technology that can transfer both data and voice. *Id.* at p. 273.

116. On April 19, 2019 the Patent Owner filed an RCE and Amendment. Ex. 1011, pp. 319-333. The Patent Owner amended the pending claims and added new Claims 26-36. Ex. 1011, pp. 321-328. In particular, Claim 1 was amended as follows:

1. (Currently Amended) A system base unit configured to communicate with ~~an environmental device and to communicate with a cellular remote unit~~, the system base unit comprising:
an environmental device configured to control an environmental characteristic;
a communication interface configured to communicate with the environmental device;
a wireless circuit in ~~the base unit~~ configured to send a first message to the cellular remote unit via a cellular communications network and to

receive a second message from the cellular remote unit via the cellular communications network, ~~wherein the base unit is wall mountable;~~
~~a first communication interface configured to wirelessly receive environmental information from the environmental device and to wirelessly send a control instruction to the environmental device;~~
wherein the first message is a first digital communications message including a representation of ~~the~~ environmental information, the environmental information being received from the environmental device via the communication interface and indicative of a measurement of the environmental characteristic;
wherein the second message is a second digital communications message including a command ~~regarding~~ for the environmental device, the command being initiated by a user via the cellular remote unit and indicating to change the environmental characteristic;
a microcontroller configured ~~to process the second message~~, to generate ~~a provide the~~ control instruction from the command included in the second message based on the command, and to send the control instruction ~~instructions~~ to the environmental device via the first communication interface; ~~and~~
wherein the environmental device is configured to change the environmental characteristic responsive to the control instruction; and
a housing configured to mount to a wall of a building, the housing physically supporting the environmental device, the communication interface, the wireless circuit, and the microcontroller. wherein the command is initiated by the user via the environmental device.

Ex. 1011, pp. 321-322.

117. Patent Owner then argued that Kates describes sensors (which provide data regarding conditions) that appear to be separate from the base unit. Ex. 1011, p. 330. Patent Owner noted that, as a result, Kates' disclosure was distinct from the limitation: "a housing configured to mount to a wall of a building, the housing physically supporting the environmental device, the communication interface, the wireless circuit, and the microcontroller." *Id.* Patent Owner then briefly noted that the new independent Claims 26, 34, and 36 were patentable over the prior art of record. Ex. 1011, pp. 330-332.

118. On May 5, 2019 the Examiner issued a Notice of Allowance. Ex. 1011, pp. 350-357. The Examiner's reasons for allowance were as follows:

The following is an examiner's statement of reasons for allowance: Claims 1, 26, 34, and 36 are in view of the amendment to claim 1 and associated remarks submitted April 19, 2019. They are persuasive over the prior art of record, Kates 20050275530, Hager 20020024452, Lindsey 20040116822, Sinclair 7,127,270, and Seo 7,209,487. Ex. 1011, p. 355.

119. The issue fee was paid by the Patent Owner the same day. Ex. 1011, p. 379.

H. The 935 Patent

120. On March 16, 2007, Patent Owner filed United States Non-provisional Application No. 11/686,993 (Ex. 1010), which seeks the benefit of the filing date of the Provisional Application, and which ultimately issued as the 935

Patent. The 935 Patent was filed with 18 claims, of which Claims 1 and 12 were independent. Ex. 1010, pp. 40-46. On April 20, 2007, the Patent Owner filed a preliminary amendment adding new Claims 19 and 20. Ex. 1002, pp. 80-91.

Exemplary Claim 1 recited:

1. A ubiquitous connectivity and communications system for controlling operation of an environmental condition in a structure, comprising:

a device for controlling the environmental condition in the structure;

a base unit in said structure and operatively interfaced with said device to control the operation thereof;

a remote device adapted to send and receive short message service (SMS) messages;

wireless connectivity means providing an on-demand, private and direct communications interface from said remote device and enabling instant wireless connectivity with said base unit;

means for providing an indication of current status of said device to said base unit;

means for transmitting said indication of current status through said connectivity means from the base unit to said remote device as a first SMS message;

display means at said remote device for indicating said current status of said device;

input means at said remote device for prescribing an indication of revised status for said device as a second SMS message, wherein the

second SMS message includes information associated with the remote device;

means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit is adapted to authenticate the second SMS message using the information associated with the remote device;

means operatively associated with said base unit and operatively connected with said device for effecting said revised status for said device.

Id. at p. 81

121. On February 2, 2010 the Examiner filed a first Office Action rejecting Claims 1, 3, 4, 7-10, 12, 13, 15, 16, and 18-20 over Shamoon (U.S. Pub. No. 2003/0034897), Heinonen (U.S. Pat. No. 7,031,663) and Kim (U.S. Pub. No. 2004/0092282), Claims 2 and 14 over Shamoon, Heinonen, Kim, and Ljunggren (U.S. Pub. No. 2004/0260406), Claim 5 over Shamoon, Heinonen, Kim, and Cocciadiferro (U.S. Pat. No. 7,610,113), Claims 6 and 17 over Shamoon, Heinonen, Kim, and Ahya (U.S. Pub. No. 2005/0259618), and Claim 11 over Shamoon, Heinonen, Kim, and “well known art.” Ex. 1010, pp. 109-121.

122. On July 30, 2010 the Patent Owner filed a response to the Office Action traversing the Examiner’s rejection without amendment to the claims. Ex. 1010, pp. 140-159. Specifically, Patent Owner argued that the prior art of record did not teach the first and second SMS messages as well as connectivity without

the Internet as is recited in the claims. Ex. 1010, pp. 143-144. The Patent Owner stated: “The present invention advantageously *uses SMS messaging which does not require the Internet*. The coverage of SMS messaging may be broader and more available than Internet coverage.” Ex. 1010, p. 144 (emphasis added). In particular, the Patent Owner stated that the Ljunggren system “requires the Internet to operate his remote control system.” Ex. 1010, p. 144. Regarding the Kim reference, the Patent Owner stated that “The Kim system requires the Internet to operate his remote control system. There are many places and times where the Internet is simply not available. Typically, Internet access may not be available while traveling in a vehicle.” Ex. 1010, p. 143.

123. The Examiner issued a second Office Action on September 3, 2010, maintaining the rejections of all claims under the combination of prior art references Shamoon, Heinonen and new reference Donner (U.S. Pub. No. 2005/0079880). Ex. 1010, pp. 160-173.

124. On March 2, 2011 the Patent Owner filed a response amending certain of the claims, added new Claims 21 - 22, and arguing that none of the prior art references disclose or suggest two-way SMS messaging with the claimed control function or the claimed base unit and ubiquitous system. Ex. 1010, pp. 195-214.

125. Specifically, Patent Owner distinguished the Shamoon system by arguing: “In Shamoon, the system is entirely local, i.e. all components within the

structure, and utilizes line of sight transmission (radio frequency or infrared) between the handheld remote and the base station. SMS messaging is not employed. A wireless network is not employed, and in fact is contraindicated and would increase the cost and complexity of the system.” Ex. 1010, p. 206.

126. Regarding Heinonen, the Patent Owner stated that the reference is “a data acquisition, storage and transmission system that sends out messages but does not receive return messages, and there is no two way messaging.” Ex. 1010, p. 209.

The Patent Owner further distinguished the Heinonen reference by stating:

Moreover, this reference does not disclose or suggest means for transmitting the second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit is adapted to authenticate the second SMS message using the information associated with the remote device in the various forms in independent claims 1, 13, and 19. Further, the Heinonen does not control and environmental function within a structure.

Ex. 1010, p. 208.

127. Regarding the Donner reference, Patent Owner stated that the reference is “totally prophetic and does not enable one skilled in the art to send a second SMS message to control anything.” Ex. 1010, p. 210. In essence, Patent Owner argued that Donner is not an enabled reference because at the time, a user could not gain access to a cellular telephone’s operating system through an

external port and thus the system of Donner would not be possible to construct. *Id.* at p. 211.

128. On March 22, 2011 the Examiner issued a final Office Action maintaining the rejection over Claims 1-19 and further rejecting Claims 21-22 under 35 U.S.C. § 103 as being unpatentable over Yamamoto (U.S. Pat. No. 6,970,539) and Yarkoski (U.S. Pat. No. 6,959,196). Ex. 1010, pp. 225-243. The Examiner and the Patent Owner's representative (Ed Garcia), the original inventor (Charles Shamoon), and a technical expert (Wade Baker) held an interview on July 5, 2011. Ex. 1010, pp. 266-269. The Patent Owner reported that during an interview the Examiner agreed that "sending a command from the remote unit to the base unit via an SMS message is not disclosed by the cited art" and thus rewrote all the independent claims to conform to the substance of this limitation. Ex. 1010, p. 281

129. On July 14, 2011 the Patent Owner filed an Amendment. Ex. 1010, 272-283. Patent Owner essentially rewrote the claims in this Amendment. Specifically, Patent Owner amended Claim 1 as follows:

1. (Currently Amended) A wireless system comprising:
an environmental device;
a base unit operatively interfaced with the environmental device and
configured to control an operation of the environmental device;

a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and
a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,
wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,
wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and
wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.

~~A ubiquitous connectivity and communications system for controlling operation of an environmental condition in a structure, comprising:
a device for controlling the environmental condition in the structure; a base unit in said structure and operatively interfaced with said device to control the operation thereof;
a remote device adapted to send and receive short message service (SMS) messages;
wireless connectivity means providing an on-demand, private and direct communications interface from said remote device and enabling instant wireless connectivity with said base unit;
means for providing an indication of current status of said device to said base unit; means for transmitting said indication of current status~~

~~through said connectivity means from the base unit to said remote device as a first SMS message;~~

~~display means at said remote device for indicating said current status of said device;~~

~~input means at said remote device for prescribing an indication of revised status for said device as a second SMS message, wherein the second SMS message includes information associated with the remote device;~~

~~means for transmitting said second SMS message including information associated with the remote device and the indication of revised status through said connectivity means to said base unit, wherein the base unit is adapted to authenticate the second SMS message using the information associated with the remote device;~~

~~means operatively associated with said base unit and operatively connected with said device for effecting said revised status for said device.~~

Id. at. 273-274.

130. On August 1, 2011, the Examiner issued an Advisory Action noting that certain newly added limitations changed the scope of the original claim and would require further search and consideration. Ex. 1010, pp. 291-293. On August 7, 2011, the Patent Owner filed a Request for Continued Examination with additional amendments and new claims. Ex. 1010, pp. 294-305. Patent Owner also reiterated what it believed was said during the prior interview:

Specifically, the claims were discussed in detail. The Supervisor and the Examiner agreed that if the claims were clarified by amendment, then claims having features distinguishable over the cited art would be patentable. For example, sending a command from the remote unit to the base unit via an SMS message is not disclosed by the cited art.

Ex. 1010, p. 306.

131. A Notice of Allowance was mailed on September 26, 2011, in which the Examiner noted that the “Claims 1-7, 9-19 and 21-24 are allowed for the reasons as set forth in applicant's response filed on 08/07/2011.” Ex. 1010, pp. 316-323.

VIII. Litigation related to the 935 Patent

132. I understand that on July 12, 2018, Patent Owner filed a complaint against City Of San Antonio by and through its agent, City Public Service Board Of San Antonio d/b/a CPS Energy (hereinafter, “Defendant” or “CPS Energy”) in the United States District Court for the Western District of Texas alleging infringement of the 935 Patent along with U.S. Patent No. 9,602,655 (the “Asserted Patents”). Ex. 1013. The complaint did not specifically identify any claims that were allegedly infringed, but relied on exemplary Claim 19, when accusing “a wirelessly controllable smart thermostat system that incorporates a base unit (Honeywell and Radio smart thermostats) interfaced with an environmental device (thermostat)” as infringing. Ex. 1013, ¶ 32.

133. I understand that CPS Energy filed a Motion to Dismiss for Failure to State a Claim (the “Motion”) on September 20, 2018. Ex. 1012. The basis for this Motion was that the Asserted Patents were invalid under 35 U.S.C. § 101 for failure to claim patent-eligible subject matter. Ex. 1012 at 1. In particular, CPS Energy asserted that the claims of the Asserted Patents were “directed to the abstract idea of monitoring and controlling appliances.” *Id.* CPS Energy also asserted that sending messages between devices to remotely monitor and control devices was not inventive, a technological improvement, or even new. *Id.* Finally, CPS Energy asserted that the claims do not recite specific hardware or software and instead relied on “generic computer components and software to perform conventional activities.” *Id.*

134. In response, I understand Patent Owner filed an opposition on November 5, 2018 alleging that the Asserted Patents were directed to, and claim, patentable subject matter. In support of its response and arguments that the claims recite patentable subject matter, I understand that Patent Owner attached the Declaration of Ivan Zatkovich, which I have attached as Exhibit 1014.

135. I understand that CPS Energy’s Motion to Dismiss is still pending and that the case is stayed pending the outcome of the Motion.

A. Declaration of Ivan Zatkovich

136. As I noted above, Mr. Zatkovich filed a Declaration in the litigation.

In reviewing the declaration, I find that Mr. Zatkovich asserts:

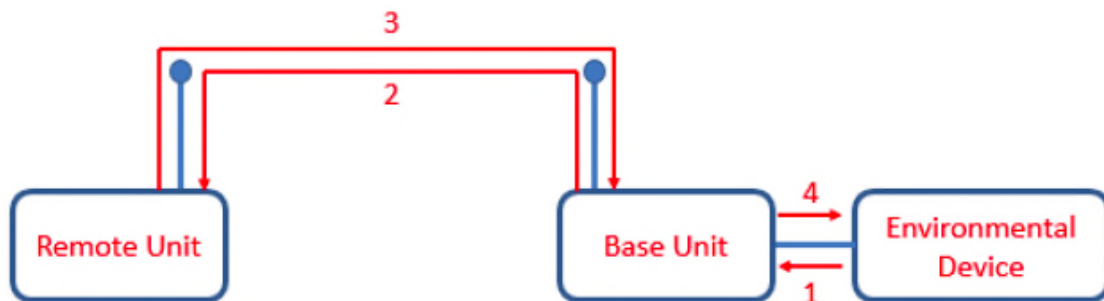
- The claimed base unit is connected to, and communicates through, a *wireless cellular network*. Ex. 1014 at 60.
- The claimed base unit “must function both as a communication gateway and as a user interface controller.” *Id.* at 48-49.

137. By way of overview, Mr. Zatkovich asserts that the context of the 935 Patent is home or business monitoring and control, and that the 935 Patent is focused only on one specific aspect of this industry: “the integration of an incompatible communication device (a cellular phone) into that space.” Ex. 1014 at 48. In order to implement such a system, Mr. Zatkovich explains that on-demand bidirectional communication (two-way communication) is required. *Id.* This two-way communication allows for the “remote unit to initiate commands to and request status from, the monitored devices” in a home or business and also allows “monitored devices to alert the user to specific events in an unsolicited manner.” *Id.*

138. Mr. Zatkovich asserts the Asserted Patents describe a system that allows for remote monitoring and control of devices using a cellular network. Mr. Zatkovich explains that it is practically difficult and cost-prohibitive to run cables

and telephone lines for internet connections to homes/businesses in geographically remote areas, but that cellular connectivity is more widely available. Ex. 1014 at 23. Accordingly, the Asserted Patents allegedly solve the shortcoming with respect to geographically remote locations and the inability to use Internet connectivity by disclosing a base unit that is connected to, and communicates through, a wireless cellular network. *Id.* at 60.

139. Mr. Zatkovich asserts that the system described in the Asserted Patents includes a remote unit, typically a cellular phone, a base unit, and an environmental unit. Mr. Zatkovich provides the following figure to describe the devices and flows of communication in the system:



140. The first communication, labeled “1” represents “an environmental device detecting a condition and communicating that condition to the base unit.” Ex. 1014 at 45. Thereafter the base unit “interprets the first communication” and determines whether the remote unit should be alerted. *Id.* If the base unit determines the remote unit should be alerted, the base unit “communicates a second message to the remote unit through the cellular network,” which is labeled

“2.” *Id.* The user of the remote unit can then respond to the second message by “directing the base unit to execute a command,” which takes the form of a “third message from the remote unit to the base unit through the wireless network.” *Id.* at 46. This third message, which is subsequently “received and interpreted at the base unit” is labeled above as “3.” *Id.* In the last step in the sequence, the “command is communicated from the base unit to an environmental device to adjust [the] operation of the environmental device.” *Id.* at 47. This is labeled as “4” in the figure above.

i. Base Unit

141. Mr. Zatkovich explains that the base unit is a collection of several subsystems. The base unit also includes a microcontroller that executes customer software, which is designed to receive simple message service messages from the remote unit. Ex. 1014 at 39. Mr. Zatkovich confirms that “[a]t the core of the network is a base control unit acting as a communications gateway between a remote unit and devices, to be monitored or controlled, in proximity to the base control unit” and states that the base unit “must function both as a communication gateway and as a user interface controller.” *Id.* at 48-49.

ii. Environmental Unit

142. Mr. Zatkovich explains that a wide variety of devices are within the purview of the Asserted Patents, including devices that control window coverings,

HVAC units, sprinkler systems, etc. Ex. 1014 at 40. Mr. Zatkovich confirms that other environmental devices, such as X10-based devices, 1-wire-based devices, environmental sensors, and other devices, can be interfaced with the base unit.

iii. Remote Unit

143. Mr. Zatkovich explains that the remote unit is based on a cellular telephone with custom software that detects reception of a “simple message service message” and acts on the message. Ex. 1014 at 40-41. This custom software, according to Mr. Zatkovich, is “a critical element for an on-demand bidirection communications system with the remaining components of the three-component system for monitoring and control at remote locations.” *Id.* at 41. Mr. Zatkovich explains that the customer software presents the user with the ability to trigger sending environmental commands to the base unit through the cellular network.” *Id.* at 42. In this way, Mr. Zatkovich explains that the use of port addresses with the use of “simple message service” messaging “allowed the base unit and remote unit to respond to receipt of a ‘simple message service message’ as an event rather than requiring user intervention to differentiate such message from other message that may be received by either device.” *Id.* at 42. Mr. Zatkovich describes that this process includes the remote unit “detect[ing] the event of receiving this message and present[ing] a graphical alert to the user of the remote unit.” *Id.*

iv. Short/Simple Messages

144. Mr. Zatkovich explains that a central theme of the 935 Patent is the “integration of cellular, user-friendly or automated, two-way communications into a base unit at a remote location.” Ex. 1014 at 60. This was accomplished, according to Mr. Zatkovich, through using a base unit that, itself, had cellular communication capability, such that it could communicate directly with a remote unit. *Id.* at 78. Because of this connectivity, the base unit and remote unit can communicate with one another through an SMS message. *Id.* at 34, 42.

145. Mr. Zatkovich alleges that the term “SMS” can refer to “short message service messages,” “simple message service messages” and “other digital communication.” *Id.* at 5. In particular, Mr. Zatkovich draws a distinction between the simple message service message and the short message service message. *Id.* at 51 (“these terms are not synonymous”). In particular, Mr. Zatkovich states that “the term ‘simple message service’ reflects an enhanced form of ‘short message service’ messages.” *Id.* Mr. Zatkovich explains that the difference between these terms is that the simple message service is based on a “‘port addressing scheme’ that reflects more than ordinary text messaging.” Ex. 1014 at 52. The particular example proposed by Mr. Zatkovich depicts this scheme:

“SMS port addressing” refers to a communications capability for individual messages to be received by particular software applications based on a “port address” associated with the message. For example, a

first software application may be configured to receive all messages sent to port 10000 while a second software application may be configured to receive all messages sent to port 10001. By incorporating a port address within a message, the message has an ability to direct itself to a particular software application on the recipient device. This capability reflects a command and is therefore different than, and much more than, what is commonly understood as a “text message” so this disclosure is inconsistent with “short message service” and is consistent with the “simple message service” disclosure (reflecting something different than “short message service”) discussed above.

Id. at 54. As described below, a POSITA would have been familiar with the conventional and widely-used SMS short message service and would not have understood there to be a distinction between the 935 Patent’s use of “simple message service” and “short message service.”

IX. Claim Construction

A. Environmental Device

146. The term “environmental device” is not found in the specification of the 935 Patent. That said, the 935 Patent provides numerous examples of devices and/or sensors that interact with, monitor, or otherwise control aspects of the environment in and around the base unit. Specifically, the 935 Patent discloses that the “present invention” provides for “monitoring, controlling, and securing various environment functions and characteristics attendant the interior and exterior of a building.” Ex. 1001, 11:29-32. The 935 Patent, however, does not limit the

“environmental device” to any particular device, but discloses “by way of example and not limitation, temperature, power status for the building and discrete applications therein, humidity/moisture, smoke/toxic gases, structural breaches, security status, visual conditions and a host of other natural and non-natural phenomena” as examples of sensed or controlled phenomena. Ex. 1001, 11:35-39. Moreover, the 935 Patent discloses particular sensors that provide continuous updates on the conditions of the environment. Such example sensed conditions include: “utilities status, moisture and humidity detection, door and window condition, and the like. Associated controlled devices providing operational functions [sic] refrigeration, water heating, security cameras, illumination devices, and the like.” Ex. 1001, 11:47-53. I believe that “environmental device” should be given its plain and ordinary meaning. In my opinion a POSITA would have understood the plain and ordinary meaning of term “environmental device” to be “a device that is capable of measuring and/or controlling its surroundings.”

147. I understand that in the parallel district court litigation the Patent Owner put forth a similar claim construction of the term “environmental device.” Specifically, I understand that the Patent Owner proposed “environmental device” be construed as “[a] device operatively connected to at least one sensor capable of measuring an environmental condition.” Ex. 1015, Appx. A. While I do not agree that the term “environmental device” should be narrowly construed to require the

environmental device to necessarily include or be connected to “at least one sensor,” in my opinion the claims are invalid under either the construction proposed herein or the construction proposed by Patent Owner.

B. Base Unit

148. I understand that the Patent Owner argued that the term “base unit” should be construed to mean “[a] base control device operatively connected to at least a power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces for controlling and commanding subsystems within an environment through messaging” in the co-pending litigation. Ex. 1015, Appx. A.

149. The specification does not use the term “base unit,” but instead, uses the term “base control unit” to broadly describe a device that is placed at the home or business to be monitored. *See* Ex. 1001, 3:51-57. The 935 Patent discloses the “base control unit” as a generic component that consists of “either off-the-shelf integrated circuits combined with discreet components or complete modules provided by other original equipment manufacturers (OEMs).” Ex. 1001, 4:53-56. Indeed, the 935 Patent discloses that certain functionality, functionality such as the display and/or keypad, is unnecessary and may be eliminated. Ex. 1001, 5:36-42.

150. As such, a POSITA would have understood a “base unit” to be what was well known at the time and what was disclosed, namely a generic

communication device (*e.g.*, a component that can send and receive data) that is characterized as located at the “base,” (*e.g.*, physically within the environment proximate to the environmental device). As such, in my opinion a POSITA would have understood “base unit” to have its plain and ordinary meaning. In my opinion, the plain and ordinary meaning of the term “base unit” is a “base component that can send and receive data through interface(s) to the remote unit and environmental device.” While I do not agree that the term “base unit” should be narrowly construed as proposed by Patent Owner, in my opinion the claims are invalid under either the construction proposed herein or the construction proposed by Patent Owner.

C. Cellular Remote / Remote Unit¹

151. I further understand that the Patent Owner argued that the term “[cellular remote / remote] unit”² should be construed to mean “[a] remote communications device capable of cellular communications that is operatively

¹ The claims of the 935 Patent do not recite a “cellular remote unit,” but I include both terms for construction here so as to stay consistent with Patent Owner’s claim construction proposal. Ex. 1015, Appx. A.

² I understand that the Patent Owner did not provide different constructions for “remote unit” and “cellular remote.” Ex. 1015, Appx. A.

connected to at least a microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons for controlling and commanding subsystems within an environment through messaging.” Ex. 1015, Appx. A. This is substantially similar to the definition offered for the “base unit.” I disagree with this construction as well.

152. The specification does not use the term “[cellular remote / remote] unit”, but instead, uses the terms “remote control unit.” *See* Ex. 1001, 3:51-57. The 935 Patent describes the “remote control unit” generically in terms of a device that is geographically remote from the “base control unit” and able to send and receive data. Ex. 1001, 3:51-57. In one example, the 935 Patent describes the “remote control unit” as a “***conventional*** cellular telephone handset[.]” Ex. 1001, 6:65-67 (emphasis added).

153. As such, a POSITA would have understood a “[cellular remote / remote] unit” to be what was well known at the time and what was disclosed, namely a generic communication device (e.g., a component that can send and receive [cellular] data) that is located at a remote location. As such, in my opinion a POSITA would have understood “[cellular remote / remote] unit” to have its plain and ordinary meaning. In my opinion the plain and ordinary meaning of the term “[cellular remote / remote] unit” is a “[cellular remote / remote] component

that can send and receive data.” While I do not agree that the term “[remote / cellular remote] unit” should be narrowly construed as proposed by Patent Owner, in my opinion the claims are invalid under either the construction proposed herein or the construction proposed by Patent Owner.

D. Communications Interface

154. I understand that the Patent Owner argued that the term “communications interface” should be construed to mean “[a]n interface capable of communicating the control and command instructions to the subsystems within the environment” in the co-pending litigation. Ex. 1015, Appx. A. I disagree. In my opinion, Patent Owner’s construction improperly imports the function of the interface (communicating the control and command instruction). In my opinion, the function performed by the “communications interface” is described in other portions of the claims and should not be imported into the construction of the term “communications interface.”

155. The 935 Patent broadly describes the term “communications interface” to include an interface between various communications medium. For example, the “communications interface” is described as being able to support power line communications (Ex. 1001, 6:30-33), serial communications (*id.* at 7:55-56), Ethernet communications (*id.* at 5:53), and USB communications (*id.*).

156. Given the breadth of the use of the term “communications interface” in the 935 Patent, in my opinion the term “communications interface” should be given its plain and ordinary meaning. In my opinion, the plain and ordinary meaning of the term “communication interface” is “an interface that enables the exchange of data.” Ex. 1001, 6:30-33, 7:55-56, 5:53. While I do not agree that the term “communications interface” should be narrowly construed as proposed by Patent Owner, in my opinion the claims are invalid under either the construction proposed herein or the construction proposed by Patent Owner.

E. Other terms

157. I understand that the Patent Owner asserts additional constructions for cellular communications network/cellular telephone network, geo-fence, and control instruction as outlined in the table below. In my opinion these terms should be given their plain and ordinary meaning. However, for the purposes of this report, I do not dispute Patent Owner’s constructions as in my opinion the claims are invalid under the construction proposed by Patent Owner, but reserve the right to dispute such constructions at a later time.

Term	Construction proposed by Patent Owner
“cellular communications	cellular telephone network

Term	Construction proposed by Patent Owner
network”/“cellular telephone network”	
“short message service (SMS)”	service capable of transmitting short messages between network interfaces
“data bearer service”	Service capable of transmitting data between network interfaces

Ex. 1015, Appx. A.

X. Overview of the Prior Art

A. Oinonen

158. U.S. Patent No. 6,275,710 to Oinonen et al. (“Oinonen”) was issued by the United States Patent Office on August 14, 2001. Ex. 1016. I understand that Oinonen was not considered by the Patent Office during the prosecution of the 935 Patent.

159. Oinonen is directed to a system and method that allows for the transmission of data between a first and second telecommunication terminal. Ex. 1016, Abstract. The first telecommunication terminal is connected to peripheral devices to provide monitoring and control functions. Ex. 1016, 6:60-64. The

second telecommunication terminal is the mobile device carried by the user that allows the user to control the device. *Id.* at 6:64-67.

160. Oinonen discloses the following use case, which I find instructive to my understanding of the reference:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station. In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 4:67-5:15.

B. Whitley

161. WIPO Publication No. 99/49680 (PCT/US99/06429) to Whitley et al. (“Whitley”) was filed on March 24, 1999 and published on September 30, 1999. Ex. 1023.³

162. Whitley is directed to a method and apparatus for “remotely monitoring and controlling via a wireless network various devices deployed in homes and businesses.” Ex. 1023, Abstract. Whitley discloses that its system is based on a wireless communication network, such as the GSM network. *Id.* The system of Whitley allows users to forward data and commands to a gateway in the home. *Id.* The gateway in Whitley is a data collection and control device that is connected to the various devices in the home/business. *Id.*

163. Whitley discloses that a wireless user responds to communications initiated by the controlled device. For example, Whitley discloses:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20.

³ A family member of Whitley is cited on the face of U.S. Patent No. 9,602,655, which is a family member of the 935 Patent. However, I understand that Whitley was not considered by the Patent Office during prosecution of the 935 Patent.

Ex. 1023, 10:14-17.

164. Whitley further discloses:

The customer can then, based on the energy usage trends, input commands to adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy. Likewise, the user can input other commands for delivery to the gateway 20. For instance, the user could instruct the gateway 20 to enable or disable an alarm system at a particular facility 12 at a particular time and for a particular time period.

Ex. 1023, 17:2-8.

C. Bielski

165. European Patent Application No. 1391861 to Bielski (“Bielski”) was filed on August 13, 2002 and published by the European Patent Office (A2) on February 25, 2004. Ex. 1017. I understand that Bielski was not considered by the Patent Office during the prosecution of the 935 Patent.

166. Bielski is directed to a communication system for transmitting and receiving messages through a telecommunication network for monitoring and control of various devices. Ex. 1017, Abstract. The system of Bielski utilizes a communication unit interfaced with a “check unit” to transfer data to a user through a cellular network. *Id.* The Bielski check unit is wired to a device to be controlled. *Id.*

167. Bielski discloses that the system can be monitored and controlled through a mobile terminal, such as a mobile phone. Ex. 1017, [0005], [0008]. For example, Bielski discloses:

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network of a network operator, either with the help of the internet or directly, and from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.

Ex. 1017, [0063].

D. Wu

168. *System integration of WAP and SMS for home network system* by Wu and Jan (“Wu”) was published in Volume 42, Issue 4 of *Computer Networks* on July 15, 2003. Ex. 1018. I understand that Wu was not considered by the Patent Office during the prosecution of the 935 Patent.

169. Based on my review of Wu, I can confirm that Wu was available to the public as of its publication in Volume 42, Issue 4 of *Computer Networks* on July 15, 2003. Mr. Lee of the British library corroborates this date by testifying

that Wu was cataloged on June 24, 2003 and would have been available for public use as of that date. Ex. 1028. A copy of Mr. Lee's declaration and an authentic copy of Wu are attached as Exhibits 1018 and 1028. *Computer Networks* is an international journal publication that publishes papers on topics related to computer communication networking. I am familiar with *Computer Networks* and consider it be a publication that is widely subscribed to by at least the academic world. Indeed, I published an article in *Computer Networks* and hence am familiar with its operation and circulation.⁴

170. According to the publisher, "*Computer Networks* is an international, archival journal providing a publication vehicle for complete coverage of all topics of interest to those involved in the computer communications networking area. The audience includes researchers, managers and operators of networks as well as designers and implementors." The journal covers topics such as communication network protocols, communication network architectures, network services and

⁴ "Transport and Display Mechanisms for Multimedia Conferencing Across Packet Switched Networks," *Computer Networks and ISDN Systems*, Volume 26, Number 10, July 1994. Note that the journal *Computer Networks* was previously known as *Computer Networks and ISDN Systems*. The name of the journal changed in 1999.

applications, network security and privacy, network operation and management, as well as discrete algorithms and discrete modeling.

171. Wu is directed to a wireless home network system (HNS) that is designed to allow for “remote[] monitor and control [of] devices in the HNS via [] a GSM mobile terminal.” Ex. 1018, Abstract. Wu teaches that monitoring and control information flows through an HNS gateway. *Id.* Wu discloses bi-directional communication between a user’s mobile device and the HNS gateway using WAP, HTTP, and/or SMS for remote control and monitoring of devices in the home. Ex. 1018, p. 495. The communications disclosed by Wu are illustrated in at least Figure 2 of Wu:

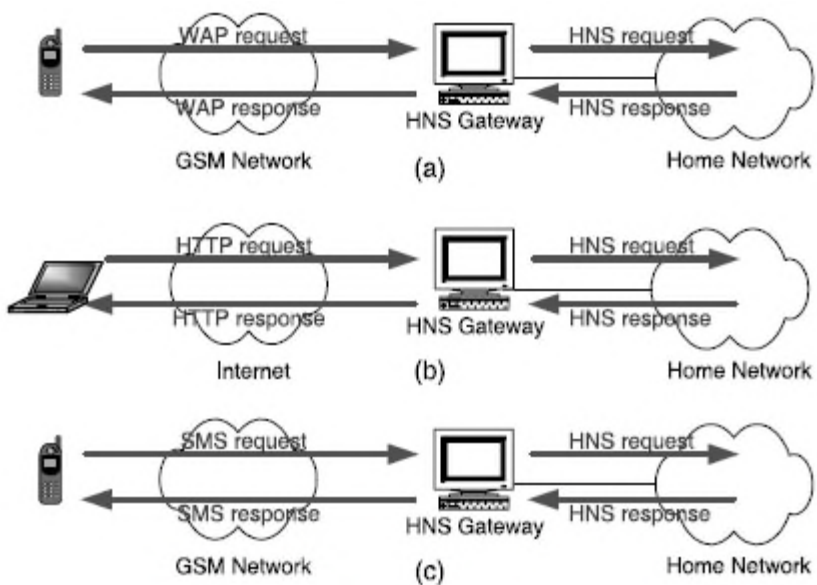


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

172. Wu discloses that this system is operable to control devices such as an air-conditioning unit, lights, a refrigerator, and an alarm. Ex. 1018, Table 1.

E. Sears

173. U.S. Patent Pub. 2002/0069263 to Sears et al. (“Sears”) was filed on September 28, 2001 and published on June 6, 2002. Ex. 1019. I understand that Sears was not considered by the Patent Office during the prosecution of the 935 Patent.

174. Sears is directed to Java and/or Java-like applications for wireless devices and “seamless and optimized” interaction between users, mobile communication devices and applications in a network environment. Ex. 1019, Abstract.

F. Menard

175. US Patent Pub. 2002/0177428 to Menard et al. (“Menard”) was filed on March 28, 2002 and published on November 28, 2002. Ex. 1020. I understand that Menard was not considered by the Patent Office during the prosecution of the 935 Patent.

176. Menard is directed to a bidirectional wireless system that allows for remote messaging and notification of alarms. Ex. 1020, Abstract, [0005]. For example, Menard discloses that in response to an alarm message, a user (a “responsible party,” or “RP”) can generate response messages including

instructions for responding to/verifying the alarm. Menard then discloses that, “after instructions from an RP are completed, another round of notification may occur.” Ex. 1020, [0179]. Menard further discloses that selected RPs “may be notified of the outcome of the process” and, in one example, explains that the message could be notifying the user of execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179].

G. Antila

177. US Patent No. 6,583,770 to Antila et al. (“Antila”) was filed on May 13, 1998 and was granted on June 24, 2003. Ex. 1021. I understand that Antila was not considered by the Patent Office during the prosecution of the 935 Patent.

178. Antila discloses a mobile device with dual LCD displays. Ex. 1021, Abstract. Antila discloses that LCD displays were common for mobile devices. Ex. 1021, 1:15-25. Antila discloses the Nokia 9000 Communicator as an example of such a device and further discloses that the Nokia 9000 Communicator has a full QWERTY keyboard. Ex. 1021, 2:19-25, 7:30-65.

H. Ehlers

179. US Patent Pub. 2004/0117330 to Ehlers et al. (“Ehlers”) was filed on July 28, 2003 and published on June 17, 2004. Ex. 1022.

180. I understand that Ehlers was not considered by the Patent Office in the prosecution of the 935 Patent.⁵

181. Ehlers discloses a system and distribution network of managing energy consumption within a building. Ex. 1022, Abstract.

182. Ehlers discloses a user interface that comprises functions and features by which users (“customers”) may, among other things, “directly access and control in-home devices.” Ex. 1022, [0115, 0116].

XI. Invalidity of the Challenged Claims of the 935 Patent in Light of the Prior Art

A. Count 1A: Oinonen and Whitley

i. Motivation to combine Oinonen with Whitley

183. Oinonen discloses the use of a mobile device to monitor and/or control a device through the use of SMS messages. Oinonen also discloses bidirectional communications that rely on SMS messages:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, a short message is arranged to be transmitted and received by a second mobile

⁵ I understand that US Patent Pub. 2005/0033707 to Ehlers et al. was cited in the prosecution history of the related 655 Patent, but was not relied upon by the Examiner in any Office Action.

station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station. In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the State of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 4:67-5:15.

184. In addition, Oinonen discloses a system that enables a single communication terminal to be connected to a number of peripheral devices and/or to generate a number of distinct control messages. For example, Oinonen discloses an example embodiment that contemplates a telecommunication terminal that is able to generate eight control messages and, respectively, the status of eight measurement messages can be examined. Ex. 1016, 13:10-14. While Oinonen discloses a base unit, Oinonen does not expressly articulate how its telecommunications device would be configured to monitor and/or control multiple devices. A POSITA, understanding that a home or business would likely include many devices to be controlled, would have been motivated to identify a solution. To the extent such a solution was not already part of the knowledge of a POSITA, Whitley discloses such a solution.

185. A POSITA would have looked to the disclosures of Oinonen and Whitley as they are both directed to the transmission of messages (*e.g.*, messages transmitted via the SMS short message service) over a cellular network for the purpose of monitoring and/or controlling various devices in a home or business. In particular, Whitley discloses a data collection and control device that is connected to various devices, called a “gateway,” and Oinonen discloses a first telecommunication terminal (TE1), which is “telecommunication terminal to which the peripheral device to be controlled or monitored is connected.” Ex. 1016, 6:60-64. Specifically, Whitley discloses “[m]ethods and apparatus are disclosed for remotely monitoring and controlling via a wireless network various devices deployed in homes and businesses” and Oinonen likewise discloses “controlling and monitoring peripheral devices to be used in telemetric systems” with a mobile telecommunication unit.” Ex. 1023, Abstract.

186. It would have been obvious to a POSITA to combine Whitley for several reasons. First, Whitley discloses that it would be desirable to take advantage of the short messaging service capability of a deployed GSM network to more efficiently provide remote monitoring and control of multiple distributed gateways. Ex. 1023, 7:1-3.

187. Second, the gateway of Whitley is advantageously configured to remotely monitor and control multiple devices located in the customer's facility.

Ex. 1023, 6:19-21. Indeed, Whitley discloses that each device may have its own address so as to allow each device to be individually monitored and/or controlled.

Whitley discloses:

Thus, gateways 20 may couple to a remote facility 12 and may monitor, control or both monitor and control various devices within the facility 12, such as lights, security sensors, an answering machine, a home computer, etc. For instance, gateway 20 may be a set-top box, personal computer or other device provided with a processor, such as an Intel 386 or 486 processor, and communicates with various, optionally addressable, devices located throughout the facility.

Ex. 1023, 9:1-8.

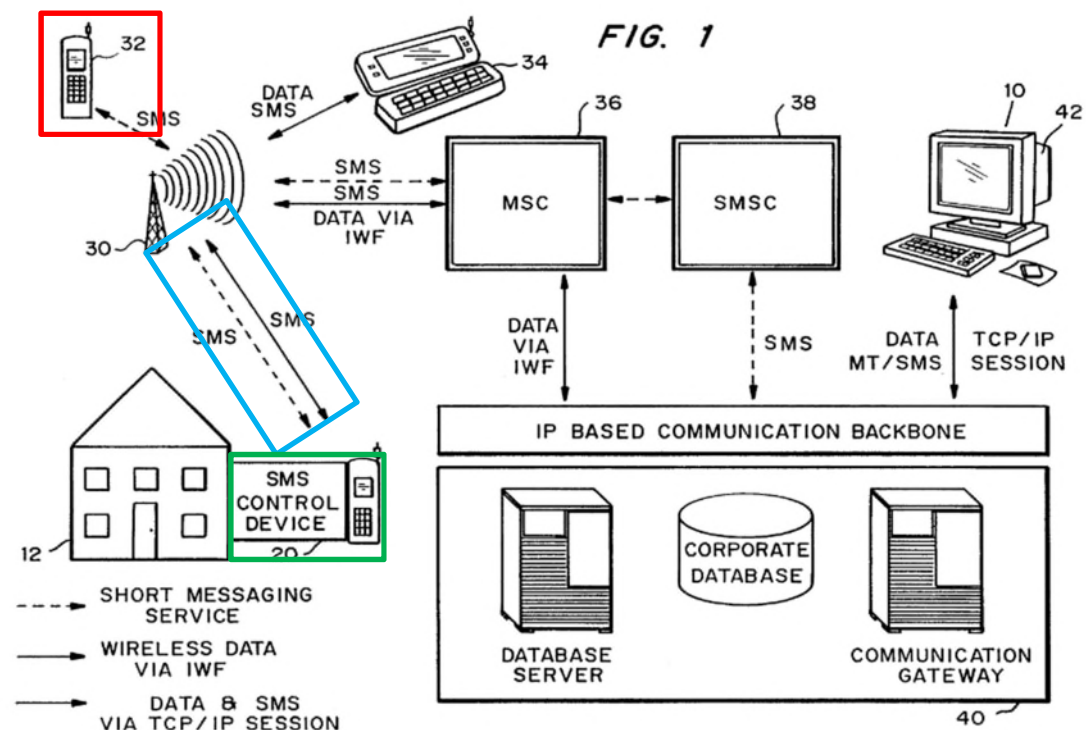
188. Third, a POSITA would have been motivated to rely on Whitley for the additional reason that it allows for monitoring of activities at a facility over time. Ex. 1023, 7:4-6. In one disclosed example, Whitley explains that its disclosed system can be used to track energy trends for a device. Ex. 1023, 16:19-26. In this example, Whitley discloses that the gateway can poll the devices to determine energy usage and can generate an SMS message containing the poll results. *Id.* Advantageously, the user “can then, based on the energy usage trends, input commands to adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy.” Ex. 1023, 17:2-4.

189. Finally, a POSITA would have been motivated to combine the teachings of Whitley with that of Oinonen so as to “provide a method for allowing customers to receive monitoring information about activities at their facility via a mobile station or a fixed terminal” and to “provide a method that allows customers to control the gateway and devices coupled to the gateway from their mobile station or a fixed terminal communicating over the wireless network.” Ex. 1023, 6:22-26. Specifically, Whitley discloses that the system “allows the gateway to send data and receive commands directly from the customer.” Ex. 1023, 2:23-25. Whitley further discloses that “[t]he customer can send and receive such data via a mobile station.” Ex. 1023, 2:26-27.

190. Moreover, Whitley discloses that the wireless user can respond to a communication initiated by the controlled device. For example, Whitley recites:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20. . .

Ex. 1023, 10:14-17. Annotated Figure 1 of Whitley illustrates the remote unit (red box) and bidirectional communication (blue box) with the base unit (green box).



191. A POSITA would have understood that such bidirectional messaging advantageously allows for both the polling of multiple devices as well the detection of events, such as alarm conditions. For example, monitoring temperature over time may be suitable for polling based systems, whereas the detection of an intruder may be more suitable for an event based system. A POSITA would have understood that both types of communications disclosed by Whitley would have been beneficial depending on the context and, thus, would have been motivated to implement a system that allowed for both polling based and event based communications.

192. Thus, for the reasons espoused by Whitley and because a POSITA would have understood that the additional teachings of Whitley provided a more robust system that allowed for the control of more devices using the same data transfer protocol (*e.g.*, SMS), a POSITA would have been motivated to combine the aforementioned references. Indeed, Oinonen and Whitley both use the same data transfer protocol (*e.g.*, SMS). Both references also rely on the same type of user equipment. In particular, Whitley discloses the Nokia 9000 GSM communicator and Oinonen, a patent assigned to Nokia, provides figures of a device that a POSITA would understand to be a Nokia product, such as Nokia 9000 GSM communicator. Based on the fact that both references use the same data transfer protocols and rely on the same type of user equipment, a POSITA would have expected the resulting combination to be both operable and predictable. Indeed, the POSITA would have had a reasonable expectation of success.

ii. Claim 1: [1Pre] A wireless system comprising:

193. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley.

194. Oinonen discloses a “digital mobile communication system, such as the GSM system” in which “it is possible to send messages without setting up a connection with a circuit coupling.” Ex. 1016, 1:16-18. Oinonen discloses that such “non-connection” methods for message transmission include the “short

message service SMS, the unstructured supplementary service data USSD, or the general packet radio service GPRS.” Ex. 1016, 1:18-22.

195. Oinonen illustrates an example of its wireless system in at least Figure 1.

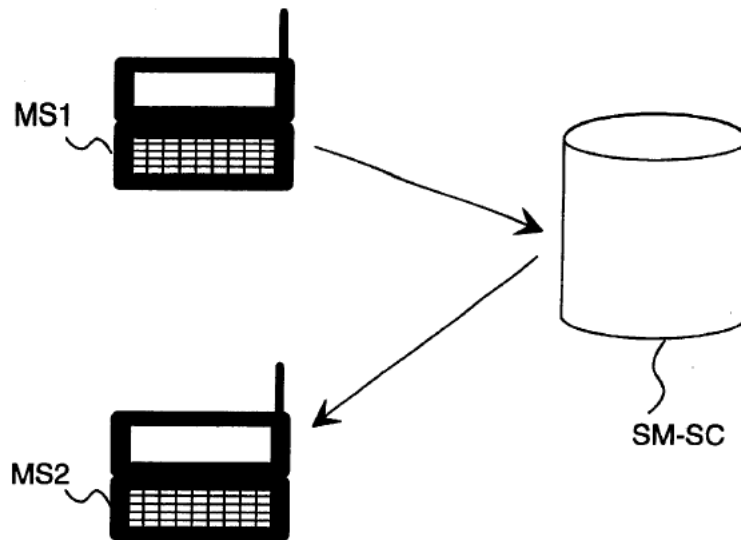
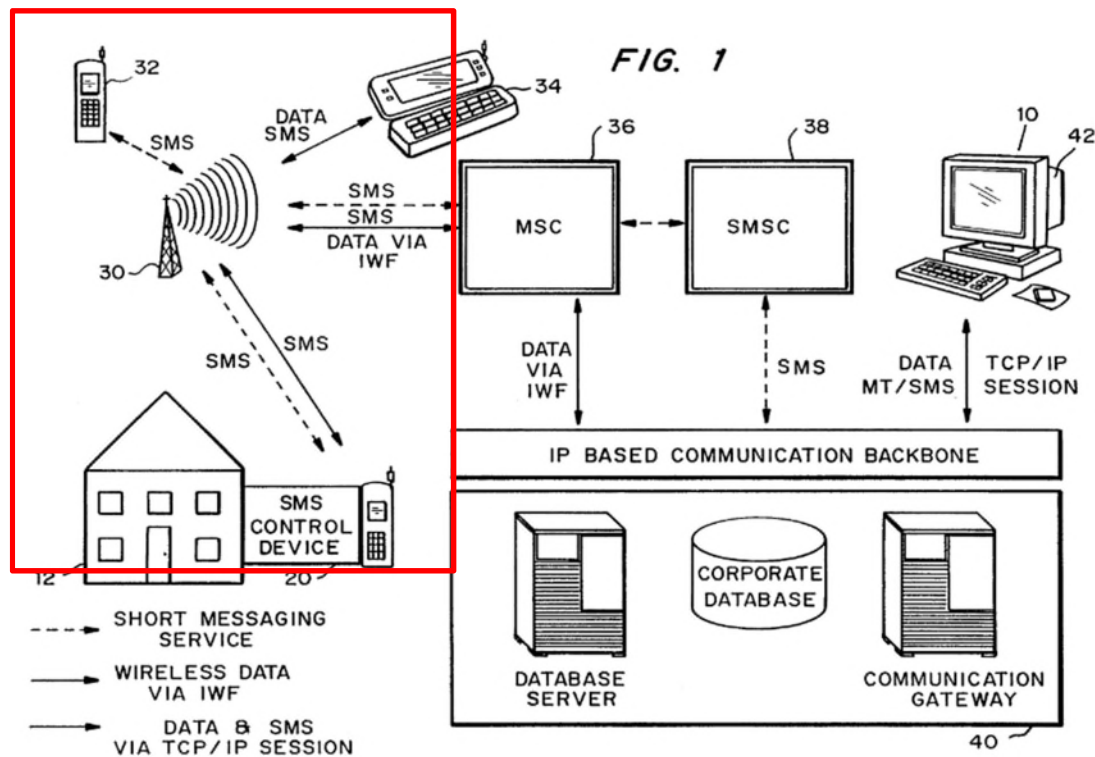


Fig. 1

Ex. 1016, Fig. 1.

196. Likewise, Whitley discloses a method for “remotely monitoring and controlling via a wireless network various devices deployed in homes and businesses.” Ex. 1023, Abstract. Whitley discloses that the system is based on a “wireless communication network.” *Id.* Like Oinonen, Whitley discloses using cellular communication networks such as the GSM network and the GPRS protocol. Ex. 1023, Abstract. Whitley discloses the use of short message service (SMS) messages in the wireless system. Ex. 1023, Abstract.

197. The wireless system of Whitley is shown, for example, in Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

iii. Claim 1: [1A] an environmental device;

198. Oinonen and Whitley disclose Limitation 1 A.

199. The 935 Patent broadly discloses “environmental device” as “a device that is capable of measuring and/or controlling its surroundings.” *See supra*.

Oinonen and Whitley disclose such environmental devices.

200. Oinonen discloses the claimed environmental device. Specifically, Oinonen discloses at least a valve opening/closing system, a door locking and door

opening/closing system, an illuminator, and a real estate security system. Ex. 1016, 3:45-58, 4:14-33, 10:63-66, 11:12-14, 11:46-53.

201. Even if Patent Owner's construction of "[a] device operatively connected to at least one sensor capable of measuring an environmental condition" were adopted, in my opinion Oinonen discloses this recitation. Specifically, Oinonen discloses a wireless system that includes example "environmental devices," such as a switch to lock a door and a switch to determine whether a door is opened or closed. Oinonen discloses that "[t]he door is locked by transmitting a short message, such as "lock the door," from the second telecommunication terminal TE2. Ex. 1016, 11:62-12:4. Oinonen further discloses the ability to sense the state of the door (*e.g.*, locked / unlocked) by way of a switch S1 that is "arranged in connection with a door 12, for recognizing whether the door 12 is open or closed." Ex. 1016, 9:26-28.

202. The switch S1 in Oinonen can be controlled by the Oinonen first telecommunication terminal TE1 (*e.g.*, the base unit) to open or close a door. Ex. 1016, Table 1. Switch TE1 is also configured to transmit information to the Oinonen first telecommunication terminal TE1 upon the detection of an event. *See e.g.*, Ex. 1016, 10:17-21 ("In these application examples, it is assumed that a change of state in any input line of the connection interface 7 causes an interrupt request which is processed in the same interrupt service program.")

203. Oinonen further discloses an “environmental device” in the form of a real estate alarm system. Oinonen discloses that the real estate alarm system “is coupled to a first telecommunication terminal TE1 for transmitting the state of the alarm system e.g. to the telecommunication terminal of a guard. The alarm line 20 of the alarm system is coupled to a relay 16, whereby in the case of an alarm, the position of the switch S2 of the relay 16 is changed e.g. from the open position to the closed position. . .” Ex. 1016, 10:63-11:11.

204. Oinonen discloses other “environmental devices” including an “illuminator.” Ex. 1005, 11:12-45. Oinonen further confirms that other environmental devices such as a remote-controlled heating system were also well-known. Ex. 1016, 3:66-4:13.

205. Like Oinonen, Whitley likewise discloses “environmental devices” under either construction. Specifically, Whitley discloses a variety of connected “environmental devices” including a “thermostat, refrigerator, water heater, and washer/dryer” as well as a “general meter.” Ex. 1023, 16:21-23.

206. In other instances, Whitley discloses that the connected device can be an alarm system. Ex. 1023, 17:5-10. Like Oinonen, Whitley also discloses that the system can be used to control and monitor “lights.” Ex. 1023, 12:21-23.

207. Whitley further discloses control of a thermostat:

The customer can then, based on the energy usage trends, input commands to adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy. Likewise, the user can input other commands for delivery to the gateway 20. For instance, the user could instruct the gateway 20 to enable or disable an alarm system at a particular facility 12 at a particular time and for a particular time period.

Ex. 1023, 17:2-7.

iv. Claim 1: [1B] a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device;

208. Oinonen and Whitley disclose Limitation 1B.

209. Oinonen discloses a first telecommunication terminal (TE1) that operates as the claimed base unit. The first telecommunication terminal (TE1) is a “telecommunication terminal to which the peripheral device to be controlled or monitored is connected.” Ex. 1016, 6:60-64. Oinonen further discloses that the connection interface that enables communication between the first telecommunication terminal TE1 and the peripheral device to be controlled is a “V.24 connection interface.” Ex. 1016, 6:60-64. As is described with respect to Limitation 1 A, the Oinonen peripheral devices are the claimed environmental device.

210. In my opinion Oinonen discloses the claimed “base unit” under either the construction I propose or the construction proposed by Patent Owner. In

particular, a POSITA would have understood that the power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces in Patent Owner's construction were standard components that would be common in a conventional "base unit." To the extent that Oinonen is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed base unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a base unit and that their inclusion in Oinonen's first telecommunication terminal would have been obvious given the knowledge and experience of a POSITA alone.

211. Additionally, Oinonen discloses that the connection interface between the base unit and the "environmental device" can be an interface other than the V.24 standard. Ex. 1016, 13:8-10. For example, Oinonen discloses that parallel connections (Centronics) can be used, which allows for "eight control messages [to] be generated and, respectively, the status of eight measurement messages [to] be examined at a time." Ex. 1016, 13:10-14.

212. Oinonen discloses that the first telecommunication unit (TE1) is configured to control an operation of the environmental device as it discloses processing incoming messages and, in response, sending standardized

current/voltage⁶ messages to control operation of the environmental device. Ex. 1016, 4:14-40. By way of example, Oinonen discloses that the environmental device (door lock) is controlled by the base unit whereby, “the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.” Ex. 1016, 11:62-12:4.

213. Oinonen also discloses that its first telecommunication terminal is in communication with, and controls operation of, its illuminator and real estate security system. For example, in the illuminator, the intensity of the light within the location of the illuminator can be measured by the user through the second telecommunication terminal by way of short message service (SMS) messages. Ex. 1016, 11:12-24. For example, the user can send the message “check if the room is

⁶ A POSITA would have understood that standardized current or voltage messages would be within the scope of the 935 Patent. Indeed, the 935 Patent discloses that “[b]y far the most popular and ubiquitous power line carrier system is the X10.” Ex. 1001, 2:27-28. X10 is an industry standard protocol for control of devices in a building/home using the electrical wiring in the building as the conduit for radio frequency communication among electronic devices.

too dark” from the second telecommunication terminal TE2 to the first telecommunication terminal TE1. Ex. 1016, 11:21-25. The first telecommunication terminal will receive this message, interpret the message, and apply the corresponding voltage to the illuminous intensity sensor. Ex. 1016, 11:24-28.

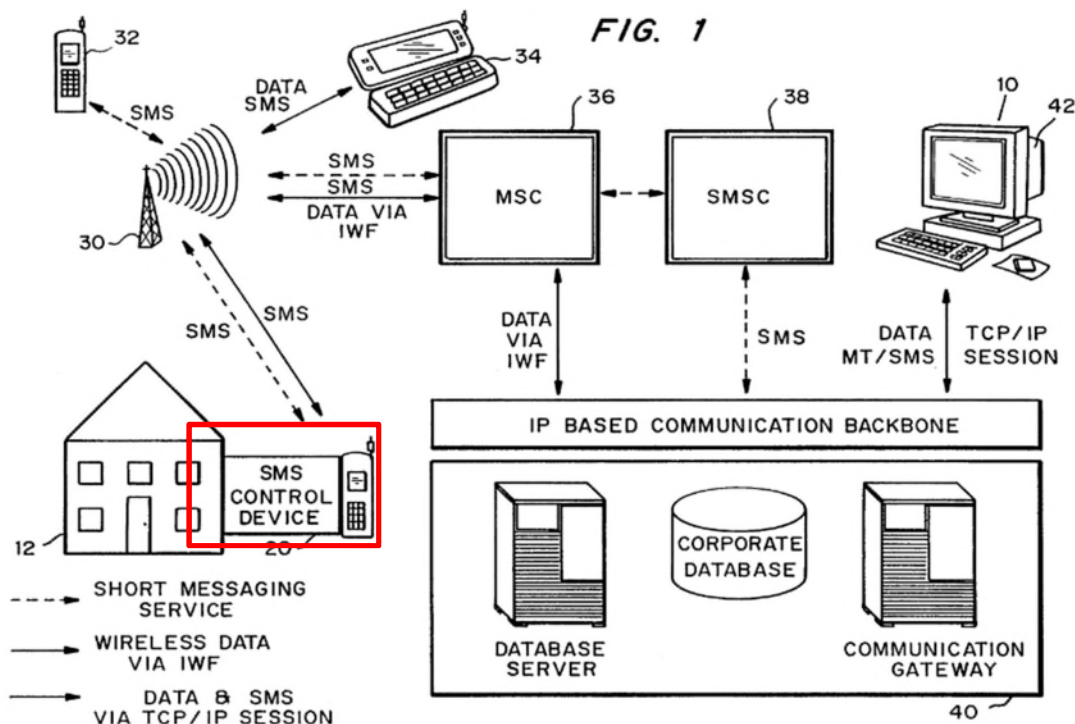
214. Likewise, Whitley discloses a system that is designed to control various household devices through a gateway (*e.g.*, a base unit). The gateway disclosed by Whitley functions as a hub and includes “any device that (a) provides a *physical interface between internal devices* associated with a particular facility 12 and external networks and, optionally, (b) may provide a platform for delivering various services to the facility.” Ex. 1023, 8:27-9:1 (emphasis added). Whitley discloses that the interface between the gateway and connected devices allows the gateway to communicate with the connected devices. Ex. 1023, 3:7-13.

215. In my opinion, like Oinonen, Whitley discloses the claimed “base unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces in Patent Owner’s construction were standard components that would be common in a conventional “base unit.” To the extent that Whitley is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed base unit, a POSITA would

understand that there is nothing inventive about the addition of these common elements to a base unit and that their inclusion in Whitley's gateway would have been obvious given the knowledge and experience of a POSITA alone.

216. Whitley discloses that the interface between the gateway and connected devices allows that gateway to control the connected devices. Whitley discloses that the gateway "[is] coupled to various devices within the facility in order to control the devices." Ex. 1023, 3:7-8. For example, Whitley discloses that "gateways may control the lights within a facility according to a pre-programmed pattern that the user may change by communicating new commands via the present invention." Ex. 1023, 3:9-10. Whitley also discloses that the gateway can be remotely configured to issue control commands: "gateways may be configured remotely to receive commands and data, which allows remote control over the devices (*e.g.*, home appliances or electronics) with which the gateway may communicate." Ex. 1023, 3:11-13.

217. The gateway (20) disclosed by Whitley is seen in at least annotated Figure 1:



Ex. 1023, Fig. 1.

v. ***Claim 1: [1C] a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and***

218. Oinonen and Whitley disclose Limitation 1C.

219. Oinonen discloses the claimed remote unit in the form of a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that the system, including the second telecommunication terminal, can operate in

the GSM mobile communication system as well as “other connectionless message transmission systems, such as unstructured supplementary service data USSD or general packet radio service GPRS.” Ex. 1016, 13:15-20.

220. Moreover, Oinonen discloses:

In the short message service SMS of the GSM system, it is possible to transmit a message of a maximum length of 160 characters at a time. The characters are e.g. ASCII characters (American National Standard Code for Information Interchange) of 7 bits, but it is also possible to transmit characters of 8 bits which are not necessarily ASCII characters. Also short message services have been developed where the message can be transmitted in several short messages of a maximum length of 160 characters, whereby the length of the short message can be multiplied. For example in the GSM mobile communication system, the abbreviation C-SMS is used for this concatenated short message service.

Ex. 1016, 2:29-41.

221. In my opinion Oinonen discloses the claimed “remote unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons in Patent Owner’s construction were standard components that would be included in a conventional “remote unit” such as Oinonen’s “second

telecommunication terminal.” To the extent that Oinonen’s second telecommunication terminal is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed remote unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a remote unit and that their inclusion in Oinonen’s second telecommunication terminal would have been obvious given the knowledge and experience of a POSITA alone.

222. Oinonen discloses that the remote unit can send short message service (SMS) messages. For example, Oinonen discloses that the purpose of its invention is to achieve a monitoring and control system whereby information is transmitted between a peripheral device and a mobile station. Ex. 1016, 4:41-43. Oinonen confirms that such information is “is transmitted by using e.g. short messages or the like.” Ex. 1016, 4:44-45.

223. Oinonen also discloses that the remote unit can receive SMS messages. Oinonen discloses that when a change in state of the environmental device occurs, “a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.” Ex. 1016, 4:67-5:6.

224. Likewise, Whitley discloses a remote unit that can send and receive SMS messages. In particular, Whitley discloses a mobile station that allows users

to “receive monitoring information about activities at their facilities” and allows users to “control the gateway and devices coupled to the gateway.” Ex. 1023, 6:22-26. Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal. Ex. 1023, 2:26. Whitley discloses that the remote unit can be a “cellular handset.” Ex. 1023, 8:14.

225. Whitley discloses that its remote unit can take the form of any number of mobile communication devices:

The phrase "mobile station" means a device for sending and receiving data over a wireless network and includes, for instance, a pager 31, a handset 32 or an internet communicator 34 that may be a Nokia 9000 GSM communicator capable of accessing the internet via a GSM wireless network.

Ex. 1023, 8:6-10.

226. In my opinion, like Oinonen, Whitley discloses the claimed “remote unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons in Patent Owner’s construction were standard components that would be included in a conventional “remote unit” such as Whitley’s mobile station, such as a Nokia 9000. To the extent that Whitley’s mobile station is found

to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed remote unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a remote unit and that their inclusion in Whitley's mobile station would have been obvious given the knowledge and experience of a POSITA alone.

227. Whitley further discloses that its mobile device can send and receive SMS messages:

Preferably, the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS"). *SMS messages allow users of the network and the gateways to send and receive packets of data* (about 160 characters) without setting up an actual call connection. *Receiving terminals, whether mobile stations, such as handsets or pagers*, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page.

Ex. 1023, 3:19-25 (emphasis added).

228. Whitley further discloses how the mobile station receives SMS messages, discloses that "[a] system 10 using a GSM network allows SMS messages with a payload of about 160 bytes or characters to be sent at 9600 Baud from a gateway 20 to a terminal via a GSM network." Ex. 1023, 12:7-9. Whitley

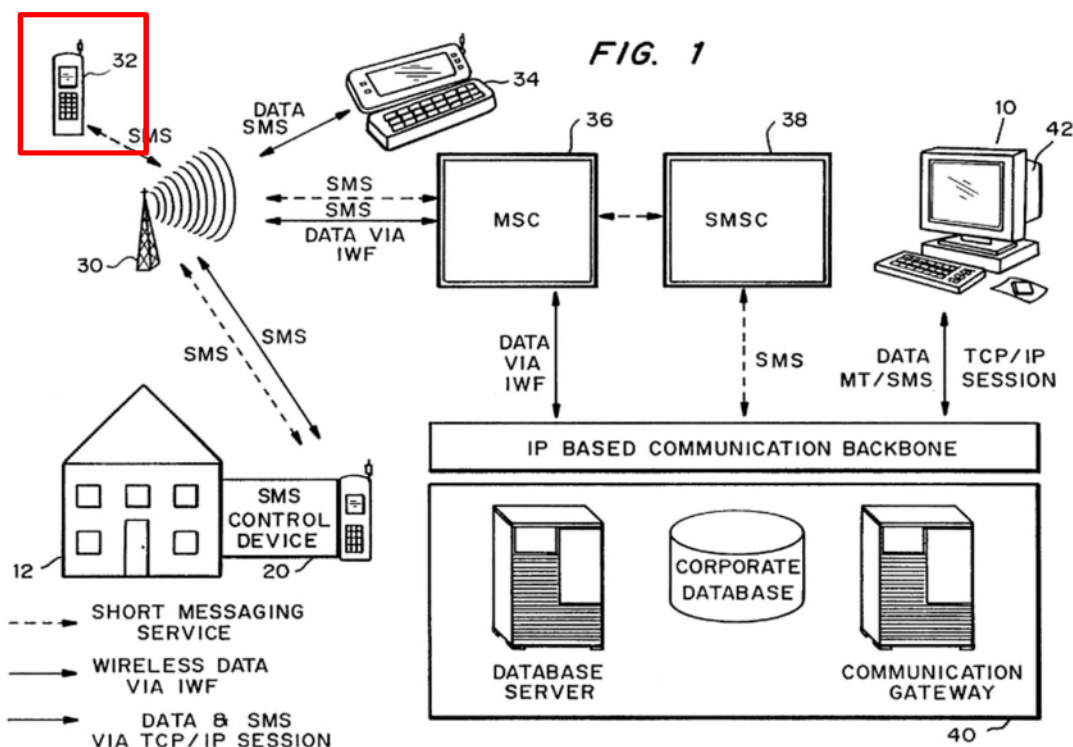
also discloses that users can send commands, via SMS, to the gateway to control devices. Ex. 1023, 16:9-12.

229. Whitley discloses an example in which environmental information is sent by SMS from the gateway to the mobile device:

By way of example, assume that *gateway 20 monitors facility 12 for energy usage data or alarms indicating a security breach as well as communicates with various electronic devices, such as an electronic thermostat or lights*. The digital GSM network allows *gateway 20 to periodically upload a SMS message, providing essentially real time monitoring of energy usage at the particular facility 12*. For instance, the GSM network may allow message uploading as frequently as every 5 minutes. Gateway 20 could be programmed to provide periodic (e.g., hourly) reports on energy usage. If a security sensor coupled to gateway 20 triggers, gateway 20 could be configured to package and transmit, usually on a priority basis, a SMS message indicating a breach in security, as well as other data including the date and time, the location of the facilities, or the location of the sensor.

Ex. 1023, 12:21-13:2 (emphasis added).

230. The remote unit (32) disclosed by Whitley is seen in at least annotated Figure 1:



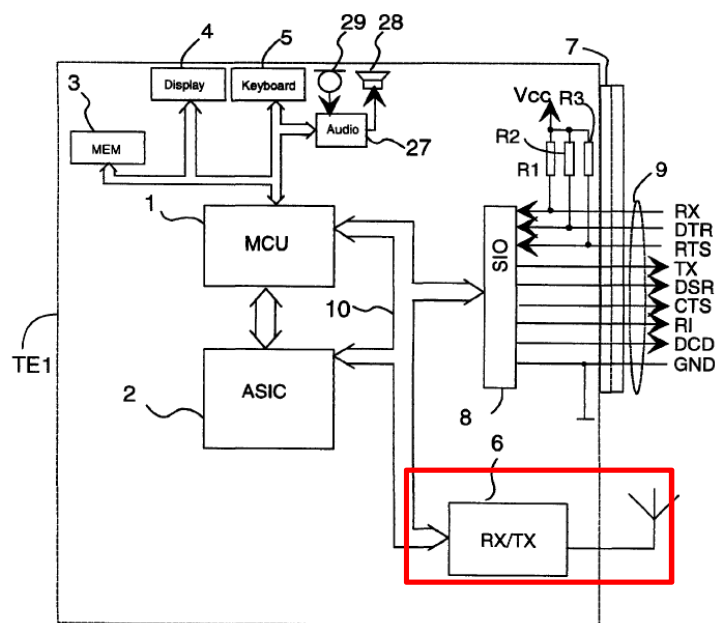
Ex. 1023, Fig. 1.

vi. Claim 1: [1D] a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,

231. Oinonen and Whitley disclose Limitation 1D.

232. Oinonen discloses that the first telecommunication terminal TE1 includes a wireless module in the form of a “radio element.” Ex. 1016, 7:12-21.

The radio element is shown in annotated Fig. 3 (a diagram of the first telecommunication terminal) and is labeled as RX/TX:



Ex. 1016, Fig. 3. Oinonen discloses that the RX line is a data reception line and that the TX line is a data transmission line. Ex. 1016, 6:12-17.

233. Oinonen discloses sending and receiving messages via a cellular communications network. Oinonen discloses that the user communicates wirelessly with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “transmit[ing] as short messages *from* the second telecommunication terminal *to* the first telecommunication terminal.” Ex. 1016, 4:58-60 (emphasis added). Oinonen discloses that short messages are transmitted between telecommunication terminals via typical wireless protocols, which include GSM and GPRS. *See e.g.*, Ex. 1016, 1:51-2:28, 2:29-31, 2:42-44, 13:15-20.

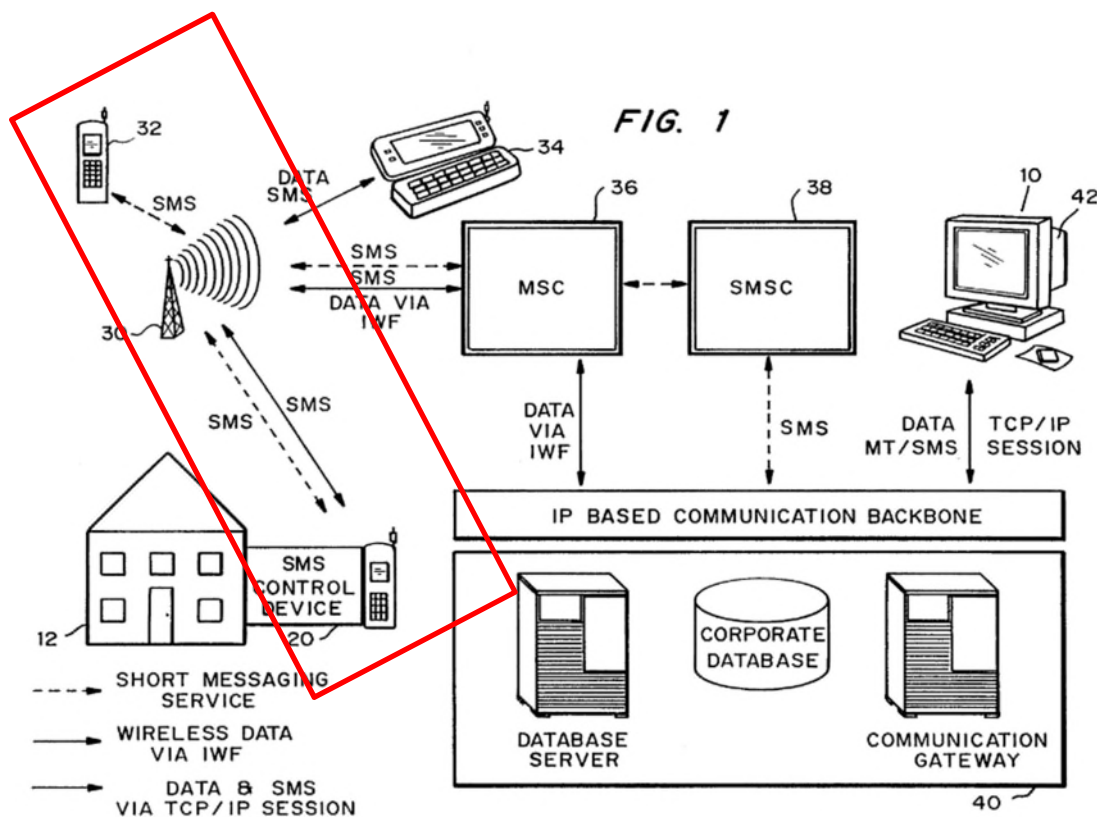
234. Likewise, Whitley discloses a “gateway” that comprises the wireless module of Claim 1. Whitley discloses “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8. Whitley further discloses:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, *the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS")*. SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection. Receiving terminals, whether mobile stations, such as handsets or pagers, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page. Ex. 1023, 3:13-25 (emphasis added).

235. Whitley also discloses that its system “allows the gateway [base unit] to send data and receive commands directly from the customer.” Ex. 1023, 2:23-25. Whitley discloses that the communication to and from its base unit (the

gateway) can be in the form of messages and that there can be a first (received) and second (response) message. Ex. 1023, 10:14-17.

236. The wireless connectivity between remote unit (32) and base unit (20) is further illustrated in at least Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

vii. Claim 1: [1E] wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,

237. Oinonen and Whitley disclose Limitation 1E.

238. As is disclosed in Limitation 1D, Oinonen discloses that an SMS message is sent / received through a wireless module of the first

telecommunication terminal (the claimed base unit). Ex. 1016, 4:52-62. Oinonen further discloses that the state of a connected device is monitored to determine if there are any changes in the state of lines that are connected via a connection interface. Ex. 1016, 4:67-5:6. Oinonen also discloses that “upon a change in the state [of the peripheral device (environmental unit)], a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.” Ex. 1016, 4:67-5:6.

239. Moreover, and in the example related to a door, Oinonen discloses the transmission of an SMS message that contains current environmental information related to the door. *See* Ex. 1016, 10:38-55. For example, Oinonen discloses that its message includes the states of all input lines at the moment of examination and transmitted “advantageously as a short message.” Ex. 1016, 10:38-42. Oinonen discloses that its short message includes the states of the input lines (*e.g.*, “RX=0, DTR=1, RTS=0”) or standard text (*e.g.*, “door is open”). Ex. 1016, 10:43-54. In another example directed to an alarm system, Oinonen discloses that a message is configured to be sent to the second telecommunication terminal TE2 with “information about the alarm.” Ex. 1016, 11:8-11.

240. Whitley discloses that the system includes “[f]ormatting messages for wireless delivery to and from. . . [a] gateway[]”. Ex. 1023, 5:18-20. In an SMS

implementation, this may be accomplished at the gateway, which formulates messages to other terminals into a short message format.” Ex. 1023, 5:18-20. Whitley discloses that thereafter, the SMS message is transmitted “from the gateway to a network element.” Ex. 1023, 5:28.

241. Whitley discloses that the gateway receives data from various devices in the home and packages the data for forwarding to a user through a cellular network. Ex. 1023, 8:1-4; *see also id.* at 8:4-10 (“The system 10 of the present invention aims to route messages from various gateways 20 to terminals” such as a mobile station such as a Nokia 9000 GSM handset). This is accomplished by a program in the gateway that “generate[s] text for an outgoing SMS message, place[s] it in the SIM card of the gateway 20 and initiate[s] the data transfer over the GSM network.” Ex. 1023, 9:17-19.

242. Whitley discloses a particular example in which environmental information is sent by SMS from the gateway to the mobile device:

By way of example, assume that *gateway 20 monitors facility 12 for energy usage data or alarms indicating a security breach as well as communicates with various electronic devices, such as an electronic thermostat or lights*. The digital GSM network allows *gateway 20 to periodically upload a SMS message, providing essentially real time monitoring of energy usage at the particular facility 12*. For instance, the GSM network may allow message uploading as frequently as every 5 minutes. Gateway 20 could be programmed to provide periodic (e.g.,

hourly) reports on energy usage. If a security sensor coupled to gateway 20 triggers, gateway 20 could be configured to package and transmit, usually on a priority basis, a SMS message indicating a breach in security, as well as other data including the date and time, the location of the facilities, or the location of the sensor.

Ex. 1023, 12:21-13:2 (emphasis added).

viii. Claim 1: [1F] wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and

243. Oinonen and Whitley disclose Limitation 1F. *See* 1B, 1Pre.

244. As is disclosed in Limitation 1D, Oinonen discloses that an SMS message is sent / received through a wireless module of the first telecommunication terminal (the claimed base unit). Ex. 1016, 4:52-62. Oinonen further discloses that “control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.” Ex. 1016, 4:57-61. Oinonen further discloses:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, ***wherein the user selects or writes a message which corresponds to the desired control operation*** and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection

line is changed at the connection interface on the basis of this short message.

Ex. 1016, 5:6-13 (emphasis added).

245. Oinonen further confirms the transmission of second SMS message includes a command for the environmental device:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.*

Ex. 1016, 4:52-61 (emphasis added).

246. Oinonen provides an example of second SMS message in the form of its door locking example. Specifically, Oinonen discloses “[t]he door is locked by transmitting a short message, such as ‘lock the door’, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state.” Ex. 1016, 11:62-12:4.

247. In my opinion Limitation 1F does not require the second SMS message be sent in response to the first message. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, in my opinion a POSITA would have understood that the request and response messages are disclosed by Oinonen and Whitley. Indeed, Oinonen discloses:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, *a short message is arranged to be transmitted and received by a second mobile station*, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station. *In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device*, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 4:67-5:15 (emphasis added).

248. Likewise, Whitley discloses that its system “allows the gateway to send data and receive commands directly from the customer.” Ex. 1023, 2:23-25. Whitley further discloses that “[t]he customer can send and receive such data via a

mobile station.” Ex. 1023, 2:26-27. Whitley also discloses that users can send commands, via SMS, to the gateway to control devices. Ex. 1023, 3:19-25, 12:7-9, 16:9-12. Moreover, Whitley discloses that the wireless user responds to a communication initiated by the controlled device. For example, Whitley recites:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20.

Ex. 1023, 10:14-17.

249. Whitley further discloses:

The customer can then, *based on the energy usage trends, input commands to adjust the thermostat*, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy. Likewise, the user can input other commands for delivery to the gateway 20. For instance, the user could instruct the gateway 20 to enable or disable an alarm system at a particular facility 12 at a particular time and for a particular time period.

Ex. 1023, 17:2-7 (emphasis added).

250. Finally, Whitley discloses that “each gateway is uniquely addressable through, for instance, a phone number, IP address, or similar identifier, *the customer can formulate messages or commands that will be routed directly from the customer's mobile station or fixed terminal to the gateway.*” Ex. 1023, 6:12-14 (emphasis added).

- ix. Claim 1: [1G] wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.***

251. Oinonen and Whitley disclose Limitation 1G.

252. As was discussed with respect to Limitation 1F, Oinonen discloses that the second telecommunication terminal TE2 sends SMS control messages to the first telecommunication terminal TE1. *See e.g.*, Ex. 1016, 11:21-28. Oinonen discloses that the first telecommunication terminal TE1 is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:34-37.

253. Oinonen further discloses:

the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 5:6-13.

254. Oinonen further discloses that the first telecommunications terminal receives and processes messages before sending the control instruction to the environmental device via the first communication interface:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.*

Ex. 1016, 4:52-61 (emphasis added).

255. Oinonen further discloses a particular example where the base unit controls the operation of the environmental unit on the basis of the received SMS messages. Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In *the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state.* This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4 (emphasis added).

256. Oinonen continues in this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door,” from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

Ex. 1016, 12:4-12.

257. Likewise, Whitley discloses that, based on the command sent by the user, the gateway sends commands to the environmental device. Whitley discloses that the gateway acts as a “control device.” Ex. 1023, 7:29. In particular, Whitley discloses that the gateway includes “any device that (a) provides a physical interface between internal devices associated with a particular facility 12 and external networks and, optionally, (b) may *provide a platform for delivering various services to the facility.*” Ex. 1023, 8:27-9:1 (emphasis added). Whitley also discloses that, “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14.

258. Whitley confirms that a receiver in the gateway allows it to receive SMS message from the remote unit. Whitley discloses that “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and *receiving communications* via a digital wireless network.” Ex. 1023, 9:6-8 (emphasis added).

259. Whitley further discloses that the receiver allows the gateway to receive commands from user. Whitley discloses that “[t]he customer can send and receive such data via a mobile station.” Ex. 1023, 2:26-27. For example, Whitley recites:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20.

Ex. 1023, 10:14-17.

260. Whitley also discloses that “because each gateway is uniquely addressable through, for instance, a phone number, IP address, or similar identifier, *the customer can formulate messages or commands that will be routed directly from the customer's mobile station or fixed terminal to the gateway.*” Ex. 1023, 6:12-14 (emphasis added).

- x. *Claim 2: The system as recited in claim 1 wherein said environmental device includes electronic and electromechanical switching portions interfaced with said environmental device.***

261. Oinonen and Whitley disclose the limitations of Claim 2.

262. There are no express disclosures of “electromechanical switching portions,” or even “switching portions” in the specification of the 935 Patent. There is a single disclosure of a switch in terms of a “conventional thermostat,” and generic disclosures of actuators and relays (within the context of a 1-Wire network) that “may be useful” for control of devices within a typical home. Ex. 1001, 5:58-64, 6:19-26, 12:13-20.

263. The 935 Patent discloses that its switch “automatically control[s] a heating or cooling appliance when the sensed temperature is beyond a present value.” Ex. 1001, 12:13-15. Based on this disclosure, a POSITA would have understood that one example of an environmental device that includes electronic and electromechanical switching portions would be a heating/cooling system. A POSITA would have also understood that other devices with electronic and electromechanical switching mechanisms that activate / deactivate a device would also include electronic and electromechanical switching portions.

264. Oinonen discloses such electronic and electromechanical switching mechanisms in at least the form of a peripheral device in communication with the first telecommunication terminal that can be a “switch S1 arranged in connection

with a door 12 for recognising [sic] whether the door 12 is open or closed.” Ex.

1016, 9:26-28. Oinonen also discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes *a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.*

Ex. 1016, 11:62-12:4 (emphasis added).

265. Oinonen further discloses that a “remote-controlled heating system” is known in the art which “the heating of an apartment can be set by telephone for example so that the heating can be switched from a lower output to a higher output.” Ex. 1016, 3:66-4:3.

266. Likewise, Whitley discloses that the user can control a thermostat that is connect to the gateway. Ex. 1023, 16:21. Whitley provides an example in which the user can send control commands to the thermostat:

The customer can then, based on the energy usage trends, input commands to adjust the thermostat, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy. Likewise, the user can input other commands for delivery to the gateway 20.

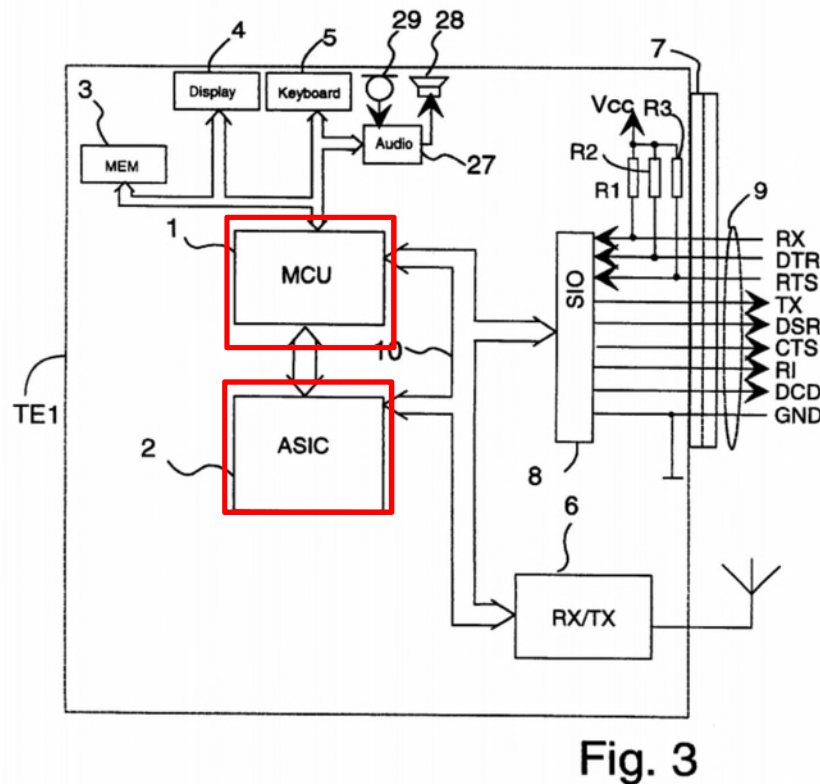
Ex. 1023, 17:2-7.

- xi. Claim 3: The system as recited in claim 1 wherein said base unit is a microcontroller-based processing unit having customizable application specific software.***

267. Oinonen and Whitley disclose the limitations of Claim 3. Based on the disclosure in the 935 Patent that the microcontroller “is electrically interconnected with random access memory 44, read only memory 46, the keypad 32, and the LCD display 38,” a POSITA would understand the disclosures of a “microcontroller” to include a generic processor in an embedded system. Ex. 1001, 4:10-13. This is confirmed by the fact that the microcontroller described in the 935 Patent communicates with, and controls components in the base unit and attached devices via traditional communication buses (serial or parallel) and the microcontroller executes Java software. Ex. 1001, 4:29-34, 4:36-37, 4:46-52, 7:46-49.

268. Oinonen discloses that the first telecommunication terminal TE1 (the base unit) comprises a processor, such as a microprocessor as well as an application-specific integrated circuit (ASIC) in which “it is possible to implement a majority of the logic functions of the data processor.” Ex. 1016, 7:12-26. Oinonen further discloses that the first telecommunication terminal TE1 can comprise application software with message interpreter, which “examines the received messages and, on the basis of this, controls certain operations.” Ex. 1016,

8:33-37. Both the microprocessor and application-specific integrated circuit (ASIC), operate as the claimed “microcontroller.” These microcontrollers are illustrated in annotated Fig. 3 of Oinonen:



Ex. 1016, Fig. 3.

269. Oinonen also discloses that the application software within the first telecommunication terminal TE1 is customized for a particular connection. Specifically, Oinonen discloses that the software within TE1 “is provided with the necessary programs for examining the logical states of the input lines of this connection interface 7 and for setting the logical states of the different output lines to the value (0/1) required at the time, respectively.” Ex. 1016, 9:44-49.

270. Whitley likewise discloses that its base unit (the gateway) comprises “a processor, such as an Intel 386 or 486 processor” and includes customizable application specific software. Ex. 1023, 9:3-9. For example, Whitley discloses that its gateway can be programmed to “format and manage data packets sent and received via the short messaging service provided by a GSM network, as described further below. Gateway 20 sends and receives SMS messages via and as part of the architecture of a GSM network.” Ex. 1023, 9:11-13. Moreover, Whitley can be reprogrammed to monitor specific energy usage or to generate specific alarms. For example, Whitley discloses: “Gateway 20 could be programmed to provide periodic (e.g., hourly) reports on energy usage.” Ex. 1023, 12:26-27.

xii. Claim 7: The system as recited in claim 1 wherein said wireless connectivity includes a transmitting and receiving module in said base unit and a transmitting and receiving unit in said remote unit operatively communicating with each other over a cellular telephone network.

271. Oinonen and Whitley disclose the limitations of Claim 7.

272. As stated with respect to Claim 1, Oinonen discloses that the first telecommunication terminal TE1 (the base unit) and second telecommunication terminal TE2 (the remote unit) both include a wireless module that provides wireless connectivity between the base unit and remote unit. Specifically, Oinonen discloses that the first telecommunication terminal TE1 includes a transmitting and receiving module in the form of a “radio element.” Ex. 1016, 7:12-21. The radio

element is shown in Figure 3 and is labeled as RX/TX. Ex. 1016, Fig. 3. Oinonen discloses that the RX line is a data reception line and that the TX line is a data transmission line. Ex. 1016, 6:12-17. Oinonen confirms that the “second telecommunication terminal TE2 used may be a mobile station of the type presented [sic] above.” Ex. 1016, 7:52-54.

273. Oinonen confirms that its base unit has a transmitting and receiving module in that Oinonen confirms that the user communicates with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “transmit[ing] as short messages *from* the second telecommunication terminal *to* the first telecommunication terminal.” Ex. 1016, 4:58-60 (emphasis added). Oinonen discloses that its SMS short messages are transmitted between telecommunication terminals via typical wireless protocols, which include GSM and GPRS. *See e.g.* Ex. 1016, 1:51-2:28, 2:29-31; 2:42-44; 13:15-20. Oinonen also discloses that “upon a change in the state [of the peripheral device (environmental unit)], a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.” Ex. 1016, 4:67-5:6.

274. A POSITA would have understood that Oinonen discloses said wireless connectivity includes a transmitting and receiving module in said base

unit and a transmitting and receiving unit in said remote unit operatively communicating with each other over a cellular telephone network given that Oinonen discloses examples of its telecommunication terminals communicating with one another. For example, Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4.

275. Oinonen further discloses that the disclosed SMS short message system in which the first and second telecommunication terminals communicate with one another is implemented in the GSM mobile communication system, the unstructured supplementary service data (USSD), or the general packet radio service (GPRS). Ex. 1016, 13:15-20. A POSITA would have understood such protocols make up a cellular telephone network.

276. Likewise, as stated with respect to Claim 1, Whitley discloses a gateway (the base unit) with a wireless module that communicates via cellular networks:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, *the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS").* SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection. Receiving terminals, whether mobile stations, such as handsets or pagers, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page.

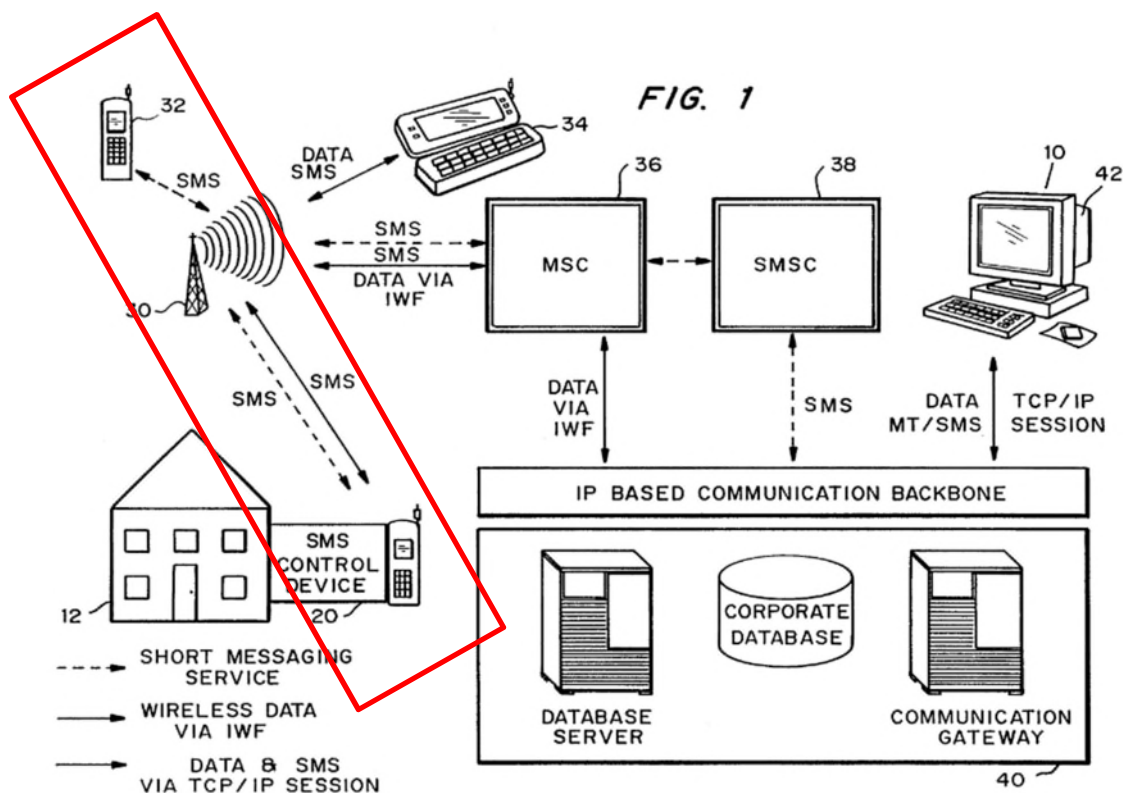
Ex. 1023, 3:13-25 (emphasis added).

277. Whitley confirms the inclusion of a transceiver in the gateway disclosing that “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8.

278. Whitley discloses that the mobile unit and gateway communicate with one another through cellular networks. Ex. 1023, 2:26-3:2 (“the present invention provides a system and methods for providing customers a virtual direct connection for routing messages to a gateway from a mobile station or fixed terminal, or vice

versa.”). Whitley discloses that “SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection.” Ex. 1023, 3:20-22. Whitley further discloses that the system, “allows SMS messages with a payload of about 160 bytes or characters to be sent at 9600 Baud from a gateway 20 to a terminal via a GSM network and supporting sub-components.” Ex. 1023, 12:7-9.

279. The wireless connectivity between remote unit (32) and base unit (20) is illustrated in at least Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

xiii. Claim 11: [11Pre] A wireless system comprising:

280. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitation 1Pre.

xiv. Claim 11: [11A] an environmental device configured to send environmental information, and adapted to receive a command to control an operation of the environmental device;

281. See Limitation 1A. Unlike Limitation 1A, Limitation 11A also recites that the environmental device is “configured to send environmental information, and adapted to receive a command to control an operation of the environmental device.” Oinonen and Whitley also disclose the additional requirements of Limitation 11A.

282. Oinonen discloses that the state of a connected device coupled is monitored to determine if there are any changes in the state of lines that are connected via a connection interface. Ex. 1016, 4:67-5:6. Oinonen discloses that “upon a change in the state [of the peripheral device (the environmental unit)], a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.” Ex. 1016, 4:67-5:6. For example, Oinonen discloses that peripheral devices can be measured to determine whether they are in a first position (which would indicate, for example, that a valve is

closed) or in a second position (which would indicate, for example, that a valve is open). Ex. 1016, 4:26-33. Oinonen discloses that the measurement can be by way of a current message or a voltage measurement. Ex. 1016, 4:33-36. Thus, Oinonen discloses the environmental device sending environmental information.

283. Oinonen also discloses that the environmental device is configured to receive a command that controls an operation thereof. Oinonen discloses:

the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, *whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.*

Ex. 1016, 5:6-13 (emphasis added).

284. Oinonen further discloses a particular example where the base unit controls the operation of the environmental unit on the basis of the received SMS messages. Oinonen discloses that:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca.

5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4.

285. Likewise, Whitley discloses that “[d]ata received from various devices within and associated with facility 12 is packaged by gateway 20 for forwarding via a wireless digital communications network, which may be either a cellular network or a Personal Communication System (‘PCS’) network.” Ex. 1023, 8:1-4. In a particular example, Whitley discloses that the gateway will poll connected devices (the environmental devices) to determine the level of energy usage (e.g., environmental information). Ex. 1023, 13:13-14. In other examples, Whitley discloses the gateway periodically uploading messages with energy usage information or alarms based on information from devices such as an electronic thermostat, light, or security system. Ex. 1023, 12:21-27. Thus, Whitley discloses the environmental device sending environmental information.

286. Whitley further discloses that the gateway “[is] coupled to various devices within the facility to control the devices.” Ex. 1023, 3:7-8. For example, Whitley discloses that “gateways may control the lights within a facility according to a pre-programmed pattern that the user may change by communicating new commands via the present invention.” Ex. 1023, 3:8-10. Whitley discloses control of other devices such as a “thermostat, refrigerator, water heater, and

washer/dryer” (Ex. 1023, 16:21-22), “lights,” (Ex. 1023, 3:8), and “alarm system.” Ex. 1023, 16:5-7. Whitley discloses that the gateway can be remotely configured to issue control commands: “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14. Thus, Whitley discloses the environmental device receiving a command to control the device’s operation.

xv. Claim 11: [11B] a remote unit having wireless connectivity and being configured to:

287. Oinonen and Whitley disclose Limitation 11B for at least the reasons outlined above with respect to Limitation 1C.

xvi. Claim 11: [11C] receive a first short message service (SMS) message, wherein the first SMS message includes the environmental information;

288. Oinonen and Whitley disclose Limitation 11C. *See also* 1E.

289. Oinonen discloses that the state of a connected device is monitored to determine if there are any changes in the state of lines that are connected via a connection interface. Ex. 1016, 4:67-5:6. Oinonen also discloses that “upon a change in the state [of the peripheral device (environmental unit)], a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.” Ex. 1016, 4:67-5:6.

290. Moreover, and in the example related to a door, Oinonen discloses the transmission of an SMS message from the first telecommunication terminal (TE1) to the second telecommunication terminal (TE2) that contains current environmental information with respect to the door. *See* Ex. 1016, 11:46-12:12. For example, Oinonen discloses that its message includes the states of all input lines at the moment of examination and is transmitted “advantageously as a short message.” Ex. 1016, 10:38-42. Oinonen discloses that its SMS short message includes the states of the input lines (*e.g.*, “RX=0, DTR=1, RTS=0”) or standard text (*e.g.*, “door is open”). Ex. 1016, 10:43-54. In another example directed to an alarm system, Oinonen discloses that a message is configured to be sent to the second telecommunication terminal TE2 with “information about the alarm.” Ex. 1016, 11:8-11.

291. Likewise, Whitley discloses a mobile station that allows users to “receive monitoring information about activities at their facilities” and allows users to “control the gateway and devices coupled to the gateway.” Ex. 1023, 6:22-25. Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal.” Ex. 1023, 2:26. Whitley further discloses how the mobile station receives SMS messages, disclosing that “[a] system 10 using a GSM network allows SMS messages with a payload of about 160 bytes or characters to be sent at 9600 Baud from a gateway 20 to a terminal via a GSM

network.” Ex. 1023, 12:7-9. This system disclosed by Whitley allows users to “receive monitoring information about activities at their facility via a mobile station.” Ex. 1023, 6:22-23. In one example, Whitley discloses that the gateway will periodic upload SMS messages with energy usage information or alarms (*e.g.*, environmental information) regarding devices such as an electronic thermostat, light, or security system. Ex. 1023, 12:21-27.

292. Whitley also discloses that the system includes “[f]ormatting messages for wireless delivery to and from. . . [a] gateway[]”. In an SMS implementation, this may be accomplished at the gateway, which formulates messages to other terminals into a short message format.” Ex. 1023, 5:18-20. Whitley discloses that thereafter, the SMS message is transmitted “from the gateway to a network element.” Ex. 1023, 5:28.

xvii. Claim 11: [11D] notify a user of said remote unit of receipt of the first SMS message; and

293. Oinonen and Whitley disclose Limitation 11D.

294. Oinonen discloses that “upon a change in the state [of the peripheral device (environmental unit)], a short message is arranged to be transmitted and received by a second mobile station, *possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.*” Ex. 1016, 4:67-5:6 (emphasis added). A POSITA would have understood that a

message that is displayed on the display of the user's mobile station that is capable of "informing the user" would act to notify a user of receipt of the short message.

295. Likewise, Whitley discloses that the gateway can be programmed "to send a message [] to the handset 32 in order *to alert the owner* of the facility 12" when certain environmental conditions exist. Ex. 1023, 17:12-13. A POSITA would have understood that "alert[ing] the owner" as disclosed by Whitley, informs the user about the receipt of a message.

xviii. Claim 11: [11E] send a second SMS message, wherein the second SMS message includes the command; and

296. Oinonen and Whitley disclose Limitation 11E for at least the reasons outlined above with respect to Limitation 1F.

xix. Claim 11: [11F] a wireless base unit configured to:

297. Oinonen and Whitley disclose Limitation 11F for at least the reasons outlined above with respect to Limitation 1B. *See also* 1Pre.

xx. Claim 11: [11G] receive the environmental information from the environmental device;

298. Oinonen and Whitley disclose Limitation 11G.

299. Oinonen discloses that the first telecommunication terminal TE1 and the peripheral environmental device are connected though an interface such as a "V.24 connection interface." Ex. 1016, 6:60-64. As is described with respect to Limitation 11A, the Oinonen peripheral devices are the claimed environmental device. Oinonen discloses sending and receiving standardized current/voltage

messages⁷ via the interface to measure a current state of the environmental device.

Ex. 1016, 4:14-40.

300. In particular, Oinonen discloses that the peripheral device “is monitored on the basis of changes in the state of lines in the connection interface.”

Ex. 1016, 4:67-5:6; 4:14-33. For example, Oinonen discloses that peripheral devices can be measured to determine whether they are in a first position (which would indicate, for example, that a valve is closed) or in a second position (which would indicate, for example, that a valve is open). Ex. 1016, 4:26-33. Oinonen discloses that the measurement can be by way of a current message or a voltage measurement. Ex. 1016, 4:33-36.

301. Likewise, Whitley also discloses receiving environmental information from the environmental device. In particular, Whitley discloses that the gateway will “monitor [] various devices” and “act[] as a data collection [] device.” Ex.

⁷ A POSITA would have understood that standardized current or voltage messages would be within the scope of the 935 Patent. Indeed, the 935 Patent discloses that “[b]y far the most popular and ubiquitous power line carrier system is the X10.” Ex. 1001, 2:27-28. X10 is an industry standard protocol for control of devices in a building/home using the electrical wiring in the building as the conduit for radio frequency communication among electronic devices.

1023, 7:27-29. Whitley discloses that “[d]ata received from various devices within and associated with facility 12 is packaged by gateway 20 for forwarding via a wireless digital communications network, which may be either a cellular network or a Personal Communication System (‘PCS’) network.” Ex. 1023, 8:1-4. In a particular example, Whitley discloses that the gateway will poll connected devices to determine the level of energy usage. Ex. 1023, 13:13-14. In other examples, Whitley discloses the gateway periodically uploading messages with energy usage information or alarms based on information from devices such as an electronic thermostat, light, or security system. Ex. 1023, 12:21-27.

xxi. Claim 11: [11H] transmit the first SMS message to the remote unit;

302. Oinonen and Whitley disclose Limitation 11H for at least the reasons outlined above with respect to Limitation 1E.

xxii. Claim 11: [11I] receive the second SMS message from the remote unit; and

303. Oinonen and Whitley disclose Limitation 11I for at least the reasons discussed in Limitations 1G and 1F.

304. In addition, Oinonen discloses that users are able to send control commands from the second telecommunication terminal (TE2) (the remote unit) via SMS messages to the first telecommunication unit (TE1) (the wireless base unit) to control the environmental unit:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.*

Ex. 1016, 4:52-61 (emphasis added); *see also id.* at 5:6-13.

305. Oinonen further discloses:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message.

Ex. 1016, 5:6-13.

306. In various examples, Oinonen discloses that the second telecommunication terminal TE2 sends SMS control messages to the first telecommunication terminal TE1. *See e.g.*, Ex. 1016, 11:21-28. Oinonen discloses that the first telecommunication unit TE1 is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the

received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:34-37.

307. In one example, Oinonen discloses that a door lock is controlled by a short message. Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In *the first telecommunication terminal TE1, the received short message is interpreted* and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4 (emphasis added).

308. In my opinion Limitation 11I does not require the second SMS message be sent in response to the first message. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, in my opinion a POSITA would have understood that the request and response messages are disclosed by Oinonen and Whitley. Indeed, Oinonen discloses:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, a short message is arranged to be transmitted and received by a second mobile

station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station. In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 4:67-5:15.

309. Likewise, Whitley discloses that its system “allows the gateway [base unit] to send data and receive commands directly from the customer” through a cellular remote unit. Ex. 1023, 2:23-25. Whitley further discloses that “[t]he customer can send and receive such data via a mobile station.” Ex. 1023, 2:26-27.

Moreover, Whitley discloses:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and *initiate responses via the GSM network* to control devices attached to gateway 20.

Ex. 1023, 10:14-17.

310. Whitley further discloses:

The customer can then, *based on the energy usage trends, input commands to adjust the thermostat*, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order

to save energy. Likewise, the user can input other commands for delivery to the gateway 20. For instance, the *user could instruct the gateway* 20 to enable or disable an alarm system at a particular facility 12 at a particular time and for a particular time period.

Ex. 1023, 17:2-7 (emphasis added).

xxiii. Claim 11: [11J] send the command to the environmental device.

311. Oinonen and Whitley disclose Limitation 11J for at least the reasons discussed in Limitation 1G.

312. In addition, Oinonen discloses that users send control commands from the second telecommunication terminal (TE2) to the first telecommunication terminal (TE1), which will then control the environmental device on the basis of this message:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby *the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.*

Ex. 1016, 5:6-15 (emphasis added).

313. Oinonen discloses that the first telecommunication terminal (TE1) comprises “application software” that provides the base unit with “a message

interpreter which examines the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:33-37.

314. In one example, Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.”

Ex. 1016, 11:62-12:4.

315. Oinonen continues in this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

Ex. 1016, 12:4-12.

316. Likewise, Whitley discloses that its system allows users to “remotely monitor and control devices located in the customer's facility that communicate with a gateway.” Ex. 1023, 6:19-21. Whitley also discloses that the gateway is configured to send the control instruction to the environmental device. Ex. 1023, 7:29. In particular, Whitley discloses that the gateway includes “any device that (a) provides a physical interface between internal devices associated with a particular facility 12 and external networks and, optionally, (b) may *provide a platform for delivering various services to the facility.*” Ex. 1023, 8:27-9:1 (emphasis added). Whitley also discloses that “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14.

xxiv. Claim 12: The system of claim 11 wherein the wireless connectivity connection further comprises a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing between the first wireless connection and the second wireless connection.

317. Claim 12 depends from Claim 11 and recites: “wherein the wireless connectivity connection further comprises,” however the term “wireless connectivity connection” is not found in Claim 11. Instead, Claim 11 recites: “a remote unit having *wireless connectivity* and being configured.” Ex. 1001, Claim 11 (emphasis added). In addition, the phrase “wireless connectivity connection”

only appears in Claim 12 and appears nowhere in the specification. The phrase is not a term of art and because it is not defined or explained, a POSITA could only make sense of the phrase by dropping the word “connectivity” and simply understanding “wireless connectivity connection” as a wireless connection. Similarly, a “wireless connection interfacing with [a device]” is also not a term of art and this phrase as well only appears in Claim 12 and is not described in the specification. To the extent the phrase is understandable, a POSITA would understand that the phrase simply meant “a wireless connection to, or terminating at, [the device].” The “non-wireless connection interfacing between the first wireless connection and the second wireless connection” phrase would also not be decipherable to a POSITA for similar reasons. In particular, the notion of a “connection” “interfacing” between other connections would be foreign to a POSITA.

318. Given the uncertainty as to the precise meaning of Claim 12, to the extent Claim 12 is interpreted as describing wireless or cellular network connections to/from the base unit and the remote unit, and a non-wireless connection between the base unit and the environmental device, such a scenario is disclosed by Oinonen and Whitley. *See also* 1B.

319. Oinonen discloses wireless connections between various stations (*e.g.*, the base unit and the remote unit) as well as various wired connections between various components in the mobile communication system:

FIG. 2 shows the structure of the mobile communication system and the connections for transmitting short messages. Mobile stations MS have radio communication with base transceiver stations BTS. The base transceiver stations BTS communicate further, via a so-called Abis interface, with a base stations controller BSC which controls several base transceiver stations. A unit consisting of several base transceiver stations BTS (typically some dozens of base transceiver stations) and one base station controller BSC controlling them is called a base station subsystem BSS. In particular, the base station controller BSC controls the channels of radio communication and hand-overs between channels. On the other hand, the base station controller BSC communicates, via a so-called A interface, a mobile services switching centre (MSC) which coordinates the setting up of connections from and to mobile stations. Via the mobile services switching centre MSC, a connection is further made outside the mobile communication network. Said short message service centre SM-SC is coupled with the mobile services switching centre MSC.

Ex. 1016, 1:51-2:3.

320. Moreover, Oinonen discloses a first telecommunication terminal (TE1) that operates as the claimed base unit. The first telecommunication terminal (TE1) is a “telecommunication terminal to which the peripheral device to be

controlled or monitored is connected.” Ex. 1016, 6:60-64. Oinonen further discloses that the connection interface that enables communication between the first telecommunication terminal TE1 and the peripheral device to be controlled is a “V.24 connection interface.” Ex. 1016, 6:60-64.

321. Oinonen also discloses that the peripheral device “is monitored on the basis of changes in the state of lines in the connection interface.” Ex. 1016, 4:67-5:2; 4:14-33. For example, Oinonen discloses that peripheral devices can be measured to determine whether they are in a first position (which would indicate, for example, that a valve is closed) or in a second position (which would indicate, for example, that a valve is open). Ex. 1016, 4:26-33. Oinonen discloses that the measurement can be by way of a current message or a voltage measurement. Ex. 1016, 4:33-36.

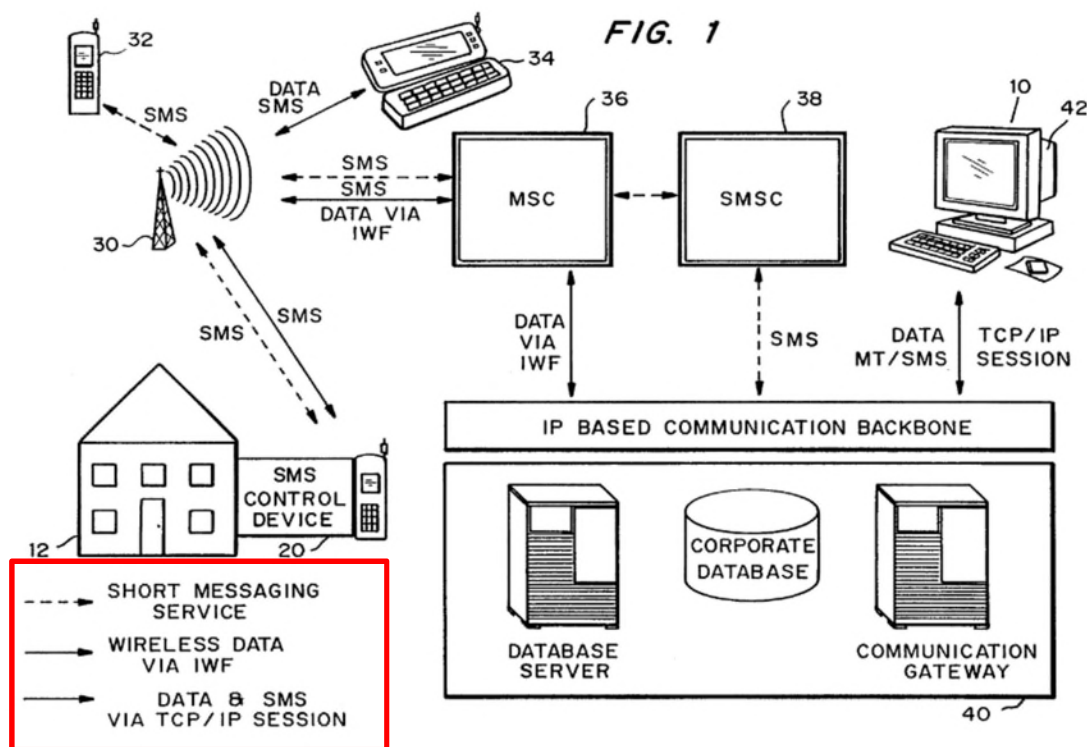
322. Likewise, Whitley discloses:

Such a network may have a number of cellular sites, each served by a tower 30 holding a base station and appropriate equipment for receiving and transmitting wireless voice and data messages. Those messages are routed to the appropriate terminal, such as a pager 31, cellular handset 32, cellular internet communicator 34, or workstation 35, by the mobile switching center (“MSC”) 36 that may be a switch provided by Nortel, Lucent, Erricson or other switch makers. If the messages are Short Messaging Service (“SMS”) messages, MSC 36 receives each SMS message, determines it is an SMS and switches the SMS message to a

SMSC ("Short Message Service Center") 38, which may be a platform, such as one provided by Logica-Aldiscon, Inc., of Lexington Massachusetts, either co- located with the MSC 36 or coupled to it via a communication link. SMSC 38 listens on a socket for SMS messages in order to route received SMS messages to the appropriate destination. Additionally, SMSC 38 receives outgoing SMS messages and reformats those messages for transmission through the MSC 36. Typically, for instance, SMSC 38 may link to MSC 36 via a SS7 data communication link (as shown in Figure 3); SMSC 38 can then route SMS messages to subscribers roaming in other wireless networks via Signal Transfer Points within the SS7 network.

Ex. 1023, 8:11-26.

323. Whitley discloses a variety of wired and wireless connections in annotated Figure 1:



Ex. 1023, Fig. 1.

xxv. Claim 13: *The system of claim 11 wherein the environmental device includes electronic and electromechanical switching portions for controlling the environmental information.*

324. Oinonen and Whitley disclose the limitations of Claim 13 for at least the reasons outlined above with respect to Claims 2 and 11.

xxvi. Claim 14: *The system of claim 11 wherein the base unit further comprises a microcontroller-based processing unit having customizable application specific software.*

325. Oinonen and Whitley disclose the limitations of Claim 14 for at least the reasons outlined above with respect to Claims 3 and 11. *See also* 1G.

xxvii. Claim 15: The system of claim 11 wherein the remote unit further comprises a cellular telephone handset.

326. Oinonen and Whitley disclose the limitations of Claim 15.

Specifically, Oinonen discloses a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station.” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that one of the benefits of the invention is that transmitting SMS short messages “will not keep the mobile station busy upon a possible incoming call.” Ex. 1016, 1:29-35. Oinonen discloses that the wireless system can be based on the GSM mobile communication system. Ex. 1016, 2:38-41. Thus, because the Oinonen second telecommunication terminal TE2 operates on the GSM mobile communication system, and can receive incoming calls, a POSITA would have understood that the disclosure to encompass a cellular telephone handset.

327. Likewise, Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal. Ex. 1023, 2:26. Whitley discloses that the remote unit can be a “cellular handset.” Ex. 1023, 8:14. Whitley discloses other mobile remote units:

The phrase “mobile station” means a device for sending and receiving data over a wireless network and includes, for instance, a pager 31, a

handset 32 or an internet communicator 34 that may be a Nokia 9000 GSM communicator capable of accessing the internet via a GSM wireless network.

Ex. 1023, 8:6-10.

328. Whitley further discloses:

Preferably, the wireless network will be a GSM (“Global System for Mobile”) communications network capable of providing Short Messaging Services (“SMS”). *SMS messages allow users of the network and the gateways to send and receive packets of data* (about 160 characters) without setting up an actual call connection. *Receiving terminals, whether mobile stations, such as handsets or pagers*, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page.

Ex. 1023, 3:19-25 (emphasis added). A POSITA would have understood these disclosures to include a disclosure of a cellular telephone handset. This understanding is confirmed by the fact that Whitley discloses its mobile station (the claimed remote unit) can be “a handset 32 or an internet communicator 34 that may be a Nokia 9000 GSM communicator.” *Id.* at 8:7-10.

xxviii. Claim 17: The system of claim 11 further comprising a cellular telephone network.

329. Oinonen and Whitley disclose the limitations of Claim 17.

330. The analysis of Claim 15 has demonstrated that both Oinonen and Whitley each disclose a cellular telephone handset. Oinonen discloses a mobile

device that is configured as a cellular phone that can make and receive phone calls. As stated previously, Oinonen discloses a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen further discloses that the disclosed SMS short messages system is implemented on a cellular telephone network, such the GSM mobile communication system, the unstructured supplementary service data (USSD), or the general packet radio service (GPRS). Ex. 1016, 13:15-20. Thus, Oinonen discloses a cellular telephone network.

331. Likewise, Whitley discloses that a preferable wireless network is “a GSM (‘Global System for Mobile’) communications network capable of providing Short Messaging Services (‘SMS’).” Ex. 1023, 3:19-20; *see also* 17:17-25, 13:25-27. In particular, Whitley discloses:

In alternative embodiment of the invention takes advantage of the architecture and protocols of the GPRS or General Packet Radio System to deliver data from and commands to gateways. The GPRS protocol provides an architecture and various interface layers (both hardware and software) for implementing a packet data system across existing wireless networks, regardless of the type of wireless protocol (e.g., TDMA, CDMA, GSM) used by those networks. Certain GPRS protocols for implementing this architecture are described in the

following documents, each of which is incorporated in its entirety by this reference: (1) GPRS MS-SGSN LLC, GSM 04.64 (ETSI No. TS 101 351); (2) GPRS MS-SGSN SNDCP, GSM 04.65 (ETSI No. TS 101 297); (3) IW PLMN GPRS-PDN GSM 09.60 (ETSI No. EN 301 347); (4) GPRS PDN. GSM 09.61 (ETSI No. TS 101 348); and (5) Digital Cellular Telecommunications System (Phase 2+): GPRS Project scheduling and open issues, GSM 10.60. The present invention implements a GPRS over a wireless network, such as a GSM network. Ex. 1023, 4:17-5:2. Given the disclosures of GSM and GPRS networks, a POSITA would understand Whitley to disclose a cellular telephone network.

xxix. Claim 18: [18 Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

332. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitations 1A, 1B and 1D.

xxx. Claim 18: [18A] a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device;

333. Oinonen and Whitley disclose Limitation 18A. *See* 11G, 11J.

334. Oinonen discloses a first telecommunication terminal (TE1) that operates as the claimed base unit which includes a communication interfaces that allows for receiving and sending information to environmental devices. Oinonen discloses that the connection interface between the first telecommunication

terminal TE1 and the peripheral device to be controlled is a “V.24 connection interface.” Ex. 1016, 6:60-64. As is described with respect to Limitations 1 B and D, the Oinonen peripheral devices are the claimed environmental device.

335. Oinonen discloses a first communication interface configured to receive environmental information from the environmental device. Oinonen discloses sending and receiving standardized current/voltage messages⁸ via the interface to measure a current state (*e.g.*, environmental information) of the environmental device. Ex. 1016, 4:14-40. In particular, Oinonen discloses that the peripheral device “is monitored on the basis of changes in the state of lines in the connection interface.” Ex. 1016, 4:67-5:2. For example, Oinonen discloses that peripheral devices can be measured to determine whether they are in a first position (which would indicate, for example, that a valve is closed) or in a second position (which would indicate, for example, that a valve is open). Ex. 1016, 4:26-

⁸ A POSITA would have understood that standardized current or voltage messages would be within the scope of the 935 Patent. Indeed, the 935 Patent discloses that “[b]y far the most popular and ubiquitous power line carrier system is the X10.” Ex. 1001, 2:27-28. X10 is an industry standard protocol for control of devices in a building/home using the electrical wiring in the building as the conduit for radio frequency communication among electronic devices.

33. Finally, Oinonen discloses that the measurement can be by way of a current message or a voltage measurement. Ex. 1016, 4:33-36.

336. Oinonen discloses that its system is configured to control an operation of the environmental device as it discloses processing incoming messages and, in response, sending standardized current/voltage messages to control operation of the environmental device. Ex. 1016, 4:14-40. By way of example, Oinonen discloses that the environmental device (door lock) is controlled by the base unit whereby, “the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.” Ex. 1016, 11:62-12:4.

337. Oinonen also discloses that its first telecommunication terminal is in communication with and controls operation of its illuminator and real estate security system. For example, in the illuminator, the intensity of the light within the location of the illuminator can be measured by the user through the second telecommunication terminal by way of short message service (SMS) messages. Ex. 1016, 11:12-24. For example, the user can send the message “check if the room is too dark” from the second telecommunication terminal TE2 to the first telecommunication terminal TE1. Ex. 1016, 11:21-25. The first telecommunication

terminal will receive this message, interpret the message, and apply the corresponding voltage to the illuminous intensity sensor. Ex. 1016, 11:24-28.

338. Likewise, Whitley discloses that the interface between the gateway and connected devices (the environmental devices) allows the gateway to receive information from, and control, the connected devices. Ex. 1023, 8:27-9:1.

339. Whitley further discloses that “[d]ata received from various devices within and associated with facility 12 is packaged by gateway 20 for forwarding via a wireless digital communications network, which may be either a cellular network or a Personal Communication System (‘PCS’) network.” Ex. 1023, 8:1-4. In a particular example, Whitley discloses that the gateway will poll connected devices to determine the level of energy usage (e.g., environmental information). Ex. 1023, 13:13-14. In other examples, Whitley discloses the gateway periodically uploading messages with energy usage information or alarms based on information from devices such as an electronic thermostat, light, or security system. Ex. 1023, 12:21-27.

340. Whitley also discloses that the gateway “[is] coupled to various devices within the facility to control the devices.” Ex. 1023, 3:7-8. For example, Whitley discloses that “gateways may control the lights within a facility according to a pre-programmed pattern that the user may change by communicating new commands via the present invention.” Ex. 1023, 3:8-10. Whitley discloses that the

gateway can be remotely configured to issue control commands: “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14.

xxxi. Claim 18: [18B] a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit,

341. Oinonen and Whitley disclose Limitation 18B for at least the reasons outlined above with respect to Limitations 1D, 1E, 1F.

xxxii. Claim 18: [18C] wherein the first message is a first short message service (SMS) message including the environmental information, and

342. Oinonen and Whitley disclose Limitation 18 C for at least the reasons outlined above with respect to Limitation 1E.

xxxiii. Claim 18: [18D] wherein the second message is a second short message service (SMS) message including the command to the environmental device; and

343. Oinonen and Whitley disclose Limitation 18D for at least the reasons outlined above with respect to Limitation 1F.

xxxiv. Claim 18: [18E] a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

344. Oinonen and Whitley disclose Limitation 18E for at least the reasons outlined above with respect to Limitation 1G. *See also* Claim 3.

345. Based on the disclosure in the 935 Patent that the microcontroller “is electrically interconnected with random access memory 44, read only memory 46, the keypad 32, and the LCD display 38,” as explained in more detail in the analysis of Claim 3 (which I incorporate here), a POSITA would understand the disclosures of a “microcontroller” to include a disclosure of a generic processor in an embedded system. Ex. 1001, 4:10-13.

346. Moreover, Oinonen discloses that the first telecommunication terminal (TE1) includes a processor:

[T]he first telecommunication terminal TE1 is a mobile station comprising e.g. *a processor 1, such as a microprocessor*, an application-specific integrated circuit 2 (ASIC), whereby it is possible to implement a majority of the logic functions of the data processor 1 and simultaneously to reduce the number of separate integrated circuits. Ex. 1016, 7:11-19 (emphasis added). Both the microprocessor and application-specific integrated circuit (ASIC), operate as the claimed “microcontroller.”

347. Oinonen also illustrates the microprocessor (1) and ASIC (2) within the first telecommunication terminal (TE1) in annotated Figure 3:

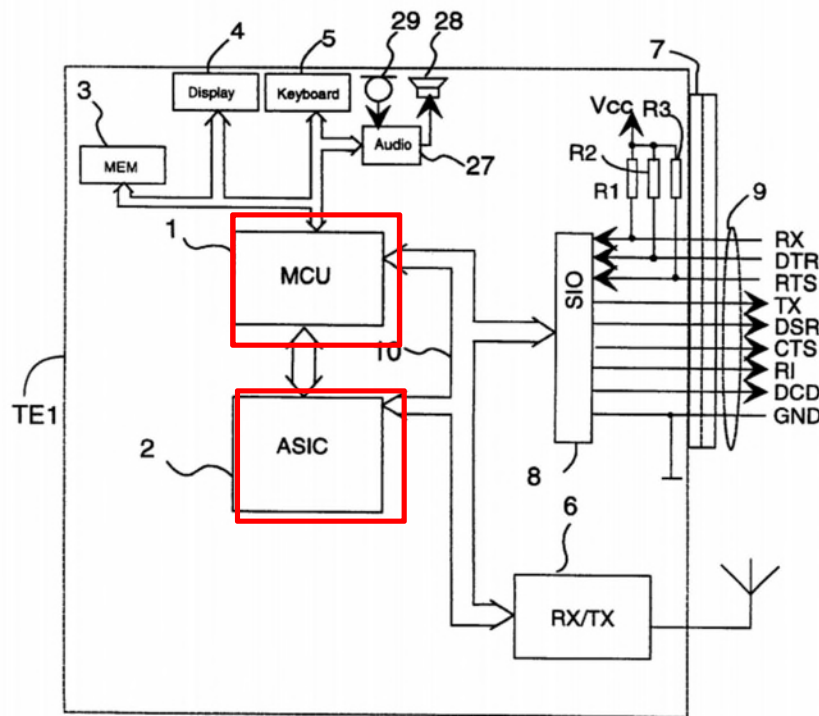


Fig. 3

Ex. 1016, Fig. 3.

348. As demonstrated in the analysis of Limitation 1F, Oinonen discloses the remote unit sending a second SMS message to the base unit including a command for the environmental device. Oinonen discloses that the first telecommunication terminal TE1 (the base unit) is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the received messages and, on the basis of this, control[] certain operations.” Ex. 1016, 8:34-37. In particular, Oinonen discloses processing based on the fact that the first telecommunications terminal receives and processes messages before sending the control instruction to the environmental device via the communication interface:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.*

Ex. 1016, 4:52-61 (emphasis added).

349. Oinonen further discloses:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message.

Ex. 1016, 5:6-13.

350. Oinonen discloses that the first telecommunication terminal TE1 processes the message to provide a control instruction to the peripheral device (the environmental device). Oinonen discloses “application software” that provides the base unit with “a message interpreter which examines the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:33-37; *see also id.* at 5:6-13.

351. In one particular example, Oinonen discloses that the base unit controls the operation of a lock based on information received from the user.

Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In *the first telecommunication terminal TE1, the received short message is interpreted* and the *locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state*. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.”

Ex. 1016, 11:62-12:4 (emphasis added).

352. Oinonen continues in this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door,” from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply Voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

Ex. 1016, 12:4-12.

353. Likewise, Whitley discloses that the gateway can be embodied as a “personal computer or other device provided with a processor, such as an Intel 386 or 486 processor.” Ex. 1023, 9:4-5.

354. Whitley discloses that the gateway will process incoming SMS control messages (the second message): “[w]hen an SMS message is received at the gateway 20, the gateway 20 reads the SMS message from the SIM card and processes the contents of the SMS message as though it was entered directly from a command console.” Ex. 1023, 9:23-25.

355. Whitley also discloses that the gateway is configured to send the control instruction to the environmental device via the first communication interface. Ex. 1023, 7:29. In particular, Whitley discloses that the gateway includes “any device that (a) provides a physical interface between internal devices associated with a particular facility 12 and external networks and, optionally, (b) may *provide a platform for delivering various services to the facility.*” Ex. 1023, 8:27-9:1 (emphasis added). Whitley also discloses that “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14.

xxxv. Claim 19: [19Pre] A communication system having wireless connectivity, the communication system comprising:

356. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitation 1Pre. *See also* 1B-1C.

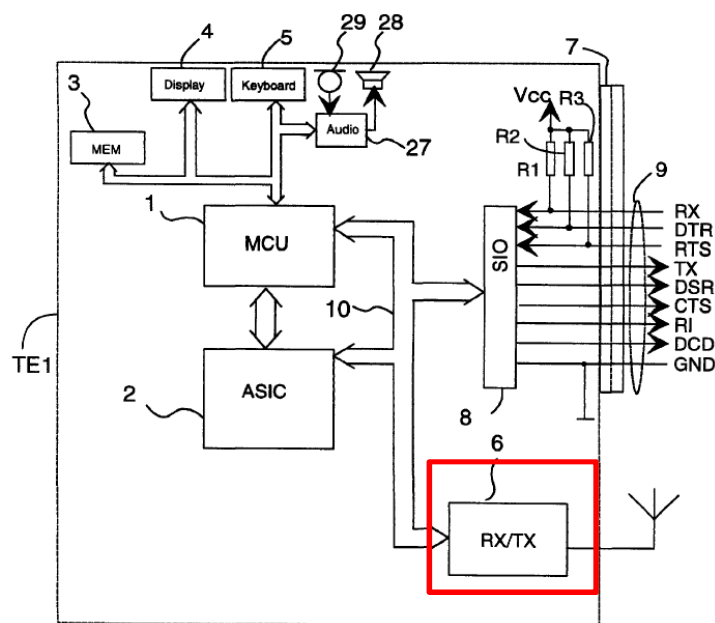
xxxvi. Claim 19: [19A] a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;

357. Oinonen and Whitley disclose Limitation 19A for at least the reasons outlined above with respect to Limitations 11F and 11G. *See also* 1E.

xxxvii. Claim 19: [19 B] a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity, wherein the first message is a wireless message including the current status of the environmental device;

358. Oinonen and Whitley disclose Limitation 19B for at least the reasons discussed in Limitations 1C-1E. A POSITA would understand that an SMS message is an example of a wireless message.

359. In addition, Oinonen discloses that the base unit includes a radio device that includes a transmitter that provides wireless connectivity between the base unit and remote unit. Oinonen discloses that the first telecommunication terminal TE1 includes a transmitter in the form of a “radio element.” Ex. 1016, 7:12-21. The radio element is shown in annotated Fig. 3 (a diagram of the first telecommunication terminal) and is labeled as RX/TX:



Ex. 1016, Fig 3. In particular, Oinonen discloses that the TX line is a *data transmission line*. Ex. 1016, 6:12-17.

360. Oinonen confirms that its base unit has a transmitter in that Oinonen confirms that the user communicates with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmit[ing] short messages or the like to another telecommunication terminal preferably via a mobile communication network.” Ex. 1016, 4:52-57. Oinonen discloses that its SMS short messages are transmitted between telecommunication terminals via typical wireless protocols, which include GSM and GPRS. *See e.g.*, Ex. 1016, 1:51-2:28, 2:29-31; 2:42-44; 13:15-20.

361. Oinonen further discloses a remote unit with wireless connectivity such that the base unit and remote unit can communicate directly. In particular, Oinonen discloses a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that the wireless system can operate in the GSM mobile communication system as well as “other connectionless message transmission systems, such as unstructured supplementary service data USSD or general packet radio service GPRS.” Ex. 1016, 13:15-20.

362. The remote unit is further discussed in Limitation 1C.

363. Oinonen discloses that the first and second telecommunication units, TE1, TE2 communicate through SMS messages and operate using standard cellular wireless services:

In the short message service SMS of the GSM system, it is possible to transmit a message of a maximum length of 160 characters at a time. The characters are e.g. ASCII characters (American National Standard Code for Information Interchange) of 7 bits, but it is also possible to transmit characters of 8 bits which are not necessarily ASCII characters. Also short message services have been developed where the message can be transmitted in several short messages of a maximum length of 160 characters, whereby the length of the short message can be

multiplied. For example in the GSM mobile communication system, the abbreviation C-SMS is used for this concatenated short message service.

Ex. 1016, 2:29-41.

364. Oinonen also discloses the first message that contains environmental information. In particular Oinonen discloses:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, *a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station.*

Ex. 1016, 4:67-5:6 (emphasis added).

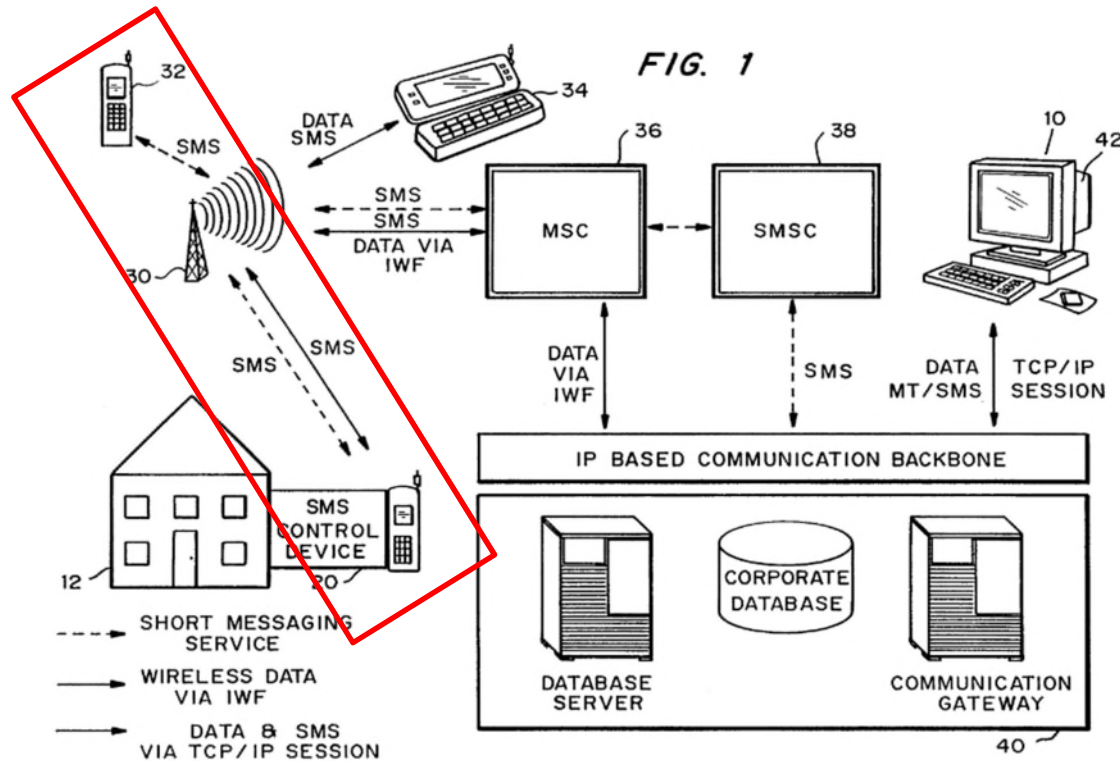
365. Moreover, in the disclosure related to controller a door lock, Oinonen discloses the transmission of an SMS message that contains current environmental information related to the door. *See* Ex. 1016, 10:38-55. For example, Oinonen discloses that its message includes the states of all input lines at the moment of examination and is transmitted “advantageously as a short message.” Ex. 1016, 10:38-42. Oinonen discloses that the message includes the states of the input lines (*e.g.*, “RX=0, DTR=1, RTS=0”) or standard text (*e.g.*, “door is open”). Ex. 1016, 10:43-54. In another example directed to an alarm system, Oinonen discloses that a

message is configured to be sent to the second telecommunication terminal TE2 with “information about the alarm.” Ex. 1016, 11:8-11.

366. Likewise, Whitley discloses a “gateway” that comprises the transmitter of Claim 19. Whitley discloses “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8. Whitley further discloses:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, *the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS").* SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection. Receiving terminals, whether mobile stations, such as handsets or pagers, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page. Ex. 1023, 3:13-25 (emphasis added).

367. The wireless connectivity between remote unit (32) and base unit (20) is illustrated in at least Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

368. Whitley also discloses a first message including status of current environmental information. Whitley discloses that the system includes “[f]ormatting messages for wireless delivery to and from. . . [a] gateway[.]. In an SMS implementation, this may be accomplished at the gateway, which formulates messages to other terminals into a short message format.” Ex. 1023, 5:18-20. Whitley discloses that thereafter, the SMS message is transmitted “from the gateway to a network element.” Ex. 1023, 5:28.

369. Whitley also discloses that the gateway receives data from various devices in the home and packages the data for forwarding to a user through a cellular network. Ex. 1023, 8:1-4; *see also id.* at 8:4-5 (“The system 10 of the present invention aims to route messages from various gateways 20 to terminals.”). This is accomplished by a program in the gateway that “generate[s] text for an outgoing SMS message, place[s] it in the SIM card of the gateway 20 and initiate[s] the data transfer over the GSM network.” Ex. 1023, 9:17-19.

370. Whitley discloses a particular example in which environmental information, in the form of energy usage, is sent by SMS from the gateway:

By way of example, assume that gateway 20 monitors facility 12 for energy usage data or alarms indicating a security breach as well as communicates with various electronic devices, such as an electronic thermostat or lights. *The digital GSM network allows gateway 20 to periodically upload a SMS message, providing essentially real time monitoring of energy usage at the particular facility 12.* For instance, the GSM network may allow message uploading as frequently as every 5 minutes. Gateway 20 could be programmed to provide periodic (e.g., hourly) reports on energy usage. If a security sensor coupled to gateway 20 triggers, gateway 20 could be configured to package and transmit, usually on a priority basis, a SMS message indicating a breach in security, as well as other data including the date and time, the location of the facilities, or the location of the sensor.

Ex. 1023, 12:21-13:2 (emphasis added).

371. Whitley further discloses that “[t]he customer can send and receive such data via *a mobile station*.” Ex. 1016, 2:26-27 (emphasis added). Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal. Ex. 1023, 2:26. Whitley discloses that the remote unit can be a “cellular handset.” Ex. 1023, 8:14. Whitley discloses that its remote unit can take the form of any number of mobile communication devices:

The phrase "mobile station" means a device for sending and receiving data over a wireless network and includes, for instance, a pager 31, a handset 32 or an internet communicator 34 that may be a Nokia 9000 GSM communicator capable of accessing the internet via a GSM wireless network.

Ex. 1023, 8:6-10.

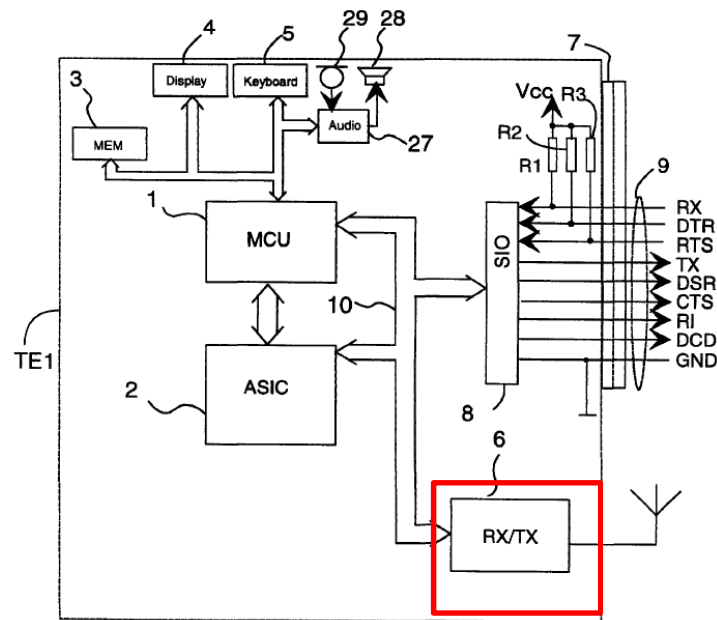
372. The remote unit is further discussed in Limitation 1C.

ii. Claim 19: [19C] a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message including a command for the environmental device; and

373. Oinonen and Whitley disclose Limitation 19C for at least the reasons discussed in Limitations 1F and 1G. *See also* 19B; 1D.

374. Oinonen discloses that the base unit also includes a radio device that includes a receiver that provides wireless connectivity between the base unit and the remote unit. Oinonen discloses that the first telecommunication terminal TE1 (the base unit) includes a receiver in the form of a “radio element.” Ex. 1016, 7:12-

21. The radio element is shown in annotated Fig. 3 (a diagram of the first telecommunication terminal) and is labeled as RX/TX:



Ex. 1016, Fig 3. Oinonen discloses that the RX line is a *data reception line*. Ex. 1016, 6:12-17.

375. Oinonen confirms that its base unit has a receiver in that Oinonen confirms that the user communicates with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “transmit[ing] as short messages *from* the second telecommunication terminal *to* the first telecommunication terminal.” Ex. 1016, 4:58-60 (emphasis added). Oinonen discloses that its short messages are transmitted between telecommunication terminals via typical wireless protocols,

which include GSM and GPRS. *See e.g.*, Ex. 1016, 1:51-2:28, 2:29-31; 2:42-44; 13:15-20.

376. Oinonen further discloses that users send control commands via SMS short messages from the second telecommunication terminal (TE2) to the first telecommunication terminal (TE1) to control the environmental unit:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device coupled therewith is controlled on the basis of the short messages via the connection interface.*

Ex. 1016, 4:52-61 (emphasis added).

377. Oinonen further discloses:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the *user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device*, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message.

Ex. 1016, 5:6-13 (emphasis added).

378. In various examples, Oinonen discloses that the second telecommunication terminal TE2 sends SMS control messages to the first telecommunication terminal TE1. *See e.g.*, Ex. 1016, 11:21-28. Oinonen discloses that the first telecommunication unit TE1 is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:34-37.

379. In one example related to a door lock, Oinonen discloses an environmental command (*e.g.*, “lock the door”):

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4.

380. Oinonen continues this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

Ex. 1016, 12:4-12.

381. Likewise, Whitley discloses a “gateway” (base unit) that comprises the receiver of Claim 19. Whitley discloses “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8. Whitley further discloses:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, ***the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS").*** SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters)

Ex. 1023, 3:13-25 (emphasis added).

FIG. 1

The diagram illustrates a system architecture for providing a Short Messaging Service (SMS) via an IP-based communication backbone. The components and their interactions are as follows:

- Mobile Devices:** A mobile phone (32) and a PDA (34) are shown. The mobile phone is highlighted with a red box.
- Base Station (30):** A radio tower that communicates with the mobile phone and the MSC (36).
- MSC (36) and SMSC (38):** The Mobile Switching Center (MSC) and the Short Message Service Center (SMSC) are connected to the base station and the IP-based communication backbone.
- IP-based Communication Backbone (40):** A central hub that connects the MSC, SMSC, and the computer system (10).
- Computer System (10):** Includes a monitor (42) and a keyboard. It is connected to the backbone via a TCP/IP session.
- Control Device (20):** A device connected to the computer system (10) and the backbone, used for managing the SMS service.
- Database Server and Corporate Database:** The backbone is connected to a database server and a corporate database, which store and retrieve SMS data.
- Communication Gateway:** A component that facilitates communication between the backbone and the computer system.

Legend:

- SHORT MESSAGING SERVICE
- WIRELESS DATA VIA IWF
- DATA & SMS VIA TCP/IP SESSION

383. Likewise, Whitley explicitly discloses that its system “allows the gateway to send data and receive commands directly from the customer.” Ex. 1023, 2:23-25. Whitley further discloses that “[t]he customer can send and receive

such data via a mobile station.” Ex. 1023, 2:26-27. Moreover, Whitley discloses that the wireless user responds to a communication initiated by the controlled device. For example, Whitley recites:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20.

Ex. 1023, 10:14-17.

384. Whitley also discloses that “because each gateway is uniquely addressable through, for instance, a phone number, IP address, or similar identifier, *the customer can formulate messages or commands that will be routed directly from the customer's mobile station or fixed terminal to the gateway.*” Ex. 1023, 6:12-14 (emphasis added).

385. In my opinion Limitation 19C does not require the second SMS message be sent in response to the first message. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, it is further my opinion that a POSITA would have understood that both messages are disclosed by Oinonen and Whitley. Indeed, Oinonen discloses:

Thus, the state of the peripheral device coupled with the mobile station is monitored on the basis of changes in the state of lines in the connection interface, whereby upon a change in the state, a short message is arranged to be transmitted and received by a second mobile

station, possibly informing the user of the mobile station preferably as a message displayed on the display of the mobile station. In a corresponding manner, the control of the peripheral device can be arranged easily by means of short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message. As a result, the peripheral device conducts the desired operation.

Ex. 1016, 4:67-5:15.

iii. Claim 19: [19D] a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.

386. Oinonen and Whitley disclose Limitation 19D for at least the reasons outlined above with respect to Limitation 18E. *See also* 1B.

xxxviii. Claim 21: [21Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

387. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitation 18 Pre.

xxxix. Claim 21: [21A] a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device

388. Oinonen and Whitley disclose Limitation 21A for at least the reasons outlined above with respect to Limitation 18A.

xl. Claim 21: [21B] a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message includes the environmental information and travels via short message and/or data bearer services, and

389. Oinonen and Whitley disclose Limitation 21B for at least the reasons outlined above with respect to Limitations 18B and 18C.

xli. Claim 21: [21C] wherein the second message includes the command to the environmental device and travels via short message and/or data bearer services; and

390. Oinonen and Whitley disclose Limitation 21C for at least the reasons outlined above with respect to Limitation 18D.

xlii. Claim 21: [21D] a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

391. Oinonen and Whitley disclose Limitation 21D for at least the reasons outlined above with respect to Limitation 18E.

B. Count 1B: Oinonen, Whitley, and Sears

i. Motivation to combine Oinonen and Whitley with Sears

392. A POSITA would have combined the teachings of Oinonen and Whitley with Sears because Sears provides methods and means for optimizing interactions between users and devices, including mobile communications devices. such as the devices disclosed by Oinonen and Whitley. Sears would enable the execution of JAVA applications on the mobile devices disclosed by Oinonen and Whitley. Sears provides a conventional JAVA runtime support environment (a “programming kernel”) known to have improved the functionality of the mobile devices disclosed by Oinonen and Whitley. Indeed, each of Oinonen, Whitley, and Sears are analogous given that they each relate to customized applications that are executable on a mobile device.

393. Oinonen discloses that its handset (telecommunication terminal TE2) and base unit (telecommunication terminal TE1) can be customized (programmed) to control and monitor peripheral devices. Oinonen discloses: “[a]dvantageously, the application software of at least the receiving telecommunication terminal TE1, TE2 is provided with a message interpreter which examines the received messages and, on the basis of this, controls certain operations, as will be disclosed in the examples below.” Ex. 1016, 8:33-37. Like Oinonen, Whitley discloses a mobile

station such as a mobile handset, that comprises an application that can transmit and receive SMS messages. *See e.g.*, Ex. 1023, 10:20-23.

394. A POSITA would have been motivated to incorporate the disclosures of Sears in the applications of Oinonen and Whitley for at least the following several reasons. First, Sears discloses that “Java technology provides a single open platform that allows developers to create dynamic, personal, and functionality-rich applications, which content providers can provide and deliver to mobile devices” and further that “J2ME [Java 2 Micro Edition — a version of Java for memory limited devices] provides a modular, scalable architecture to support the flexible deployment of technology to devices with diverse features, functions, and memory/performance capabilities. Such technology provides the next logical step in maximizing the portability of applications and the performance and memory of mobile devices.” Ex. 1019, [0032]. Indeed, a POSITA would have understood that writing an application in JAVA provides for “rich dynamic personalized services and applications for use on mobile devices.” Ex. 1019, [0007]. A POSITA therefore would have understood that rich dynamic personalized services would be a benefit desired by the user of Oinonen and Whitley.

395. Second, a POSITA would have understood that JAVA applications can be stored and run locally on a user device. JAVA-enabled devices allow applications to reside on mobile devices so they can run even when a mobile

device is out of a network's coverage area. Ex. 1019, [0008]. Such local applications not only have the benefit of being executable without a browser, but also can include content-rich graphics and faster interaction. Ex. 1019, [0007]. A POSITA would have understood that such applications therefore would be able to more robustly process the SMS commands of Oinonen and Whitley for transmission even if the device were to go offline after receipt of the message, such that once connected, the stored commands could be sent to monitor and/or control devices within the home or business. As such, a POSITA would have understood that the implementation of a JAVA application would provide a more desirable, robust, and fault tolerant application that would allow the users to interact with the devices in the home or office as disclosed by Oinonen and Whitley.

396. Third, JAVA technology is not only well suited for mobile devices, but is also well suited for control applications. A POSITA would have appreciated that the data security provided by JAVA (through, for example, the absence of direct memory pointers in JAVA, see, Ex. 1019, [0008]) would enhance the control applications disclosed by Oinonen and Whitley. In addition, as disclosed by Sears, JAVA applications themselves can be secured through JAVA's byte-code verification and digital signatures for dynamic applications. Ex. 1019, [0008].

397. Finally, the inclusion of JAVA based applications was well within the skill of a POSITA. By 2004, JAVA was well known programming technology that

would be known to a POSITA and Sears specifically discloses the use of JAVA on a mobile device. Indeed, the 935 Patent itself admits that the inclusion of JAVA applications was well within the skill of a POSITA as the 935 Patent discloses that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3. As such, in my opinion, a POSITA would have had a reasonable expectation of success of adding JAVA applications to the devices of Oinonen and Whitley to obtain the predictable result of customizable applications, because adding such JAVA applications to at least mobile devices was well known in the art.

ii. Claim 4: The system as recited in claim 1 wherein said remote unit is a cellular telephone handset with custom programmability.

398. The combination of Oinonen, Whitley and Sears disclose the limitations of Claim 4.

399. Oinonen and Whitley discloses a cellular telephone handset as discussed with respect to Claim 15.

400. Oinonen discloses that its handset comprises custom programmability in that it can be programmed to control and monitor peripheral devices. Oinonen discloses: “Advantageously, the application software of at least the receiving telecommunication terminal TE1, TE2 is provided with a message interpreter

which examines the received messages and, on the basis of this, controls certain operations, as will be disclosed in the examples below.” Ex. 1016, 8:33-37.

401. Likewise, Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal. Ex. 1023, 2:26.

402. Whitley discloses that the remote unit can be a “cellular handset.” Ex. 1023, 8:14, 8:6-10; 3:19-25.

403. In my opinion it was well known and conventional for cellular telephone handsets, such as the handsets of Oinonen and Whitley, to be customizable. Indeed, the 935 Patent admits that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3.

404. However, independently, Sears also discloses a cellular telephone that includes custom programmability. Sears is directed to Java-based programmability for wireless mobile devices. *See* Ex. 1019, Abstract. These devices can be “a cellular phone and/or a Personal Digital Assistant (PDA).” Ex. 1019, [0034]. In the background, Sears discloses that “[m]obile device users want services and applications that can deliver individualized information.” Ex. 1019, [0006]. To address this need, Sears discloses Java and Java-like applications “where the content and information may be optimized for use by specific users or for use on specific mobile device platforms.” Ex. 1019, [0012]. Indeed, Sears discloses a

device that comprises a “Java native processor and supporting software and hardware provides an open platform for mobile Internet device applications. The described processor natively executes Java byte-code and supports an optimized and enhanced J2ME/CLDC framework [the Connected Limited Device Configuration framework — a Java runtime environment for memory limited mobile devices, see Ex. 19, [0030]], and delivers to mobile devices an efficient, optimized balance between high speed and low power consumption.” Ex. 1019, [0033].

iii. Claim 5: The system as recited in claim 4 wherein said custom programmability is a JAVA programming kernel.

405. The combination of Oinonen, Whitley, and Sears disclose the limitations of Claim 5 for at least the reasons disclosed with respect to Claim 4. As discussed above, in my opinion it was well known and conventional for cellular telephone handsets, such as the handset of Oinonen and Whitley, to be customizable. Indeed, the 935 Patent admits that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3.

406. Irrespective, Sears is directed to Java-based programmability for wireless mobile devices. *See* Ex. 1019, Abstract. These devices can be “a cellular phone and/or a Personal Digital Assistant (PDA).” Ex. 1019, [0034]. In the background, Sears discloses that “[m]obile device users want services and

applications that can deliver individualized information.” Ex. 1019, [0006]. To address this need, Sears discloses Java and Java-like applications “where the content and information may be optimized for use by specific users or for use on specific mobile device platforms.” Ex. 1019, [0012]. Indeed, Sears discloses a device that comprises a “Java native processor and supporting software and hardware provides an open platform for mobile Internet device applications. The described processor natively executes Java byte-code and supports an optimized and enhanced J2ME/CLDC framework, and delivers to mobile devices an efficient, optimized balance between high speed and low power consumption.” Ex. 1019, [0033]. A POSITA would understand that Sears’ disclosures of a JAVA processor and specifically of JAVA runtime support would constitute a disclosure of a programming kernel as that term is used in the 935 Patent. Ex. 1019, [0030]. As such, a POSITA would have understood that the programs of Oinonen, Whitley and Sears were customizable via a JAVA programming kernel.

iv. Claim 6: The system as recited in claim 4 wherein said custom programmability is a J2ME programming kernel.

407. The combination of Oinonen, Whitley, and Sears disclose the limitations of Claim 6 for at least the reasons disclosed with respect to Claim 4. As discussed, in my opinion it was well known and conventional for cellular telephone handsets, such as the handsets of Oinonen and Whitley, to be customizable. The

935 Patent admits that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3.

408. Indeed, Sears is directed to Java-based programmability for wireless mobile devices. *See* Ex. 1019, Abstract. These devices can be “a cellular phone and/or a Personal Digital Assistant (PDA).” Ex. 1019, [0034]. In the background, Sears discloses that “[m]obile device users want services and applications that can deliver individualized information.” Ex. 1019, [0006]. To address this need, Sears discloses Java and Java-like applications “where the content and information may be optimized for use by specific users or for use on specific mobile device platforms.” Ex. 1019, [0012]. Indeed, Sears discloses a device that comprises a “Java native processor and supporting software and hardware provides an open platform for mobile Internet device applications. The described processor natively executes Java byte-code and supports an optimized and enhanced J2ME/CLDC framework, and delivers to mobile devices an efficient, optimized balance between high speed and low power consumption.” Ex. 1019, [0033]. Sears also discloses that “J2ME provides a modular, scalable architecture to support the flexible deployment of technology to devices with diverse features, functions, and memory/performance capabilities. Such technology provides the next logical step in maximizing the portability of applications and the performance and memory of mobile devices.” Ex. 1019, [0032]. That is, Sears discloses the use of J2ME on

mobile devices. A POSITA would understand that Sears' disclosures of a JAVA processor and specifically of JAVA runtime support supporting J2ME would constitute a disclosure of a J2ME programming kernel as that term is used in the 935 Patent. Ex. 1019, [0030]. As such, a POSITA would have understood that the programs of Oinonen, Whitley and Sears were customizable via a J2ME programming kernel.

- v. ***Claim 16: The system of claim 15 wherein the cellular telephone handset includes at least one of a customizable JAVA programming kernel and a customizable J2ME programming kernel.***

409. The combination of Oinonen, Whitley, and Sears disclose the limitations of Claim 16 for at least the reasons outlined above with respect to Claims 4, 5, 6 and 15.

C. Count 1C: Oinonen, Whitley, and Antila

i. Motivation to combine Oinonen and Whitley with Antila

410. Antila discloses a mobile device with dual LCD displays. Ex. 1021, Abstract. Antila discloses that LCD displays were common for mobile devices and provides the Nokia 9000 Communicator as an example of such a device. Ex. 1021, 1:15-25, 2:19-25, 7:30-65. These disclosures are simply more specific disclosures of common features found in mobile devices such as those disclosed by Oinonen and Whitley. Oinonen discloses a remote unit with wireless connectivity. In particular, Oinonen discloses a "second telecommunication terminal TE2 [] e.g. a

telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that the wireless system can operate in the GSM mobile communication system as well as “other connectionless message transmission systems, such as unstructured supplementary service data USSD or general packet radio service GPRS.” Ex. 1016, 13:15-20.

411. Likewise, Whitley discloses a remote unit that can send and receive SMS messages. In particular, Whitley discloses a mobile station that allows users to “receive monitoring information about activities at their facilities” and allows users to “control the gateway and devices coupled to the gateway.” Ex. 1023, 6:22-29. Whitley also discloses, “[t]he customer can send and receive such data via a mobile station or a fixed terminal.” Ex. 1023, 2:26. Whitley discloses that the remote unit can be a “cellular handset.” Ex. 1023, 8:14. Whitley also discloses other types of remote units:

The phrase "mobile station" means a device for sending and receiving data over a wireless network and includes, for instance, a pager 31, a handset 32 or an internet communicator 34 that may be a **Nokia 9000 GSM communicator** capable of accessing the internet via a GSM wireless network.

Ex. 1023, 8:6-10 (emphasis added).

412. While Oinonen does not disclose a specific mobile terminal, Oinonen discloses a mobile terminal that can operate on the GSM mobile communication system. Whitley likewise discloses a mobile terminal that can operate on the GSM mobile communications system. Unlike Oinonen, Whitley specifically discloses a particular mobile terminal that can operate on the GSM network, a Nokia 9000 GSM communicator, but does not provide the technical specifications for the Nokia 9000 GSM communicator. Being directed to the Nokia 9000 GSM communicator by Whitley, a POSITA would have been motivated to seek out details of the Nokia 9000 GSM communicator (such as those provided by Antila), which was in wide public use by 2004.

413. Oinonen, Whitley, and the Nokia 9000 GSM communicator disclosed in Antila are analogous as they each relate to mobile devices that send and receive SMS messages. Antila provides technical and design information for the Nokia 9000 communicator including information on the phone's dual displays. Ex. 1021, 1:6-11, 2:18-23.

414. Second, the Nokia 9000 GSM communicator provides two LCD screens and a full QWERY keyboard "for entering alphanumeric characters in the terminal device" that would allow the user to easily type and transmit multiple SMS messages to monitor and/or control devices within the home. Ex. 1021, 7:30:37, 7:48-57. A POSITA would have understood that two screens provided a

user with the ability to dial telephone numbers and answer calls with the first screen while also allowing the user to “access calendars, contact memo[s], electric mail and other corresponding functions” in the second screen.” Ex.1021, 7:57-65. Indeed, the POSITA would understand that having full QWERTY keyboard that allows the user to control the second display would allow a user to enter commands faster and more efficiently. This would allow for easier communication via SMS to send commands and receive environmental information, such as in Oinonen and Whitley.

415. Moreover, a POSITA would have had a reasonable expectation of success in adding the Nokia 9000 GSM communicator of Antila to Oinonen and Whitley. Both Oinonen and Whitley disclose reliance on a mobile terminal that can operate on the GSM mobile communications system. As the Nokia 9000 GSM communicator is capable of operating on the GSM mobile communications system and as the Nokia 9000 GSM communicator has dual displays and a full QWERTY keyboard for accessing more advanced functions, adding the Nokia 9000 GSM communicator would have been well within the skill of a POSITA and would lead to the predictable result of the Nokia 9000 GSM communicator being operational as mobile terminal that controls and/or monitors devices in a home or business.

ii. Claim 8: The system as recited in claim 1 wherein the remote unit includes a liquid crystal display module.

416. Based on the widespread use of liquid crystal displays in mobile devices by 2004, to the extent such displays were not already present in the mobile devices of Oinonen and Whitley, it would have been obvious to a POSITA to include a liquid crystal display in the mobile devices on Oinonen and Whitley based on the knowledge of a POSITA alone. Nevertheless, Oinonen, Whitley, and Antila disclose the limitations of Claim 8.

417. Oinonen discloses that the mobile station carried by the user includes a display that is operable to display messages to inform the user of information. Ex. 1016, 4:67-5:6. Oinonen does not specifically disclose that the type of display. Likewise, Whitley discloses displaying information to the user and further discloses that its mobile state may take the form of “a pager 31, a handset 32 or an internet communicator 34 that may be a Nokia 9000 GSM communicator capable of accessing the internet via a GSM wireless network.” Ex. 1023, 8:8-10. Given that by 2004 liquid crystal displays (LCDs) were common for cellular phones, a POSITA would have understood that the Nokia 9000 communicator had a liquid crystal display.

418. Nevertheless, Antila confirms that LCD displays were very common for small devices, such as mobile phones:

Liquid crystal displays (LCD, Liquid Crystal Display) are at present very common especially in Small size devices. They are displays thin in construction, consisting of transparent electrodes, a medium containing liquid crystals and polarization filters. One of the most common constructions is the so called twisted nematic (TN, Twisted Nematic) LCD-display. In it the molecules of a layer of liquid arranged between glass plates are directed in a desired direction using control Voltages, at which the optical properties of the display elements change and create the desired pattern in the display.

Ex. 1021, 1:15-25.

419. Antila also discloses that some devices with liquid crystal displays can have multiple displays, such as the Nokia 9000 Communicator. Ex. 1021, 2:19-24. Antila discloses that the “Nokia 9000 Communicator [has] two displays opposite to each other, one display of the telephone section towards the outside of the device and a second display of computer/organizer Section towards the inside of the device.” Ex. 1021, 2:20-23. Antila further discloses that the Nokia 9000 Communicator uses small super twisted neumatic liquid crystal displays with a twist angle of 270 degrees. Ex. 1021, 4:65-6:5.

D. Count 1D: Oinonen, Whitley, Antila, and Ehlers

i. Motivation to combine Oinonen, Whitley, and Antila, with Ehlers

420. Ehlers discloses a system of managing energy consumption within a building wherein users may “directly access and control in-home devices” through

an interface on, among other devices, a mobile phone. Ex. 1022, Abstract, [0069, 0115, 0116]. A POSITA would have combined the teachings of Oinonen, Whitley, Antila and Ehlers as each reference teaches similar functionalities and architectures with respect to controlling devices in the home via mobile devices and, thus, would yield predictable results.

421. As is described above and below, the combination of Oinonen and Whitley discloses the ability to monitor and control devices within a home or business via direct mobile communications, such as SMS. One particular disclosed purpose disclosed by Whitley for monitoring is to monitor energy use rates. Ex. 1023, 16:19-23. Specifically, Whitley discloses polling devices throughout the day to determine their energy usage. Ex. 1023, 4:7-9, 16:23-24. In addition to energy monitoring, a POSITA would have understood that “[d]emand reduction programs and more advanced controls have been proposed to assist in reducing demand during peak times.” Ex. 1022, [0006]. To enhance the energy monitoring functionality of Whitley and to participate in demand reduction and other known energy management programs, a POSITA would have sought to incorporate the disclosure of Ehlers into the combination of Oinonen and Whitley.

422. Ehlers, like Oinonen, Antila, and Whitley discloses mobile phones, personal digital assistants (PDA), laptop computers, desktop computers, or other

suitable devices “may be linked to the system 1.02 via the internet, a wireless data network, or other suitable system.” Ex. 1022, [0069].

423. Ehlers is directed to the energy management, and more specifically, to the control of in-home devices, such as thermostats, to increase efficiency and to reduce costs. Ex. 1022, Abstract, [0017]. Ehlers discloses a system that is configured to balance user defined minimum and maximum values with “user defined preferences, price points and historical data (the gathering and retention of which is described later) to achieve the optimum environmental conditions.” Ex. 1022, [0089]. Moreover, Ehlers enables a user to participate in well-known energy demand reduction programs so as to obtain financial incentives. Ex. 1022, [0007], [0335]. A POSITA would have understood that Ehlers provides such benefits without requiring users to individually manage the settings of each controlled device because most end use consumers do not have the time, experience, and/or access to data to monitor and track the usage of controlled devices in the home. Ex. 1022, [0013].

424. A POSITA would have understood that Ehlers provides an improved user interface that allows a user to precisely control his/her own preferences. Ehlers confirms by disclosing that its user interface comprises a rich set of functions and features including graphical icons linked to control functions. Ex. 1022, [0115, 0315]. Ehlers further describes that, with the user interface, “the

customer may directly access and control in-home devices.” Ex. 1022, [0116]. In particular, Ehlers discloses that “with regard to the thermostat 1.30D, the customer may view current temperature, view current heating or cooling setpoint(s), override heating or cooling setpoint(s), resume scheduled heating or cooling setpoint(s), view heat/cool/auto mode, change the heat/cool/auto mode.” Ex. 1022, [0116]. A POSITA would have understood ease of use and convenience of an intuitive user interface would have the benefit of improved customer usability and enjoyment.

425. As such, in my opinion a POSITA would have had a reasonable expectation of success of adding the energy management and user interface controls to the combination of Oinonen and Whitley. Indeed, as demonstrated by the combination of Ehlers, the energy management controls and user interface controls were well known in the art.

ii. Claim 9: The system as recited in claim 8 wherein said liquid crystal module includes selectable graphic icons corresponding to current environmental information being monitored or controlled.

426. The combination of Oinonen, Whitley, and Ehlers disclose the limitations of Claim 9.

427. Oinonen discloses that the remote unit includes a display for displaying information to the user. Indeed, Oinonen discloses that “a short message is arranged to be transmitted and received by a second mobile station, possibly informing the user of the mobile station preferably as a message displayed on the

display of the mobile station.” Ex. 1016, 4:67-5:6. Likewise, Whitley discloses mobile units that comprises displays, such as the Nokia 9000 GSM communicator. Ex. 1023, 8:8-10. In particular, Whitley discloses that the user can, “while viewing data,” also “input commands to be forwarded to various devices.” Ex. 1023, 16:9-10. Oinonen and Whitley do not explicitly disclose that the command is associated with an icon on the remote unit.

428. However, a POSITA would have understood that at the time of the invention, icons were commonly used in computers, including mobile devices such as personal digital assistants and cell phones. Thus, based on the knowledge of a POSITA, it would have been obvious to include a display with selectable graphic icons corresponding to current environmental information being monitored or controlled in the mobile remote unit of Oinonen and Whitley. However, to the extent this is not the case, Ehlers provides a teaching of adding these exact features to a mobile device.

429. Ehlers discloses a graphical user interface of the remote device such as a personal digital assistant or mobile phone which includes a homeowner control center in a control panel. Ex. 1022, [0311], [0315]. Ehlers illustrates the graphical user interface with control center in annotated Figure 4A:

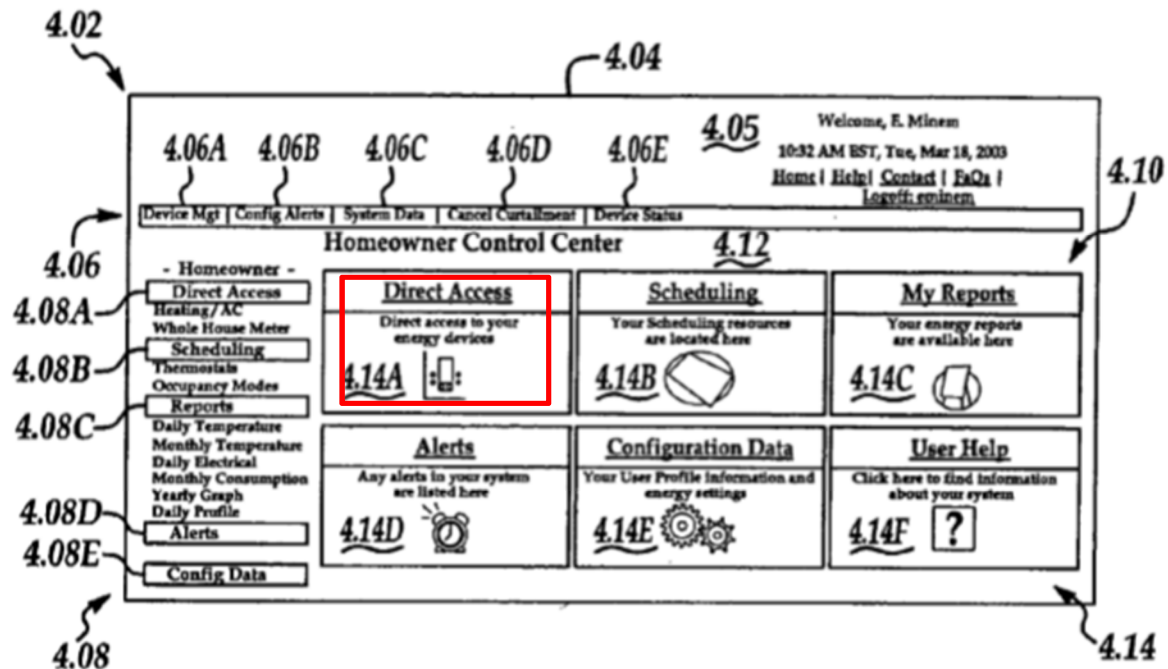


Figure 4A

430. Ehlers discloses that the control center includes a plurality of “hyperlinked icons.” Ex. 1022, [0315]. Ehlers discloses that when the user selects, for example, the “direct access icon,” the user GUI will display a “homeowner direct access” panel. Ex. 1022, [0315]-[0316], Fig. 4B. This panel is illustrated in at least Ehlers annotated Figure 4B.

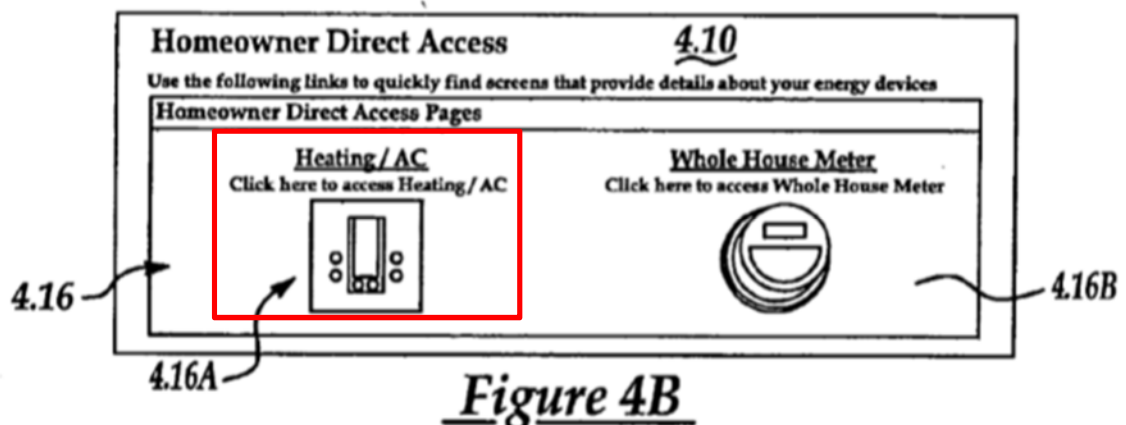
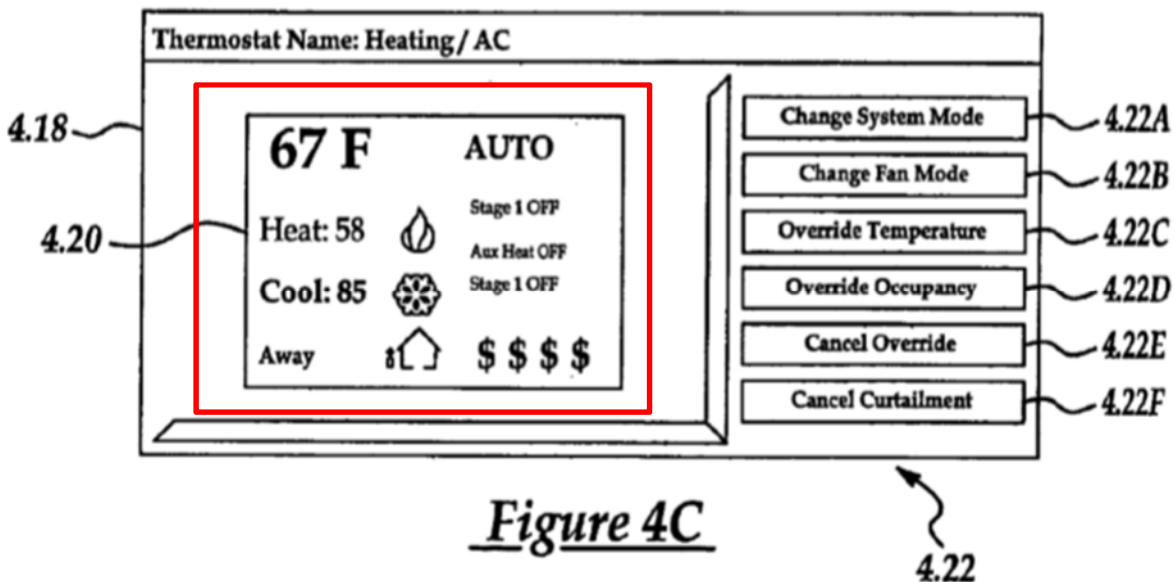


Figure 4B

431. Ehlers discloses that upon selecting the “heating/AC icon,” the GUI will display a “virtual thermostat.” Ex. 1022, [0316]. The “virtual thermostat” is illustrated in annotated Figure 4C:



432. Ehlers discloses that the virtual thermostat “contains an information section or display 4.20 and a plurality of thermostat buttons 4.22.” Ex. 1022, [0316]. For example, Ehlers discloses that the virtual thermostat includes an “Override Temperature” button that allows the customer to change the temperature. Ex. 1022, [0316].

433. A POSITA would understand that Ehlers’ disclosure of changing the temperature in a “virtual thermostat” results in the changing the temperature of the physical thermostat. *See* Ex. 1022, [0316] (“By using the thermostat buttons 4.22, the customer can change the current operating parameters of the thermostat.”)

- i. Claim 10: The system as recited in claim 1, wherein the remote unit is configured to selectively disable transmission of SMS messages from the base unit.*

434. As discussed above, the Oinonen and Whitley disclose the transmission of SMS messages from a base unit.

435. Other than describing that communications between the devices in their respective systems occurs, Oinonen and Whitley are silent with respect to activation and deactivation of services.

436. However, a POSITA would understand that such functionality is common in command and control systems especially for alarm/alert notification. This would allow a user to control her own preferences for which notifications need to be responded to and/or how those notifications should be delivered. This would include the ability to disable one communications mechanism and/or enable another.

437. For example, Ehlers discloses a control screen that provides the ability for a user to selectively activate and deactivate the transmission of messages via a particular means such as via notifications via email or via the web. Ex. 1022, Fig. 4J, [0327]. That is, Ehlers discloses the ability to selectively activate an deactivate particular transmissions of messages based on preferences. This is seen in annotated Figure 4J. Ex. 1022, Fig. 4J.

Configure Alert

Alerts

User Name: E. Minean
Primary email: eminean@aol.com

AccountID: 555
Phone#: 5555555555

Alert Description	Destination	Primary email	Web Page	Configurable	Priority	Single/Aggregate
Temperature out of Range	Home Occupant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	Single
Temperature out of Range	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Gateway Not Responding	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Temperature out of Range	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Gateway Not Responding	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Budget Limit Alarm	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Single
Device is Malfunctioning	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Single
Communication Failure	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	Single
Ramping Recovery Failure	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single
Duplicate IP address	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single
Temperature out of Range	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single

Note: You may add the secondary email as another channel. [Click here to update account personal data.](#)

Submit Reset

Figure 4I

438. As such, to provide the user additional control, the POSITA would have implemented Oinonen and Whitley to allow a user to enable/disable transmission of SMS messages.

E. Count 1E: Oinonen, Whitley, and Menard

i. Motivation to combine Oinonen and Whitley with Menard

439. Menard is directed to a bidirectional wireless system that allows for remote messaging and notification of alarms. Ex. 1020, Abstract, [0005]. Menard discloses that in response to an alarm message, a user (a “responsible party,” or “RP”) can generate response messages including instructions for responding to or verifying the alarm. Menard further discloses that selected RPs “may be notified of the outcome of the process” and, in one example, explains that the message could

be notifying the user of the execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. A POSITA would have combined the teachings of Oinonen, Whitley, and Menard as each reference teaches similar functionalities and architectures related to sending and receiving notification messages to mobile devices and thus their combination would yield predictable results.

440. As is described above and below, the combination of Oinonen and Whitley discloses the ability to monitor and control devices within a home or business via direct mobile communications, such as SMS and that these functions would be enhanced through a combination with Menard.

441. Oinonen discloses the ability to monitor and control a real estate alarm system. Ex. 1016, 10:63-66. Likewise, Whitley discloses monitoring the status of various sensors after arming a security system. Ex. 1023, 12:21-13:2. Similarly, Menard is directed to remote notification of monitored conditions, such as notification of an alarm in a security system. In particular, Menard teaches sending a notification to a responsible party over multiple communication channels so that the responsible party may verify the alarm. Ex. 1020, [0009]. In particular, Menard discloses the use of short message service (SMS) messages as a mode of communication between the user (a responsible party) and a home base unit that monitors a security system. Ex. 1020, [0009].

442. A POSITA would have understood that when sending monitoring and control messages it would be desirable to receive a confirmation that the message was delivered to the intended recipient. Indeed, a POSITA would have understood that one clear advantage of using SMS is that the SMS protocol already allows for confirmation of delivery of the message. For example, and as described by

Oinonen:

The short messages services centre SM-SC is informed whether the mobile station MS2 has received the short message. Thus, it can retransmit the short message, if it was for any reason not received by the mobile station MS2.

Ex. 1016, 2:24-28.

443. Moreover, Whitley recites:

The SMS Application queues outgoing messages and sends them one at a time to the SMSC 38 for distribution on the GSM network. In turn, the SMSC 38 returns a message indicating the delivery status of the outgoing message.

Ex. 1023, 10:3-5.

444. While delivery confirmation of an SMS message is disclosed by Oinonen and Whitley, a POSITA would recognize the value in going beyond confirming message receipt to confirming any commands conveyed in that the message had been executed by or at the recipient. A POSITA would this be motivated to implement an additional message transmission that confirms to a user

that a command had not only been delivered, but had been executed so as to provide confirmation to a user that request for monitoring and/or control had actually been performed. That is, a POSITA would be motivated to add such functionality to, for example, confirm an alarm has been activated or that the police have been called in the case of a security alarm, or confirm that the temperature has been adjusted in the case of an environmental alarm. A POSITA would have understood that Menard explicitly teaches such a confirmatory communication.

445. Menard teaches sending a second message to the user to confirm that the command has been executed. In particular, Menard discloses that responsible parties “may be notified of the outcome of the process” and in one example explains that the message could be notifying the user of execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. In this example, such a message provides the desirable extra comfort and/or security to a user in that the user understands that help is on the way.

446. In my opinion, a POSITA would have had a reasonable expectation of success of adding a confirmation message to a system that already exchanges and processes SMS messages in application specific manners. Indeed, as demonstrated by the combined teachings of Oinonen, Whitley, and Menard, transmission of SMS messages for monitoring, control, and confirmation were well known in the art.

ii. Claim 20: [20Pre] A wireless system comprising:

447. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitation 1Pre.

iii. Claim 20: [20A] a base unit operatively interfaced with an environmental device for controlling an environmental condition in a structure;

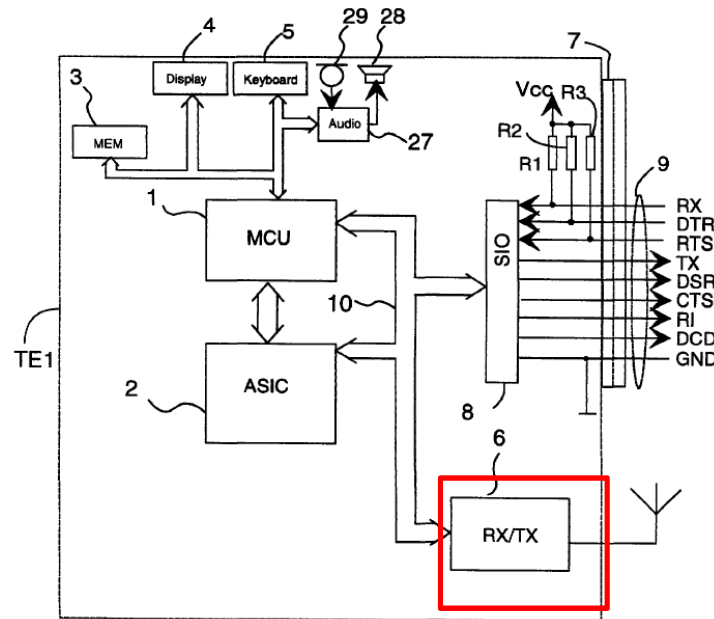
448. Oinonen and Whitley disclose Limitation 20A for at least the reasons outlined above with respect to Limitation 1B.

iv. Claim 20: [20 B] a receiver associated with said base unit, and adapted for receiving a first wireless message from a remote unit having wireless connectivity, wherein the first wireless message includes a command for the environmental device;

449. Oinonen and Whitley disclose Limitation 20B for at least the reasons set forth with respect to Limitation 19C. The remote unit is described with respect to Limitation 1C. Unlike Claim 19, Claim 20 characterizes the message that is received by the receiver as the “first” message. While the claim does not require that this be the actual first message received by the base unit and thus should not be limited as such, the combination of Oinonen and Whitley nevertheless discloses the ability for the transmission of a first message to the base unit.

450. Oinonen discloses that the base unit includes a radio device that includes a receiver that provides wireless connectivity between the base unit and remote unit. Oinonen discloses that the first telecommunication terminal TE1

includes a receiver in the form of a “radio element.” Ex. 1016, 7:12-21. The radio element is shown in annotated Fig. 3 (a diagram of the first telecommunication terminal) and is labeled as RX/TX:



Ex. 1016, Fig. 3. Oinonen discloses that the RX line is a *data reception line*. Ex. 1016, 6:12-17.

451. Oinonen confirms that its base unit has a receiver in that Oinonen confirms that the user communicates with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “transmit[ing] as short messages *from* the second telecommunication terminal *to* the first telecommunication terminal.” Ex. 1016, 4:58-60 (emphasis added). Oinonen discloses that its SMS short messages are transmitted between telecommunication terminals via typical wireless protocols,

which include GSM and GPRS. *See e.g.*, Ex. 1016, 1:51-2:28, 2:29-31; 2:42-44; 13:15-20.

452. Oinonen further discloses a remote unit with wireless connectivity such that the base unit and remote unit can communicate directly. In particular, Oinonen discloses a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that the wireless system can operate in the GSM mobile communication system as well as “other connectionless message transmission systems, such as unstructured supplementary service data USSD or general packet radio service GPRS.” Ex. 1016, 13:15-20.

453. Oinonen further discloses that users send control commands via SMS short messages from the second telecommunication terminal (TE2) to the first telecommunication terminal (TE1) to control the environmental unit:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device*

coupled therewith is controlled on the basis of the short messages via the connection interface.

Ex. 1016, 4:52-61 (emphasis added).

454. Oinonen further discloses:

In a corresponding manner, the control of the peripheral device can be arranged easily by means of *short messages, wherein the user selects or writes a message which corresponds to the desired control operation and is transmitted to the mobile station coupled with the peripheral device*, whereby the state of the corresponding connection line is changed at the connection interface on the basis of this short message.

Ex. 1016, 5:6-13 (emphasis added).

455. In various examples, Oinonen discloses that the second telecommunication terminal TE2 sends SMS control messages to the first telecommunication terminal TE1. *See e.g.*, Ex. 1016, 11:21-28. Oinonen discloses that the first telecommunication unit TE1 is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:34-37.

456. In one example related to a door lock, Oinonen discloses an environmental command (*e.g.*, “lock the door”):

The door is locked by *transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In the first*

telecommunication terminal TE1, the received short message is interpreted and the locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4 (emphasis added).

457. Oinonen continues in this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door”, from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

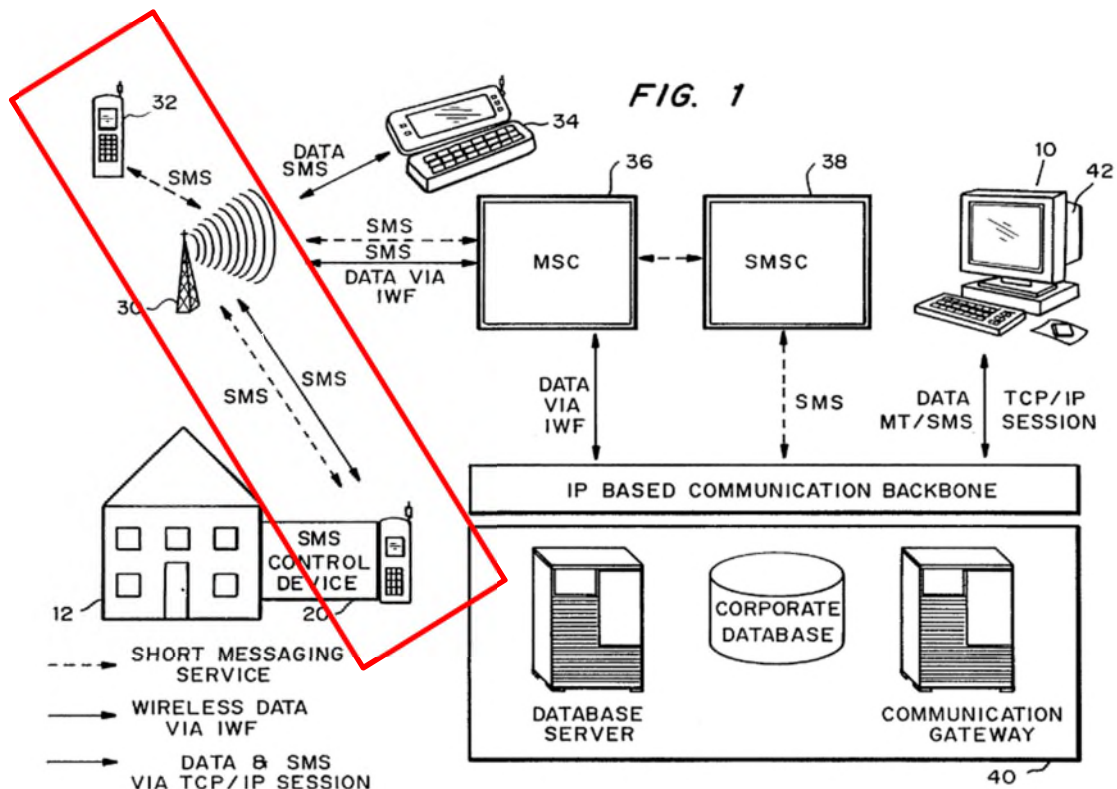
Ex. 1016, 12:4-12.

458. Likewise, Whitley discloses a “gateway” that comprises the receiver of Claim 20. Whitley discloses “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8. Whitley further discloses:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, *the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS").* SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection. Receiving terminals, whether mobile stations, such as handsets or pagers, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page.

Ex. 1023, 3:13-25 (emphasis added).

459. The wireless connectivity between remote unit (32) and base unit (20) is further illustrated in at least Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

460. Whitley discloses that the receiver allows the gateway to receive commands from user, including a first command sent from the user to the gateway. Whitley discloses that its system “allows the gateway [base unit] to send data and receive commands directly from the customer” through a cellular remote unit. Ex. 1023, 2:23-25. Whitley further discloses that “[t]he customer can send and receive such data via a mobile station.” Ex. 1023, 2:26-27. Moreover, Whitley discloses:

Through the incorporation of a fully bi-directional message transfer system, a wireless end user may (a) receive messages and initiate responses via the GSM network to control devices attached to gateway 20.

Ex. 1023, 10:14-17.

461. Whitley also discloses that “because each gateway is uniquely addressable through, for instance, a phone number, IP address, or similar identifier, *the customer can formulate messages or commands that will be routed directly from the customer's mobile station or fixed terminal to the gateway.*” Ex. 1023, 6:12-14 (emphasis added).

462. In one example, Whitley discloses:

The customer can then, *based on the energy usage trends, input commands to adjust the thermostat*, or turn off one of the devices (such as the washer/dryer or water heater) coupled to the gateway 20 in order to save energy. Likewise, the user can input other commands for delivery to the gateway 20. For instance, the user could instruct the gateway 20 to enable or disable an alarm system at a particular facility 12 at a particular time and for a particular time period.

Ex. 1023, 17:2-7 (emphasis added).

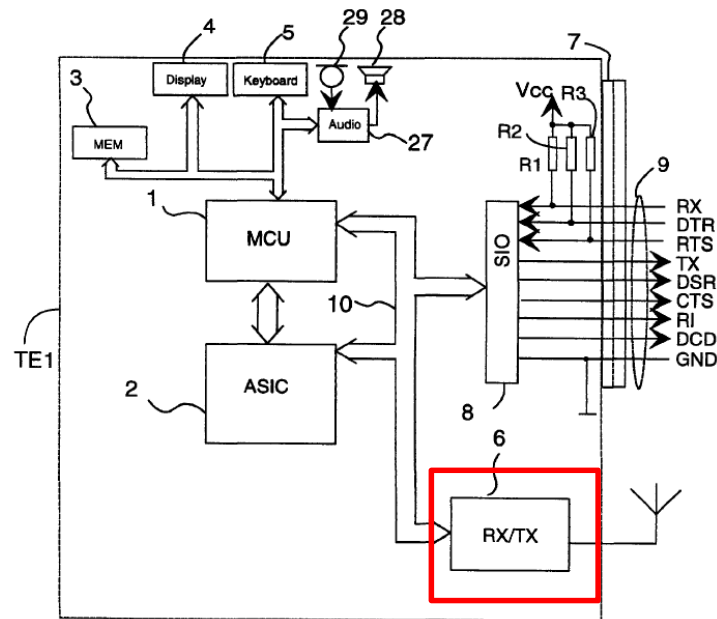
v. Claim 20: [20C] a controller operatively associated with said base unit, and operatively connected with the environmental device for executing the command; and

463. Oinonen and Whitley disclose Limitation 20C for at least the reasons outlined above with respect to Limitation 19D. *See also* 1B.

- vi. **Claim 20: [20D] a transmitter operatively associated with the controller for sending a second wireless message to the remote unit, wherein the second wireless message includes information indicating that the command has been executed.**

464. The combination of Oinonen, Whitley, and Menard disclose Limitation 20D.

465. Oinonen discloses that the base unit includes a radio device that includes a transmitter that provides wireless connectivity between the base unit and remote unit. Oinonen discloses that the first telecommunication terminal TE1 includes a transmitter in the form of a “radio element.” Ex. 1016, 7:12-21. The radio element is shown in annotated Fig. 3 (a diagram of the first telecommunication terminal) and is labeled as RX/TX:



Ex. 1016, Fig. 3. Oinonen discloses that the TX line is a *data transmission line*. Ex. 1016, 6:12-17.

466. Oinonen confirms that its base unit has a transmitter in that Oinonen confirms that the user communicates with the first telecommunication terminal TE1 (the base unit) through the second telecommunication terminal TE2 (the remote unit) by “the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmit[ing] short messages or the like to another telecommunication terminal preferably via a mobile communication network. Ex. 1016, 4:52-57. Oinonen discloses that its SMS short messages are transmitted between telecommunication terminals via typical wireless protocols, which include GSM and GPRS. *See e.g.*, Ex. 1016, 1:51-2:28, 2:29-31; 2:42-44; 13:15-20.

467. Oinonen further discloses a remote unit with wireless connectivity such that the base unit and remote unit can communicate directly. In particular, Oinonen discloses a “second telecommunication terminal TE2 [] e.g. a telecommunication terminal carried along by the user.” Ex. 1016, 6:64-7:4. The second telecommunication terminal can be a “mobile station” (Ex. 1016, 7:52-54) that can be used “not only to receive text messages but also to transmit them.” Ex. 1016, 1:26-28. Oinonen discloses that the wireless system can operate in the GSM mobile communication system as well as “other connectionless message transmission systems, such as unstructured supplementary service data USSD or general packet radio service GPRS.” Ex. 1016, 13:15-20.

468. Oinonen discloses that the first and second telecommunication units, TE1, TE2 communicate through SMS messages and operate using standard cellular wireless services:

In the short message service SMS of the GSM system, it is possible to transmit a message of a maximum length of 160 characters at a time. The characters are e.g. ASCII characters (American National Standard Code for Information Interchange) of 7 bits, but it is also possible to transmit characters of 8 bits which are not necessarily ASCII characters. Also short message services have been developed where the message can be transmitted in several short messages of a maximum length of 160 characters, whereby the length of the short message can be multiplied. For example in the GSM mobile communication system, the abbreviation C-SMS is used for this concatenated short message service.

Ex. 1016, 2:29-41.

469. Oinonen further discloses that the first telecommunication terminal (TE1) can send wireless messages, such as SMS messages, to the second telecommunication terminal (TE2). For example, Oinonen discloses:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network.

Ex. 1016, 4:52-57.

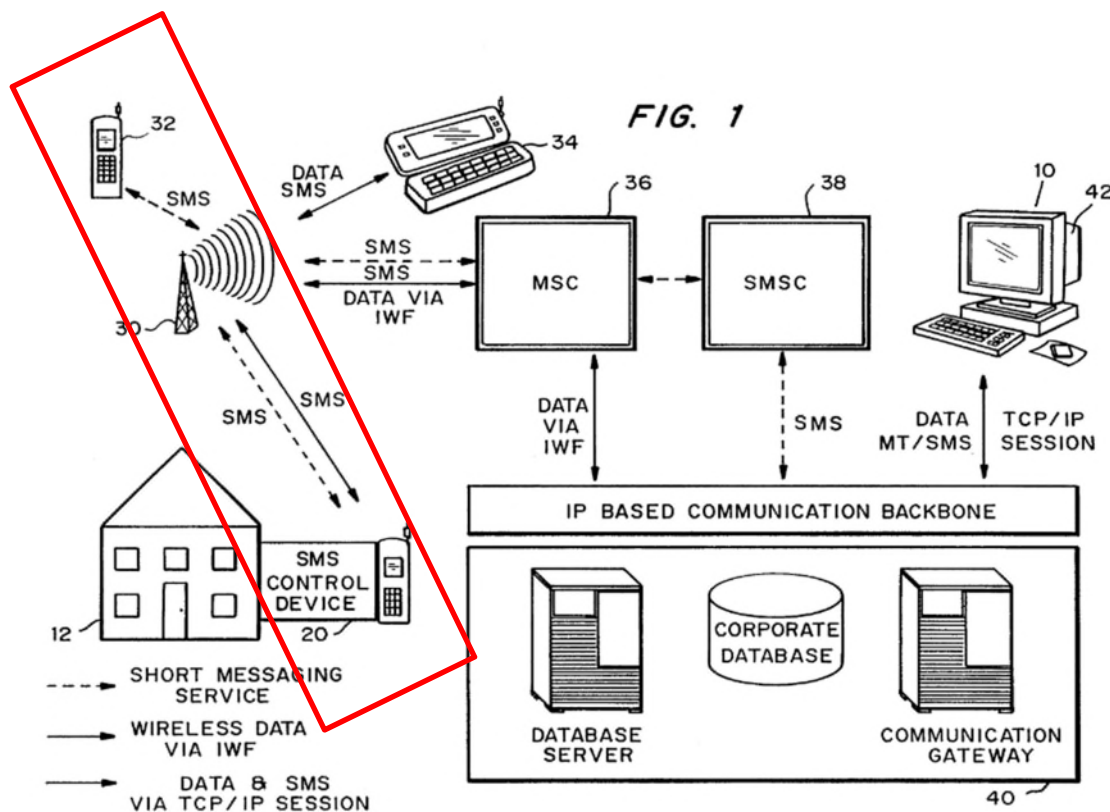
470. Oinonen discloses error messages that can be sent from the base unit to the remote unit if the command cannot be executed and also discloses that delivery of each message is confirmed. Ex. 1016, 8:50-55.

471. Likewise, Whitley discloses a “gateway” that comprises the transmitter of Claim 20. Whitley discloses “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network.” Ex. 1023, 9:6-8. Whitley further discloses:

Each uniquely addressable gateway includes a transceiver capable of communicating over a wireless network. In one embodiment of the present invention, a monitoring and control system may be provided that receives data from gateways on an essentially real time basis and can send data (including commands) to such gateways at any time over a wireless network. This allows for essentially real time monitoring of the facility at which the gateway is located. Preferably, ***the wireless network will be a GSM ("Global System for Mobile") communications network capable of providing Short Messaging Services ("SMS").*** SMS messages allow users of the network and the gateways to send and receive packets of data (about 160 characters) without setting up an actual call connection. Receiving terminals, whether mobile stations, such as handsets or pagers, or fixed terminals, like computer workstations, reassemble one or multiple related SMS message packets into readable messages, such as an e-mail or page. Ex. 1023, 3:13-25 (emphasis added).

472. Whitley further confirms the presence of a transceiver within the gateway in that it discloses that “[g]ateway 20, which may be uniquely addressable, also has a wireless transceiver for sending and receiving communications via a digital wireless network. Ex. 1023, 9:6-8.

473. The wireless connectivity between remote unit (32) and base unit (20) is illustrated in at least Whitley annotated Figure 1:



Ex. 1023, Fig. 1.

474. Similarly, Whitley discloses that the gateway sends SMS messages to the mobile device. Whitley discloses that the system includes “[f]ormatting messages for wireless delivery to and from. . . [a] gateway[.]. In an SMS

implementation, this may be accomplished at the gateway, which formulates messages to other terminals into a short message format.” Ex. 1023, 5:18-20.

Whitley discloses that thereafter, the SMS message is transmitted “from the gateway to a network element.” Ex. 1023, 5:28. Whitley also discloses, “gateway 20 confirms the accuracy of any received message to the sender.” Ex. 1023, 9:22.

475. While Oinonen and Whitley disclose confirming delivery of SMS messages and error messages, Menard discloses a second message including information indicating that the command was executed.

476. Menard is directed to remote notification of monitored conditions, such as an alarm that may be generated in a security system, a fire detection system, a medical monitoring system, *etc.* Ex. 1020, [0006]. In particular, Menard teaches notification of a responsible party (“RP”) of an alarm so that the RP may verify the alarm. The RP responds to the notification and the system executes a command based on the RP’s response. Ex. 1020, [0068]. Subsequent to this execution, Menard teaches sending a second acknowledgement message to the user to confirm that the command has been executed. In particular, Menard discloses that, “after instructions from an RP are completed, another round of notification may occur.” Ex. 1020, [0179]. Such notification can include that the responsible party “is notified of the outcome of the process” and in one example explains that the message could be notifying the user of execution of the process such as “the

police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. As such, Menard discloses that “RPs are informed as to the outcome of the event.” Ex. 1020, [0179].

vii. Claim 22: [22Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

477. To the extent the preamble is limiting, it is disclosed by the combination of Oinonen and Whitley for at least the reasons outlined above with respect to Limitation 18Pre.

viii. Claim 22: [22 A] a controller configured to communicate with the environmental device; and

478. Oinonen and Whitley disclose Limitation 22A for at least the reasons outlined above with respect to Limitation 19D.

ix. Claim 22: [22B] a wireless module configured to:

479. Oinonen and Whitley disclose Limitation 22B for at least the reasons outlined above with respect to Limitation 1D.

x. Claim 22: [22C] receive a control message from the remote unit via short message and/or data bearer services, said control message comprising control information for controlling the environmental device;

480. Oinonen and Whitley disclose Limitation 22C for at least the reasons outlined above with respect to Limitation 19C. *See also* 1G.

xi. Claim 22: [22D] create a control command for the environmental device based on the control information;

481. Oinonen and Whitley disclose Limitation 22D.

482. Oinonen discloses a processor, which processes messages and sends control instructions to the environmental device:

[T]he first telecommunication terminal TE1 is a mobile station comprising e.g. a processor 1, such as a microprocessor, an application-specific integrated circuit 2 (ASIC), whereby it is possible to implement a majority of the logic functions of the data processor 1 and simultaneously to reduce the number of separate integrated circuits.

Ex. 1016, 7:11-19.

483. Oinonen discloses that the first telecommunication terminal TE1 is a “receiving telecommunication terminal” and has a message interpreter that allows the unit to “examine[] the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:34-37. In particular, Oinonen discloses processing based on the fact that the first telecommunications terminal receives and processes messages before sending the control instruction to the environmental device via the first communication interface:

The invention is based on the idea that the telecommunication terminal, preferably a mobile station coupled with a peripheral device via a connecting interface, transmits short messages or the like to another telecommunication terminal preferably via a mobile communication network. In a corresponding manner, *control signals can be transmitted as short messages from the second telecommunication terminal to the first telecommunication terminal, where the device*

coupled therewith is controlled on the basis of the short messages via the connection interface.

Ex. 1016, 4:52-61 (emphasis added); *see also* Ex. 1016, 5:6-13.

484. Oinonen discloses that the first telecommunication terminal TE1 processes the message to provide a control instruction. Oinonen discloses “application software” that provides the base unit with “a message interpreter which examines the received messages and, on the basis of this, controls certain operations.” Ex. 1016, 8:33-37; *see also* Ex. 1016, 5:6-13.

485. In one particular example, Oinonen discloses that the base unit controls the operation of a lock based on information received from the user. Oinonen discloses:

The door is locked by transmitting a short message, such as “lock the door”, from the second telecommunication terminal TE2. In *the first telecommunication terminal TE1, the received short message is interpreted* and the *locking relay 22 is supplied with an operating voltage by setting the status line DSR of the communication device in the logical 1 state*. This causes a voltage difference of, for example, ca. 5 V between the switching pins 22a, 22b of the locking relay 22, thereby closing the switch S2 of the locking relay 22.

Ex. 1016, 11:62-12:4 (emphasis added).

486. Oinonen continues in this example, explaining that the locking of the door can be released via a similar mechanism that involves a control message that is sent to the environmental device:

The locking of the door 12 can be released in a corresponding manner by sending a short message, such as “open the door,” from the second telecommunication terminal TE2. In the first telecommunication terminal TE1, the received short message is interpreted and the supply voltage is turned off from the locking relay 22 by setting the status line DSR of the telecommunication terminal in the logical 0 state. Thus, the switch S2 of the locking relay 22 will open.

Ex. 1016, 12:4-12.

487. Likewise, Whitley discloses that the gateway can be embodied as a “personal computer or other device provided with a processor, such as an Intel 386 or 486 processor.” Ex. 1023, 9:4-5.

488. Whitley discloses that the processor in the gateway will process incoming control messages: “[w]hen an SMS message is received at the gateway 20, the gateway 20 reads the SMS message from the SIM card and processes the contents of the SMS message as though it was entered directly from a command console.” Ex. 1023, 9:23-25.

489. Whitley also discloses that the gateway is configured to send the control instruction to the environmental device. Ex. 1023, 7:29. In particular, Whitley discloses that the gateway includes “any device that (a) provides a physical interface between internal devices associated with a particular facility 12 and external networks and, optionally, (b) may *provide a platform for delivering various services to the facility.*” Ex. 1023, 8:27-9:1 (emphasis added). Whitley

also discloses that “gateways may be configured remotely to receive commands and data, which allows remote control over the devices (e.g., home appliances or electronics) with which the gateway may communicate.” Ex. 1023, 3:11-14.

xii. Claim 22: [22E] send the control command to the environmental device via the controller; and

490. Oinonen and Whitley disclose Limitation 22E for at least the reasons outlined above with respect to Limitation 11J. *See also* 19D.

xiii. Claim 22: [22F] send a status message indicating execution of said control information to the remote device.

491. The combination of Oinonen, Whitley, and Menard disclose Limitation 22F for at least the reasons outlined above with respect to Limitation 20D.

F. Count 2A: Bielski and Wu

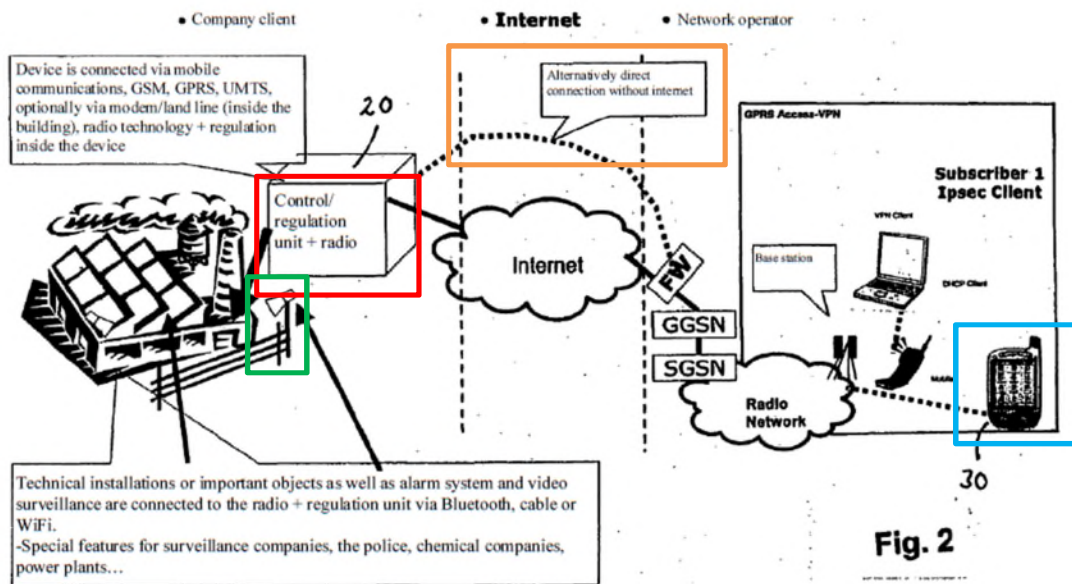
i. Motivation to combine Bielski with Wu

492. Bielski is directed to a system that monitors, actively controls, and/or regulates devices such as a stove, alarm system or video surveillance system over great distances and independent of the location of the user. Ex. 1017, [0002], [0004]. Bielski discloses that communication in such a system is bidirectional and performed via a mobile communications network operating according to the GSM, GPRS or UMTS standard. Bielski allows users to receive information concerning the monitored systems on mobile devices and respond with corresponding commands. Ex. 1017, [0005], [0010], [0022], [0063]. Importantly, the connection

between a mobile device and a base unit (a “check” and “communication” unit) may be made directly via the mobile communications network without reliance on the Internet. Ex. 1017, [0036], [0039]. Bielski discloses standard mobile communication transfer technologies:

The GPRS system is connected to a GSM system by means of the SGSN system. The SGSN system [“Serving GPRS Support Node” — a component of a GPRS network] handles the data transfer from and to the mobile communications stations. The data transfer is now by means of the mobile communications network of a network operator to the base station and from there to the mobile terminal 30 by means of the standard transfer technologies.

Ex. 1017, [0061]. Annotated Figure 2 shows the “base unit” (red box), “remote unit” (blue box), and “environmental device” (green box) as well as the direct connection between remote unit and base unit (orange box).



493. While a POSITA would understand that SMS is an example of messaging on a mobile communications network, Bielski confirms this as it provides an example of a direct mobile communication “in the form of an SMS [message]” that is used to inform a user of “the actual status of the corresponding devices in time intervals or upon special conditions of the devices, e.g. alarm conditions.” Ex. 1017, [0069].

494. While Bielski discloses direct communications over a mobile communications network, such as a network according to the GSM, GPRS or UMTS standard, and discloses the use of SMS, Bielski does not further describe the details of the use of communications protocols for each of its disclosed communications. Instead, Bielski merely states that such protocols were standardized and well known in the art. Ex. 1017, [0030]. Given the explicit suggestion in Bielski of a

standardized direct mobile communication protocol that did not rely on the Internet, a POSITA would have been motivated to identify additional implementation details, such as the implementation details for communication via the SMS protocol. To the extent such a solution was not already part of the knowledge of a POSITA, Wu discloses such details for communication via the SMS protocol.

495. Wu is directed to a wireless home network system (HNS) that is designed to allow for “remote[] monitor and control [of] devices in the HNS via [] a GSM mobile terminal.” Ex. 1018, Abstract. Wu teaches that monitoring and control information flows through an HNS gateway. *Id.* Wu discloses bi-directional communication between a user’s mobile device and the HNS gateway using WAP, HTTP, and/or SMS for remote control and monitoring of devices in the home. Ex. 1018, p. 495. A POSITA would have combined the teachings of Bielski and Wu as both references teach similar functionalities and architectures and, thus, a POSITA would have understood that any combination would yield predictable results

496. Specifically, a POSITA would have looked to the implementation details of communication via various protocols disclosed in Wu. Wu discloses a home network system that allows for the connection of computers, audio and video equipment, washing equipment and home automation subsystems (*e.g.*, heating and

air-conditioning systems, lighting systems, etc.) in an integrated, cooperative environment designed to increase comfort and ensure the sharing and management of home resources as well as the provision of new, enhanced services. Ex. 1018, p. 493. It would have been obvious to a POSITA to combine the SMS functionality described in Wu with Bielski for at least several reasons.

497. First, Wu discloses a number of interchangeable communication protocols including SMS (red box), HTTP (blue box), and WAP (green box) as seen in annotated Figure 2:

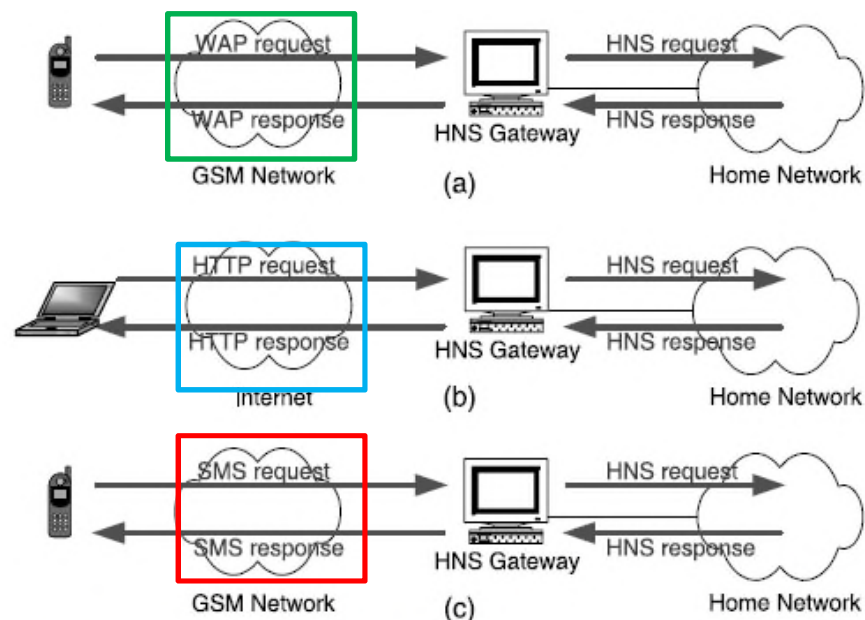


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

498. Wu discloses that the user can send request commands and receive responses based on the above protocols. Ex. 1018, p. 495. Wu provides specific

motivation to rely on the SMS protocol as it is disclosed as being simple to use because it consists of only two layers and because it is a device independent of service. *Id.* at p. 497. Wu also discloses that efficient use of SMS can allow for reduced costs. *Id.* at 501. Wu also discloses that SMS is based on the GSM network (*see* Ex. 1018, Fig. 2), which was already well known and widely implemented across the world. *Id.* at p. 494.

499. Second, a POSITA would have been motivated to use the SMS functionality of Wu to enable monitoring and control of devices in the home or business on mobile devices that supported standard SMS communications. As would be understood by a POSITA, certain mobile devices would not have been able to implement HTTP or WAP protocols because of resource constraints, thereby limiting the number of mobile devices that could be used. Instead, by using the SMS protocol, the number of mobile devices that could be used in the monitoring/control system would be increased because SMS was supported on virtually all mobile/cellular devices. As such, a POSITA would have been motivated to use SMS (which Wu discloses as being interchangeable with HTTP and WAP) so that a user having a mobile device would have the ability to monitor and control devices within a home or business.

500. Third, it would have been within the skill of a POSITA to use SMS communications as the direct mobile communications protocol described in

Bielski. As is described in Bielski, a POSITA would have understood that SMS messages were already disclosed for the purpose of providing “the actual status of the corresponding devices in time intervals or upon special conditions of the devices, e.g. alarm conditions.” Ex. 1017, [0069].

501. Given the explicit disclosures in Wu regarding SMS capabilities as an advantageous communication protocol, Bielski’s disclosure that the remote device and base unit can communicate directly without the Internet, and given the limited number of communication protocols, a POSITA would have been motivated to rely on the SMS capabilities (bidirectional messages) disclosed in Wu in the system of Bielski. Indeed, the POSITA would have had a reasonable expectation of success.

ii. Claim 1: [1Pre] A wireless system comprising:

502. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu.

503. Bielski is directed to a “communication system and a method for data transfer, in particular for the monitoring, control and/or regulation of one or more devices” that can be “used over greater distances” and run “independent of the location of the user.” Ex. 1017, [0001], [0004]. The system of Bielski acknowledges that “monitoring of devices by means of a radio connection between the device to be monitored and the monitoring unit is known from different areas.” Ex. 1017, [0003]. The system in Bielski is configured to run on a mobile

communication network including GSM, GPRS, or UMTS standard. Ex. 1017, [0022]. An example of the wireless system of Bielski is shown with respect to at least annotated Figure 5:

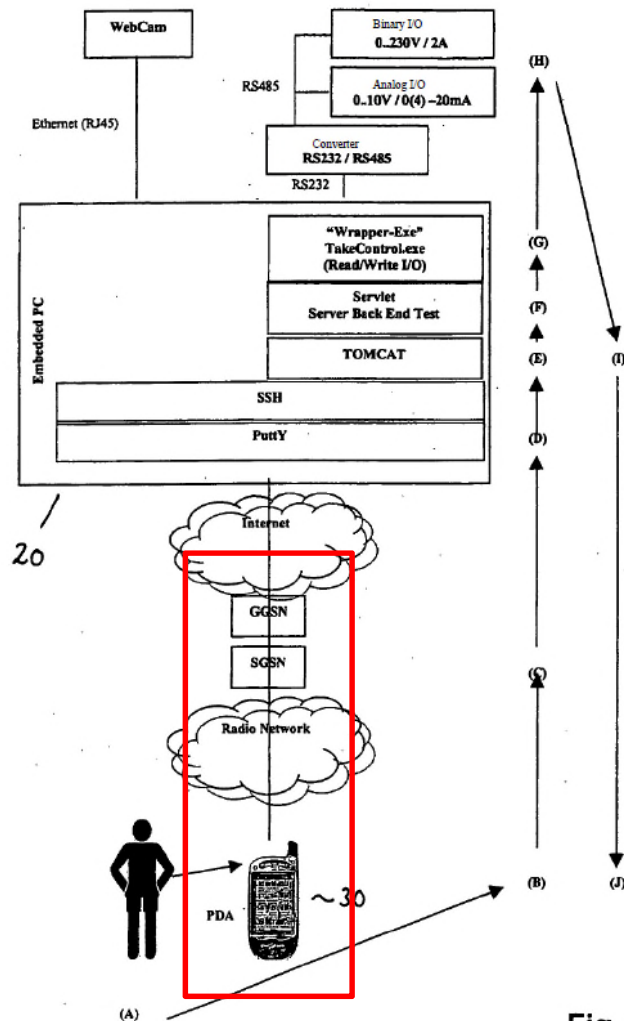


Fig. 5

Ex. 1017, Fig. 5.

504. Likewise, Wu discloses a wireless communication system. Wu is directed to a “Home Network System (HNS) architecture integrated with Wireless Application Protocol and Short Message Service to support the connectivity

between home and Internet/Global System for Mobile Communication (GSM) networks.” Ex. 1018, Abstract. Wu discloses that the advantage of this system is the ability to “remotely monitor and control the devices in the HNS via laptop computer or a GSM mobile terminal.” Ex. 1018, Abstract.

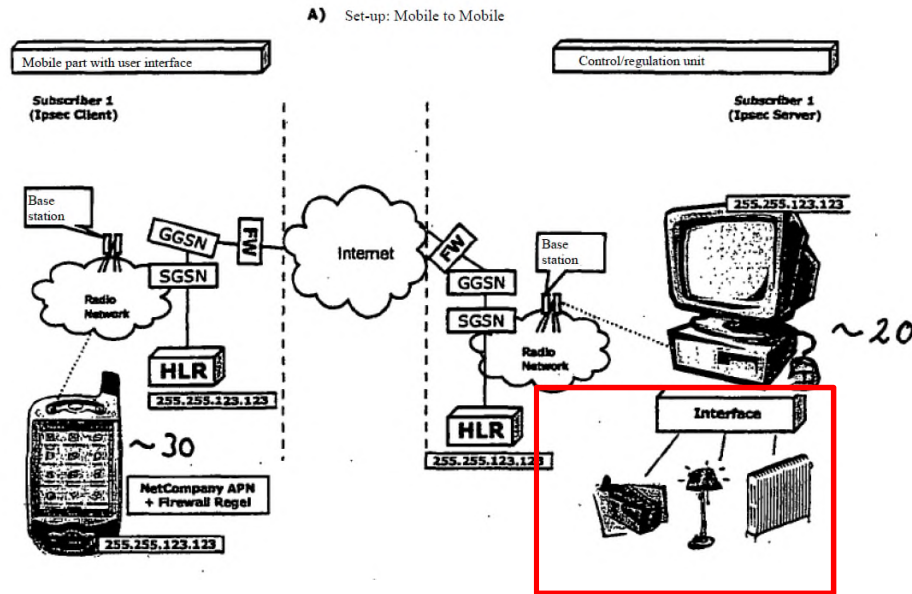
iii. Claim 1: [1A] an environmental device;

505. Bielski and Wu disclose Limitation 1A.

506. The 935 Patent broadly discloses “environmental device” as “a device that is capable of measuring and/or controlling its surroundings.” *See supra*.

Bielski and Wu disclose the claimed environmental device.

507. Bielski is directed to a communication system that allows for controlling/monitoring “one or more devices.” Ex. 1017, Abstract. Bielski discloses a variety of household devices, such as an alarm system, garage door, a light, and a heater that can be monitored, controlled, and/or regulated. Ex. 1017, [0054], [0082]. Moreover, Bielski illustrates the ability to control devices such as a heater, a light, and a camera at least in annotated Figure 4:



Ex. 1017, Fig. 4. Thus, Bielski discloses devices that are capable of measuring or controlling their surroundings.

508. Even if Patent Owner’s construction of “[a] device operatively connected to at least one sensor capable of measuring an environmental condition” were adopted, in my opinion Bielski discloses this recitation. Specifically, Bielski discloses that a “status report concerning the device state is transmitted to the mobile terminal” which makes it possible to “inform or warn the user of the mobile terminal about the device status.” Ex. 1017, [0031]. Bielski further discloses that the check unit “serves as [a] monitoring unit by receiving data from the mentioned devices.” Ex. 1017, [0056]. Bielski also discloses that users can be informed about the “status of the corresponding devices,” which can be, for example, an “alarm condition[.]” Ex. 1017, [0069]. A POSITA would understand from these

disclosures that Bielski discloses a device operatively connected to at least one sensor capable of measuring an environmental condition.

509. Likewise, Wu discloses a wireless system that can be used to monitor and control “environmental devices.” For example, Wu discloses monitoring and control of air-conditioning, lighting, a refrigerator, and a burglar alarm, among other devices. *See* Ex. 1018, Table 1. For example, Wu illustrates a listing of exemplary devices that can be controlled in Table 1:

Table 1
Devices in common use in each subsystem

Appliance subsystem	Security subsystem	Messaging subsystem
Air-conditioning	Surveillance	Answering machine
Lighting	Burglar alarm	Fax machine
Television		E-mail services
Video and audio player		
Refrigerator		
Microwave oven		

Ex. 1018, Table 1.

510. Wu also discloses an example whereby an environmental device in the form of a thermostat and HVAC system is controlled: “For example, in the winter individuals may turn on their home heating systems in advance via mobile phone so that the desired room temperature is achieved before the individual arrives home.” Ex. 1018, p. 494. A POSITA would understand from these

disclosures that Wu discloses a device operatively connected to at least one sensor capable of measuring an environmental condition.

iv. Claim 1: [1B] a base unit operatively interfaced with the environmental device and configured to control an operation of the environmental device;

511. Bielski and Wu disclose Limitation 1B.

512. Bielski discloses a base unit in the form of a check unit and a communication unit, which together can form a “structural unit” (apparatus) within the building, and which is connected to environmental devices, such as a stove, light, or alarm system, through a variety of communication media. Ex. 1017, [0005], [0008], [0020], [0054].

513. Bielski describes that the check unit controls operation of the environmental devices in that the check unit is “wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that data can be transferred from the check unit to the device(s) and/or from the device(s) to the check unit.” Ex. 1017, [0005]. Bielski discloses that communication between the device and the check unit can be established “by means of cabling, Bluetooth, or WiFi.” Ex. 1017, [0013].

514. Bielski depicts both the check/communication unit (20) and various environmental devices that are connected to the check/communication unit (20) in at least annotated Figure 4:

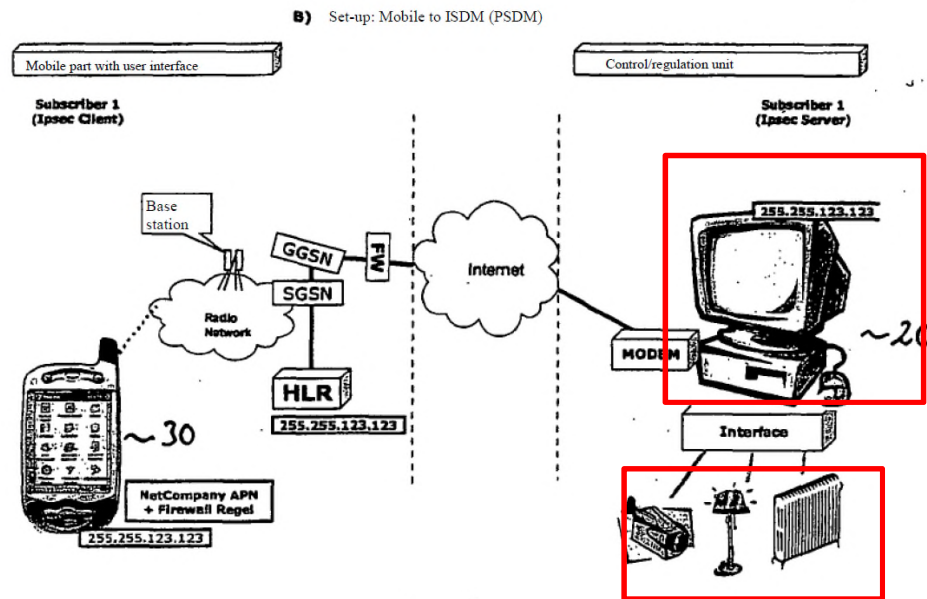


Fig. 4

Ex. 1017, Fig. 4.

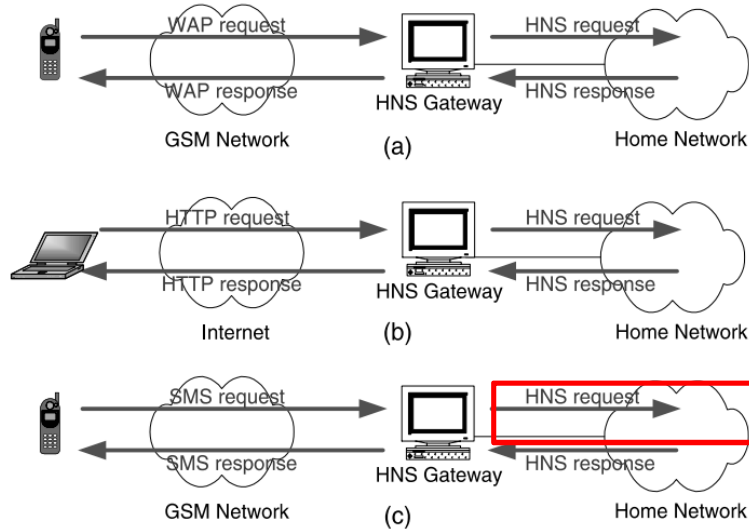
515. In my opinion Bielski discloses the claimed “base unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces in Patent Owner’s construction were standard components that would be common in a conventional “base unit.” To the extent that Bielski is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed base unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a base unit and that their inclusion in Bielski’s check and communication unit would have been obvious given the knowledge and experience of a POSITA alone.

516. Bielski also discloses that the check unit is “embodied as a control unit which transfers data for the purpose of control to the one or more devices.” Ex. 1017, [0014]. In particular, Bielski discloses that the check unit “further serves as a control and regulation unit as it transfers data to the mentioned devices, such as temperatures, opening or closing conditions etc.” Ex. 1017, [0056].

517. Likewise, Wu discloses a base unit in the form of a home network system (HNS) gateway device, such as a personal computer, that “connects to home devices and runs a home automation management application that supervises home devices.” Ex. 1018, pp. 494-495. Wu discloses that the environmental devices are interfaced with the gateway such that “an appliance can send an alerting message to the HNS gateway (by *posting information*).” Ex. 1018, p. 495 (emphasis in original).

518. Wu also discloses that the HNS gateway “is used to control the devices.” Ex. 1018, p. 496. Wu expands on this control operation, disclosing that the HNS gateway includes a configuration tool that allows for “locally monitoring, controlling, and coordinating a diverse set of independent appliances connected to the HNS.” Ex. 1018, p. 498.

519. As seen in annotated Figure 2 of Wu, the HNS gateway sends communications in the form of “HNS request[s]” to the home network, which includes environmental devices (see Ex. 1018, Fig. 1):



Ex. 1018, Fig. 2.

520. In my opinion, like Bielski, Wu discloses the claimed “base unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the power supply, display, wireless module, antenna, microcontroller, transmitter, receiver, and plurality of communications interfaces in Patent Owner’s construction were standard components that would be common in a conventional “base unit.” To the extent that Wu is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed base unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a base unit and that their inclusion in Wu’s HNS gateway would have been obvious given the knowledge and experience of a POSITA alone.

v. *Claim 1: [1C] a remote unit having wireless connectivity and being configured to send and receive short message service (SMS) messages; and*

521. Bielski and Wu disclose Limitation 1C.

522. Bielski discloses the claimed remote unit in the form of a “mobile terminal which can be operated in the telecommunication network of the network operator.” Ex. 1017, [0005]. The mobile terminal disclosed by Bielski can be a mobile phone and “can operate according to the GSM standard” as well as the GPRS standard and UMTS standard. Ex. 1017, [0008], [0030]. Bielski discloses other examples of the mobile terminal, including, but not limited to, a personal digital assistant (PDA) with mobile communication unit, portable computers with mobile communications card, and a Pocket PC. Ex. 1017, [0038], [0039], [0082], [0085].

523. In my opinion Bielski discloses the claimed “remote unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons in Patent Owner’s construction were standard components that would be included in a conventional “remote unit” such as Bielski’s mobile terminal. To the extent that Bielski’s mobile terminal is found to not contain

sufficient disclosure of the elements Patent Owner requires to be present in the claimed remote unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a remote unit and that their inclusion in Bielski's mobile terminal would have been obvious given the knowledge and experience of a POSITA alone.

524. Bielski also discloses that the remote unit is configured to utilize short message service (SMS) messages to communicate with the gateway. In particular, Bielski discloses that the mobile terminal can be informed about the status of devices, such as an alarm condition, which "can for example be in the form of an SMS." Ex. 1017, [0069].

525. Bielski further discloses that the monitoring and control function can be performed by the mobile unit without using the internet:

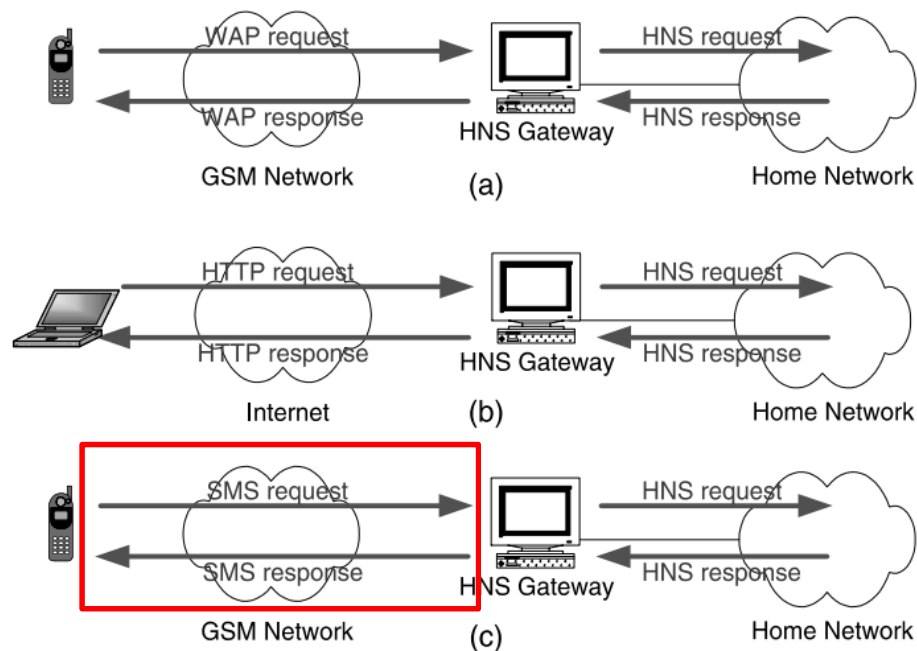
For example, a solution is conceivable in which the application is fully stored on the mobile terminal and upon the actuation of a user interface, for example, control or regulation signals are transferred to the terminals which are to be monitored, controlled or regulated. In this case, the interposing of the internet is not necessary.

Ex. 1017, [0036].

526. As is described above, a POSITA would have understood that Bielski teaches or suggests the use of SMS messages. However, a POSITA would have

also understood that the use of SMS messages was well known and, thus, would have relied on the system of Wu for the reasons discussed previously.

527. Wu discloses that the wireless system allows users to “remotely monitor and control the devices in the HNS via . . . a GSM mobile terminal.” Ex. 1018, Abstract. In particular, Wu discloses a mobile station that includes SMS capability for communicating with the HNS gateway. Ex. 1018, p. 495. Wu discloses an example mobile station, the Nokia 7110 handset. Ex. 1018, p. 500. As shown in annotated Figure 2 of Wu, the “mobile station with SMS capability can communicate with the HNS via SMS protocol” including bi-directional SMS communication. Ex. 1018, p. 495.



Ex. 1018, Fig. 2 (*see also* Fig. 3).

528. In describing Figure 2, Wu discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495.

529. In my opinion, like Bielski, Wu discloses the claimed “remote unit” under either the construction I propose or the construction proposed by Patent Owner. In particular, a POSITA would have understood that the microcontroller, keypad, ROM, RAM, a power supply, a battery, GPS circuit, radio frequency circuit, antenna, transmitter, receiver, audio interface circuit, and display for text and graphical icons in Patent Owner’s construction were standard components that would be included in a conventional “remote unit” such as Wu’s mobile station. To the extent that Wu’s mobile station is found to not contain sufficient disclosure of the elements Patent Owner requires to be present in the claimed remote unit, a POSITA would understand that there is nothing inventive about the addition of these common elements to a remote unit and that their inclusion in Wu’s mobile station would have been obvious given the knowledge and experience of a POSITA alone.

vi. Claim 1: [1D] a wireless module operatively interfaced with the base unit and configured to provide wireless connectivity between the base unit and the remote unit,

530. Bielski and Wu disclose Limitation 1D.

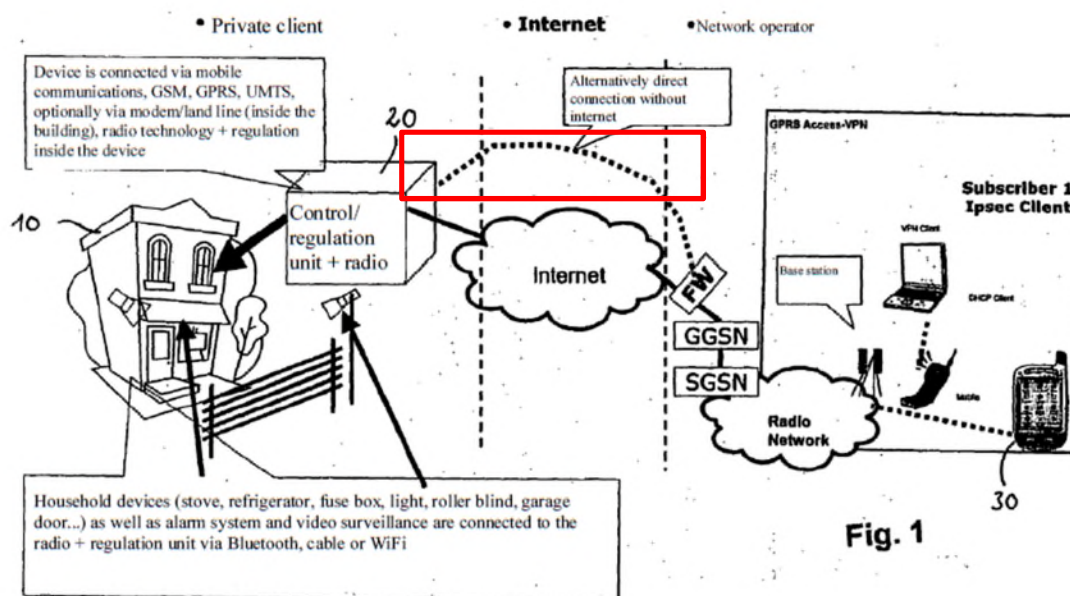
531. Bielski discloses a wireless module in the form of a communication unit in which “data can be transferred to a network operator of a

telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent and/or received via. . . a mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. This unit allows a direct cellular connection between the communication unit and the user’s mobile device. Ex. 1017, [0023]. Bielski discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

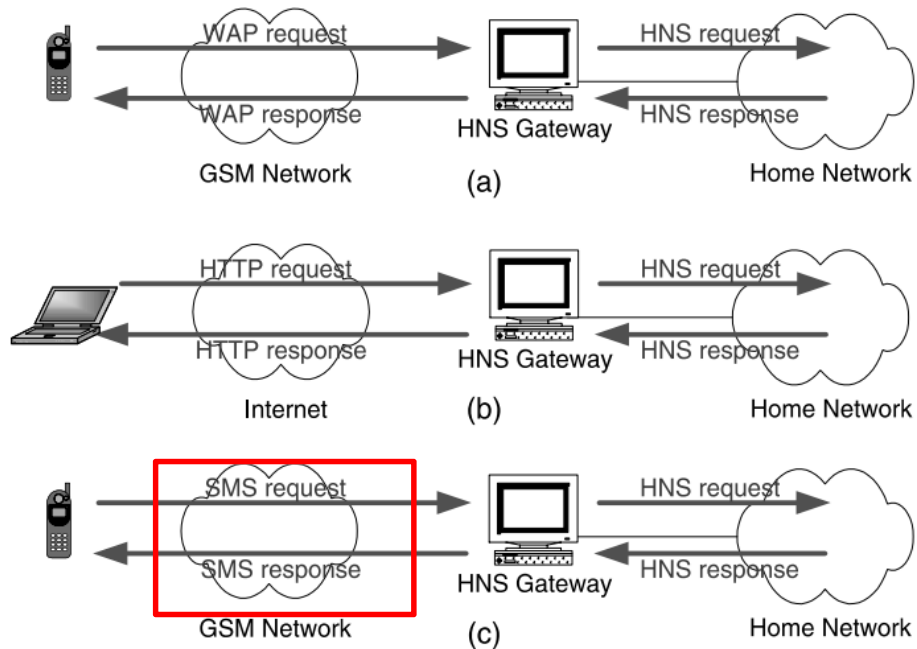
Ex. 1017, [0023].

532. Bielski also illustrates a direct connection between the mobile device and check and communication unit in the home in at least annotated Figure 1:



Ex. 1017, Fig. 1.

533. Likewise, Wu discloses the wireless module of Claim 1. Wu discloses that the HNS gateway device includes a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, p. 497; *see also id.* Fig. 6. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499. As illustrated in annotated Figure 2 of Wu, the HNS gateway is interfaced with the mobile device, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

534. In annotated Figure 6, Wu illustrates the cellular connectivity that resides within the HNS gateway and that directly connects to the remote unit.

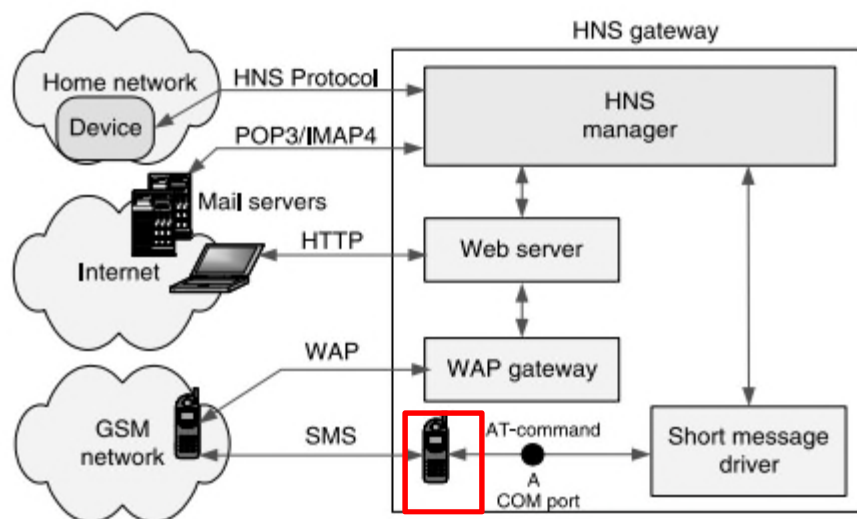


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

535. Figure 2 illustrates direct communication, by way of SMS, between the user's mobile device and the HNS gateway. Further, a POSITA would have understood that Figure 2 of Wu illustrates bidirectional communication given the double arrows between the mobile device and HNS gateway.

vii. Claim 1: [1E] wherein the base unit is configured to send a first SMS message, including current environmental information, to the remote unit through the wireless module,

536. Bielski and Wu disclose Limitation 1E.

537. Bielski discloses that one of advantages of his invention is that it “enables to passively inform the user of the mobile terminal about the status of the devices to be monitored.” Ex. 1017, [0010]. However, Bielski discloses that its system is not limited to a passive or “pull” system, but that the user can be automatically informed (*e.g.*, pushed information) about environmental information such as the status of devices, such as an alarm condition. Ex. 1017, [0069]. Bielski discloses that the notification to the mobile terminal can be “in the form of an SMS.” Ex. 1017, [0069]. Bielski discloses:

In a further design of the present invention, means can be provided by means of which a status report concerning the device state is transmitted to the mobile terminal in time intervals or upon occurrence of particular operating states of the one or more devices. This makes it possible to inform or warn the user of the mobile terminal about the device status,

either in regular time intervals, for example, or in case of special conditions, such as alarm conditions.

Ex. 1017, [0031].

538. Bielski discloses that the communication between the check and communication unit and the mobile terminal is made possible by a “sending and/or receiving unit” within the communication unit (the wireless module). Ex. 1017, [0026]. Bielski further discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

539. Bielski discloses that the SMS message can include information about the environmental devices. Bielski discloses that the “user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them.” Ex. 1017, [0063].

540. Likewise, Wu discloses that “the HNS gateway can actively notify the home user when an abnormal state occurs.” Ex. 1018, p. 494. In particular, the “HNS manager also employs the function provided by the short message driver to send alerting messages received from the home network to the mobile station.” Ex. 1018, p. 495. An example of the environmental alerting message disclosed in Wu is when “a burglar alarm rings or a surveillance system detects intruders.” Ex. 1018, p. 496. Annotated Figure 3 of Wu illustrates an example SMS message alert sent from the environmental device on the home network to the HNS gateway, which is then “pushe[d] [] to the home user in SMS” via Wu’s wireless module. Ex. 1018, p. 496, Fig. 3.

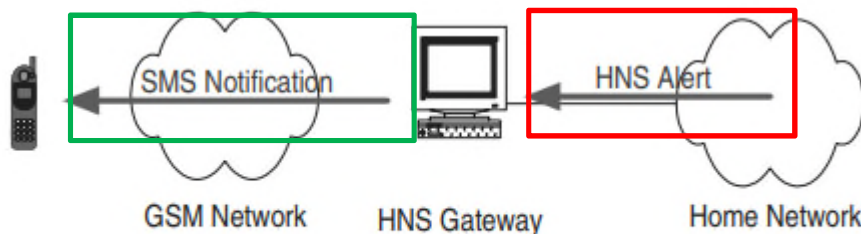


Fig. 3. Notification sent by SMS.

Ex. 1018, Fig. 3.

- viii. Claim 1: [1F] wherein the remote unit is configured to send a second SMS message, including a command for the environmental device, to the base unit through the wireless module, and**

541. Bielski and Wu disclose Limitation 1F. See 1B, 1Pre.

542. Bielski discloses active control and regulation of the home devices by means of the mobile terminal. Ex. 1017, [0008]. In particular, Bielski discloses:

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, *they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network of a network operator*, either with the help of the internet or directly, and from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.

Ex. 1017, [0063] (emphasis added).

543. Bielski further discloses:

For this purpose, the user enters the dialing number of the check and communication unit 20, which is assigned to the building 10, into their mobile phone or presses the corresponding symbol on the display. The control and communication unit 20 is clearly identifiable in the network of the telecommunication operator and can therefore be controlled by means of the internet or the mentioned direct mobile communications or land line connection. The check and communication unit takes over the desired addressing of the device.

Ex. 1017, [0064].

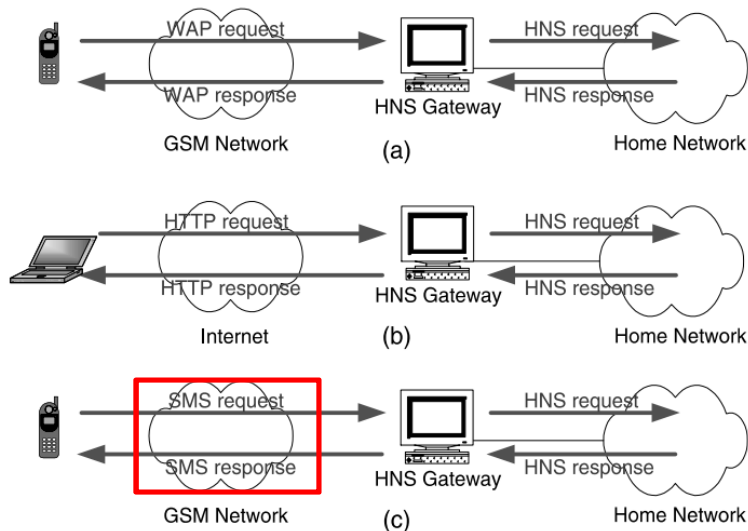
544. Accordingly, Bielski discloses that the mobile device (the remote unit) and the check and communication unit (the base unit and wireless module) communicate directly and that this communication can be performed without the internet. As is described above in Limitation 1E, a POSITA would have understood that Bielski teaches or suggests the use of SMS messages. Ex. 1017, [0069]. However, a POSITA would have also understood that the use of SMS messages was well known and, thus, would have relied on the system of Wu for the reasons espoused above.

545. In my opinion Limitation 1F does not require the second SMS message be sent in response to the first message. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, in my opinion a POSITA would have understood that the request and response messages are disclosed by Bielski and Wu. Indeed, Bielski discloses that the user “receives information from a household or a company, wherein they can actively react thereto with commands via the keyboard or the user interface.” Ex. 1017, [0070].

546. Likewise, Wu discloses a remote unit that is configured to send an SMS message to the HNS gateway. Wu discloses that after receiving an alerting message, the user can “control the appliance remotely.” Ex. 1018, p. 495. Indeed, a POSITA would have understood that Wu discloses a “request-response

mechanism” in the same manner as contemplated by at least Limitations 1E and 1F. Ex. 1018, p. 495.

547. The mobile device (the remote unit) in Wu has SMS capability such that the device “can communicate with the HNS via SMS protocol,” which allows “the user [to] monitor and control the home devices.” Ex. 1018, p. 495. SMS communication via the wireless module of Wu is illustrated in at least annotated Figure 2 of Wu:



Ex. 1018, Fig. 2.

548. In describing Figure 2, Wu discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Wu discloses that the command from the mobile device to HNS gateway can include “turning on/off” home appliances and systems, such as those listed in Table 1 (air-conditioning, lighting, burglar alarm). Ex. 1018, p. 495. Wu further discloses that the message

can include commands such as “cooling/dehumidifying” and “temperature.” Ex. 1018, 500.

ix. Claim 1: [1G] wherein the base unit is configured to receive the second SMS message, including the command, and to send the command to the environmental device to control the operation of the environmental device.

549. Bielski and Wu disclose Limitation 1G.

550. Bielski discloses the check and communication unit (base unit) receives a message from the mobile device and send the corresponding command to the environmental device. Bielski discloses that the communication unit with “sending and/or receiving unit” communicates with the mobile terminal and receives message therefrom. In particular Bielski discloses that the “sending and/or receiving” unit provides a means for which data can be sent and/or received . . . via a mobile communications network,” such as by GSM, GPRS, or UMTS. Ex. 1017, [0021], [0022].

551. Bielski discloses a check unit that “serves as a control and regulation unit as it transfers data to the mentioned devices, such as temperatures, opening or closing conditions etc., and as a regulation unit which adapts the nominal values of the devices transferred thereto to the desired nominal values by means of a regulation algorithm.” Ex. 1017, [0056]. The check unit is connected to the environmental device (*e.g.*, via wire or wirelessly) and is designed with specific applications to create the control command for the environmental device. Bielski

discloses, “[o]n the side of the check unit, a corresponding complex application for effecting control and regulation processes in the direction of the controlling/regulation devices is provided (heater, light switch, etc.).” Ex. 1017, [0082]. Bielski discloses that the invention allows for the transfer of data from the “check unit to the device(s) by means of cabling or wireless transfer.” Ex. 1017, [0040]. Bielski also discloses a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005].

552. Bielski discloses an example operation of the system in which the user sends a command from the remote unit to the check and communication unit and the check and communication unit then sends the command to the environmental device.

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. ***It is transferred to the control and communication unit 20 via the telecommunication network*** of a network operator, either with the help of the internet or directly, and ***from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.***

Ex. 1017, [0063] (emphasis added).

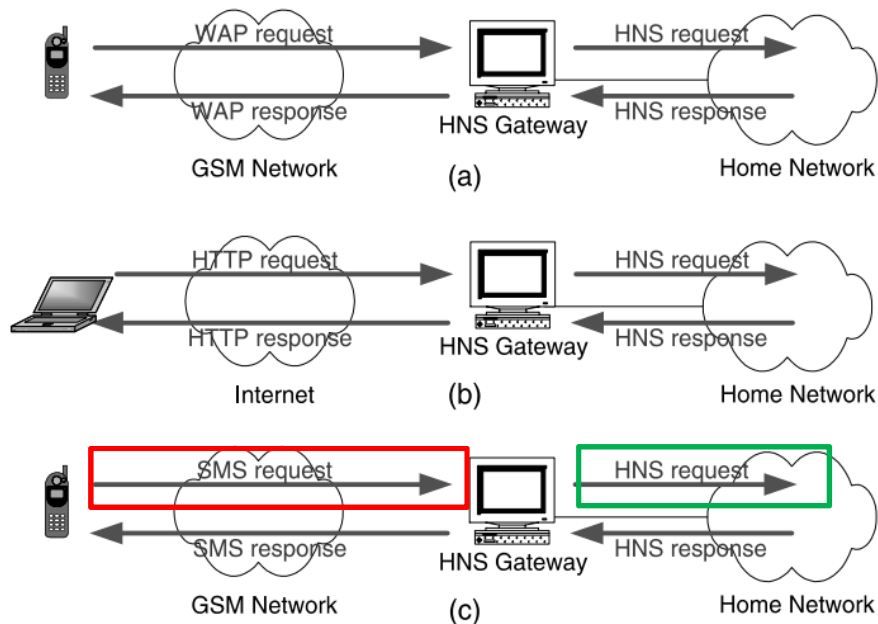
553. Bielski discloses that the check unit has complex applications that allow for “effecting control and regulation processes in the direction of the controlling/regulation devices is provided (heater, light switch, etc.).” Ex. 1017, [0082]. Bielski also discloses that the check and communication unit can be embodied as an embedded PC that accepts commands sent by the mobile device and “processes the values and correspondingly carries out the control/regulation commands via its I/O interfaces.” Ex. 1017, [0085].

554. Likewise, Wu discloses an HNS gateway, which is interfaced with environmental devices in a home or business and controls the operation thereof. Wu discloses an HNS gateway device, such as a personal computer, that “connects to home devices and runs a home automation management application that supervises home devices.” Ex. 1018, pp. 494-495.

555. Wu also discloses that a manager in the HNS gateway “is used to control the devices.” Ex. 1018, p. 496. Wu expands on this control operation, disclosing that the HNS gateway includes a configuration tool that allows for “locally monitoring, controlling, and coordinating a diverse set of independent appliances connected to the HNS.” Ex. 1018, p. 498.

556. Annotated Figure 2 of Wu illustrates that the HNS gateway receives requests from a mobile unit (SMS request) (red box) and then passes those requests

to the home network (HNS request) (green box), which includes the “environmental device” (*see* Ex. 1018, Fig. 1):



Ex. 1018, Fig. 2.

557. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Figure 2 also illustrates how the message from the remote unit is sent and received by the HNS Gateway in the form of the “SMS request” with an arrow from the remote unit to the HNS gateway.

558. Wu also discloses that control information is sent to the home network, which includes managed devices. As seen in Wu Figure 2, the HNS gateway sends an “HNS request” to the home network, which includes the environmental devices. *See* Ex. 1018, Figs. 1, 2. For example, Wu discloses that

based on the request-response mechanism in Figure 2, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495.

x. Claim 2: The system as recited in claim 1 wherein said environmental device includes electronic and electromechanical switching portions interfaced with said environmental device.

559. Bielski and Wu disclose the limitations of Claim 2.

560. There are no express disclosures of “electromechanical switching portions,” or even “switching portions” in the specification of the 935 Patent. There is a single disclosure of a switch in terms of a “conventional thermostat,” and generic disclosures of actuators and relays (within the context of a 1-Wire network) that “may be useful” for control of devices within a typical home. Ex. 1001, 5:58-64, 6:19-26, 12:13-20.

561. The 935 Patent discloses that its “switch automatically control[s] a heating or cooling appliance when the sensed temperature is beyond a present value.” Ex. 1001, 12:13-15. Based on this disclosure, a POSITA would have understood that one example of an environmental device that includes electronic and electromechanical switching portions would be a heating/cooling system. A POSITA would have also understood that other devices with electronic and

electromechanical switching mechanisms that activate / deactivate a device would also include electronic and electromechanical switching portions.

562. Bielski discloses such electronic and electromechanical switching mechanisms in at least the form of monitoring and control of environmental devices such as a heater. Ex. 1017, [0082]. Similar to a thermostat, Bielski discloses the control of both on/off conditions and temperatures. Ex. 1017, [0063], [0081].

563. Likewise, Wu discloses monitoring and control of devices such as an air-conditioner or heating system. Wu further discloses that the user can control these devices in a variety of ways, including “turning [them] on/off.” Ex. 1018, p. 495. Wu also discloses the ability to control three parameters of an air conditioner – “power (on/off), function (cooling/dehumidifying), and temperature.” Ex. 1018, p. 500.

xi. Claim 3: The system as recited in claim 1 wherein said base unit is a microcontroller-based processing unit having customizable application specific software.

564. Bielski and Wu disclose the limitations of Claim 3. As was described with respect to at least Limitation 1B, Bielski and Wu disclose a base unit. Based on the disclosure in the 935 Patent that the microcontroller “is electrically interconnected with random access memory 44, read only memory 46, the keypad 32, and the LCD display 38,” a POSITA would understand the disclosures of a

“microcontroller” to include a generic processor in an embedded system. Ex. 1001, 4:10-13. This is confirmed by the fact that the microcontroller described in the 935 Patent communicates with, and controls components in the base unit and attached devices via traditional communication buses (serial or parallel) and the microcontroller executes Java software. Ex. 1001, 4:29-34, 4:36-37, 4:46-52, 7:46-49.

565. Bielski discloses that its check and a communication unit (base unit) can be embodied as a computer, such as an embedded PC. Ex. 1017, [0037], [0049]. In particular, Bielski illustrates its check unit and a communication unit as a computer in at least annotated Figure 4. As would be understood by a POSITA, a computer or embedded PC necessarily includes the claimed microcontroller-based processing unit.

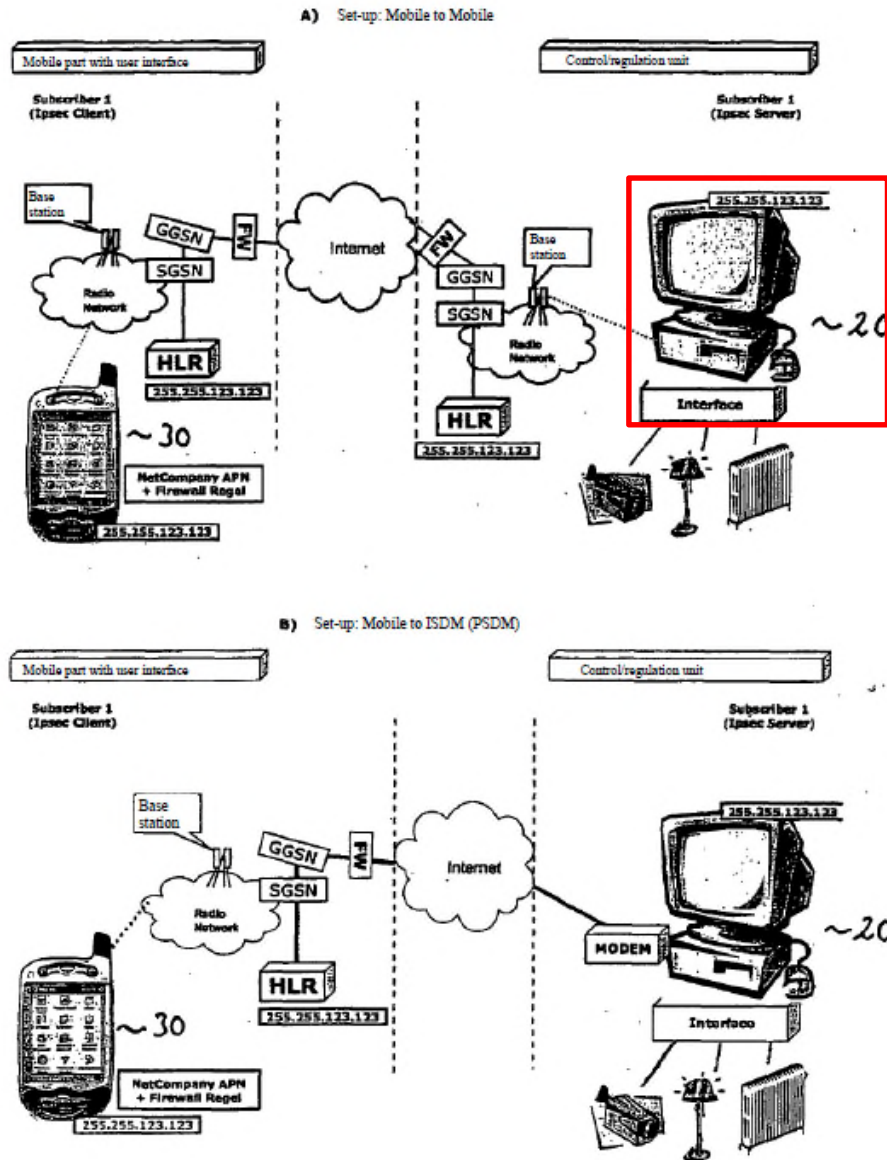


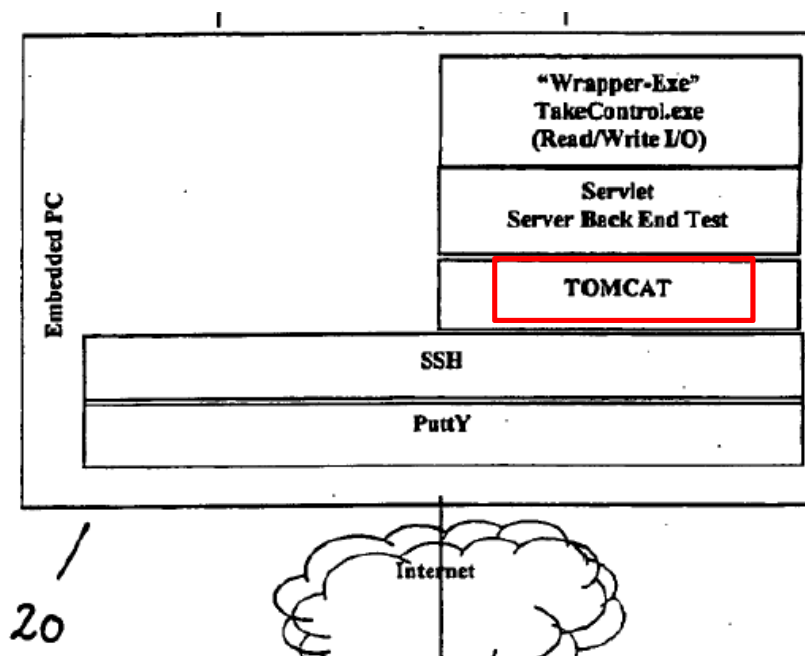
Fig. 4

Ex. 1017, Fig. 4.

566. Bielski also discloses that “[t]he use of specifically developed applications on the mobile device and/or in a check unit and/or in other elements of the system is especially advantageous.” Ex. 1017, [0076]. Bielski further discloses that the ability to create “special solutions” with regards to the interaction of these

applications “is essential” thereby suggesting a POSITA that the ability to customize and update the application is necessary. Ex. 1017, [0076].

567. Moreover, in annotated Figure 5, Bielski discloses that the check and communication unit includes “TOMCAT,” a reference the Apache Tomcat® which is an open source implementation of several Java specifications for supporting Java applications and services including the Java Servlet.



Ex. 1017, Fig. 5.

568. Likewise, Wu discloses that its HNS gateway (the base unit) is implemented on “on a desktop PC and a GSM mobile station with the ability to send and receive short messages and connect to the gateway through the RS232 serial port.” Ex. 1018, p. 498.

569. Wu discloses that the HNS gateway comprises software components that include a “Web server, WAP gateway, remote access service (RAS) server, short message driver, and HNS configuration tool.” Ex. 1018, p. 498.

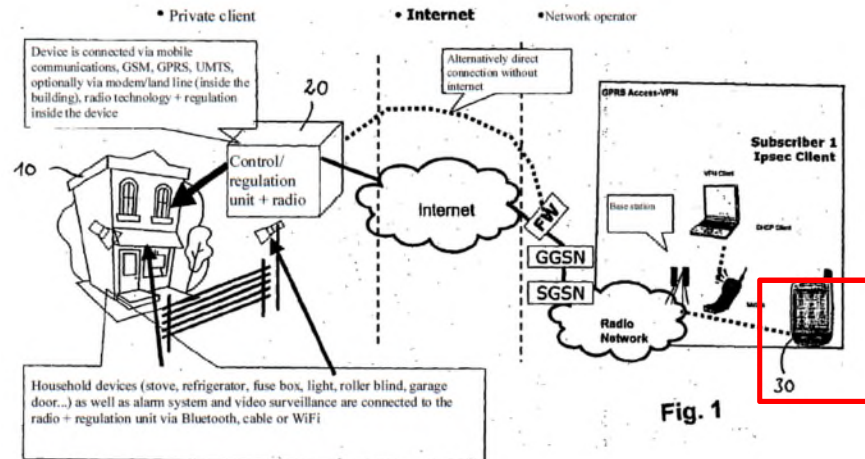
570. As would be understood by a POSITA, the HNS configuration tool is customizable software given that it is the software tool “for locally monitoring, controlling, and coordinating a diverse set of independent appliances connected to the HNS.” Ex. 1018, p. 498. That is, the HNS configuration tool can be configured or customized for a particular home network. For example, Wu discloses that the HNS configuration tool allows for the customization and configuration of “home devices even though they do not know much about home networks.” Ex. 1018, p. 499.

xii. Claim 4: The system as recited in claim 1 wherein said remote unit is a cellular telephone handset with custom programmability.

571. Bielski and Wu disclose the limitations of Claim 4. As was described with respect to at least Limitation 1C, Bielski and Wu disclose a remote unit, such as a cellular telephone.

572. Bielski discloses that the “inventive communication system enables the user of a mobile terminal, for example the user of a mobile phone, to monitor devices.” Ex. 1017, [0008]. Bielski further discloses that the inventive system is based on mobile communications networks such as GSM, GPRS, and/or UMTS.

Ex. 1017, [0070]. Examples of cellular telephone handsets are illustrated in at least annotated Figure 1.



Ex. 1017, Fig. 1.

573. Bielski further discloses that the cellular phone can have custom programmability. Indeed, Bielski discloses that “[t]he use of specifically developed applications on the mobile device and/or in a check unit and/or in other elements of the system is especially advantageous.” Ex. 1017, [0076]. Bielski further discloses that the ability to create “special solutions” with regards to the interaction of these applications “is essential.” Ex. 1017, [0076]. Bielski further discloses special applications within the cellular phone to improve usability and function:

The existence of an application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels or can set specifications for the control/regulation unit is particularly advantageous. It would be

possible, for example, to specify a room temperature with a slider inserted onto the user interface, wherein the exact temperature values would be shown on a separate display and the user, however, moves the slider to a desired value, similar to an air conditioning system in a motor vehicle. Furthermore, the usual buttons for on/off features and other settings for corresponding applications can be shown as well. The application itself takes over complicated tasks such as calculations of control/regulation behavior (ramp feature etc.) in certain application areas or the exchange of the information with the check unit via the mobile communications network, in the corresponding room which can also have a corresponding application. Software updates can enable an adaptation to possible changes in the controlled/regulated environment. This concept enables a comfortable handling using a special user interface and the monitoring/control/regulation of devices etc. with a corresponding suitable transfer band width and the data transfer suitable thereto (data flow, for example via the internet protocol). This is not easily possible with pure GSM networks.

Ex. 1017, [0081]

574. Similar to Bielski, Wu discloses that the user controls the system via a “GSM mobile terminal.” Ex. 1018, Abstract. Wu provides the specific example of a “Nokia 7110 handset,” which is a cellular phone that was commercially available at the time of Wu. Ex. 1018, p. 500.

575. Wu also provides custom software in the form of an application to monitor and control the current status of the HNS. Wu illustrates a current state

(green box) of the monitored device (red box) through its user interface that is illustrated in annotated Figure 9.

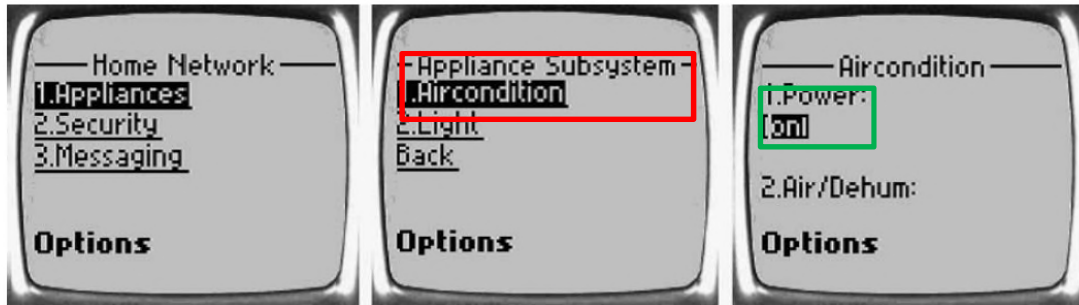


Fig. 9. HNS status.

Ex. 1018, Fig. 9.

- xiii. Claim 7: The system as recited in claim 1 wherein said wireless connectivity includes a transmitting and receiving module in said base unit and a transmitting and receiving unit in said remote unit operatively communicating with each other over a cellular telephone network.***

576. Bielski and Wu disclose the limitations of Claim 7. As was described with respect to at least Limitation 1C, Bielski and Wu disclose wireless connectivity including the remote unit with wireless connectivity.

577. Bielski discloses that both the check and communication unit (base unit) and mobile device (remote unit) include transmitting/receiving units such that both devices can communicate with one another directly.

578. Bielski discloses a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In

particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent and/or received via . . . a mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. The sending/receiving unit allows a direct cellular connection between the communication unit and the user’s mobile device. Ex. 1017, [0023]. Indeed Bielski discloses:

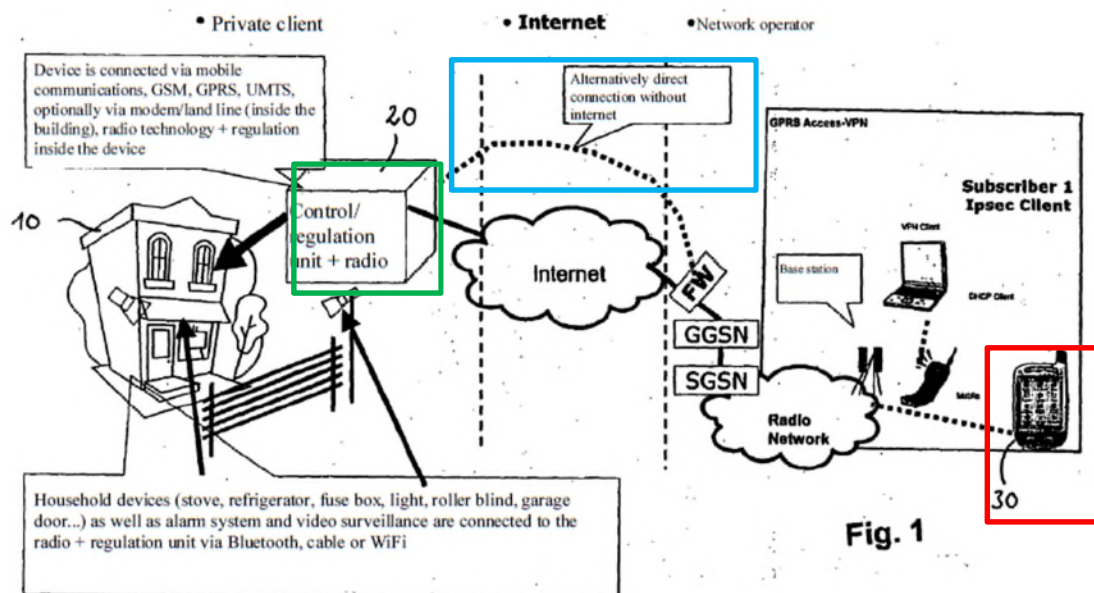
The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

579. In this implementation, Bielski discloses that “a connection of the network operator to the internet is not required.” Ex. 1017, [0060].

580. Bielski further discloses that the remote unit comprises a transmitting and receiving unit that allows it to communicate with the check and communication unit. Indeed, Bielski discloses that the mobile terminal and the check and communication unit communicates directly via a cellular connection. Ex. 1017, [0023]. Bielski discloses that “[t]he mobile terminal can operate according to the GSM standard” as well as “the GPRS standard, the UMTS standard or any other standard or data transfer technology for the transfer of the desired data.” Ex. 1017, [0030].

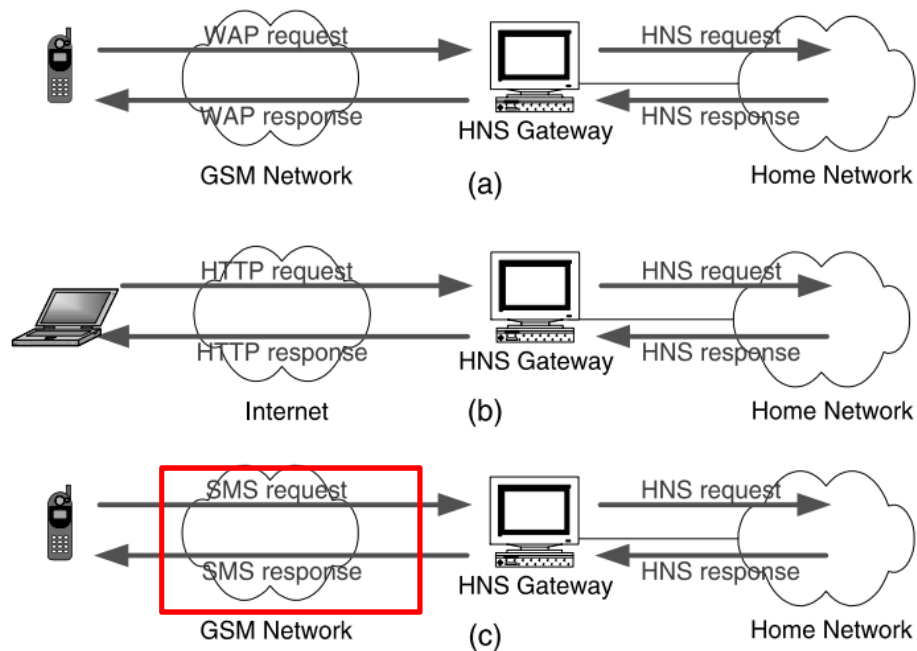
581. Bielski further illustrates a direct connection (blue box) between the mobile device (red box) and check and communication unit in the home (green box) in annotated Figure 1:



Ex. 1017, Fig. 1.

582. As seen in Figure 1, the check and communication unit in the home can be connected to the mobile device either directly or through the internet. When connected directly, the check and communication unit communicates with the mobile device via a cellular network.

583. Wu discloses that the HNS gateway (base unit) includes a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, p. 497; *see also id.* at Fig. 6. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499. As shown in annotated Figure 2 of Wu, the HNS gateway can communicate with the mobile device over a cellular network, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495. Wu discloses an example of the mobile station, a Nokia 7110 handset. Ex. 1018, p. 500.



Ex. 1018, Fig. 2.

584. Wu further discloses that the HNS gateway can actively use “WAP push [14], HTTP push mechanisms or SMS to send messages to a mobile station.”

Ex. 1018, p. 496.

585. In further regard to the mobile terminal, Wu discloses that, as seen in Figure 2(c), “a mobile station with SMS capability can communicate with the HNS via SMS protocol. With SMS, the user can monitor and control the home devices.”

Ex. 1018, p. 495.

586. Wu annotated Figure 6 also shows the cellular connectivity that resides within the HNS gateway and that directly connects to the remote unit.

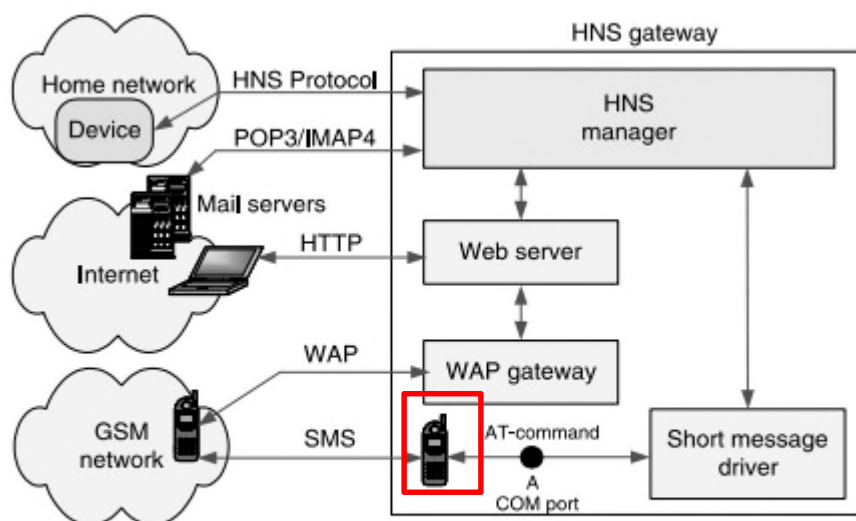


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

xiv. Claim 8: The system as recited in claim 1 wherein the remote unit includes a liquid crystal display module.

587. Bielski and Wu disclose the limitations of Claim 8.

588. Bielski discloses that the mobile devices has a display. Ex. 1017, [0064]. Indeed, Bielski states: “The existence of an application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels or can set specifications for the control/regulation unit is particularly advantageous.” Ex. 1017, [0081]. In addition, Bielski discloses examples with PDAs that show displays with icons. See Ex. 1017, Fig. 6.

589. As a result, a POSITA would have understood that there were a very limited number of display types for mobile devices at the time of Bielski, with the most prevalent type being LCD displays. Accordingly, a POSITA would have understood that Bielski suggests an LCD display. To the extent this was not the case, given the prevalence of LCD displays in the 2004 time frame, based on the knowledge of a POSITA alone, it would have been obvious to include an LCD display on the mobile device of Bielski.

590. Likewise, Wu illustrates that LCD displays were known for use in mobile devices. Wu discloses that the HNS gateway communicates with, for example, a Nokia 7110 handset and provides examples of the display of this device. Ex. 1018, Fig. 9, p. 500. For example, Wu illustrates the graphical user interface of the Nokia 7110 that a POSITA would identify as an LCD screen in Figure 9 and 11:



Fig. 9. HNS status.

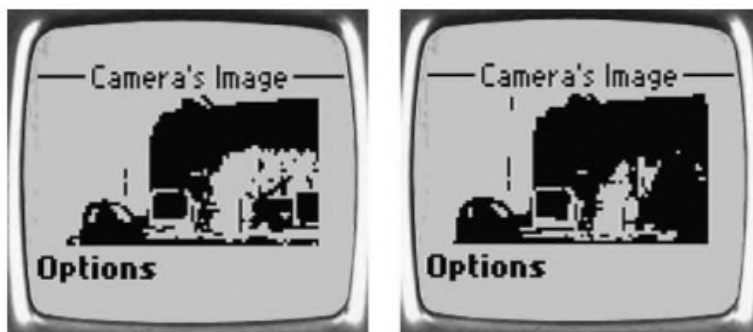


Fig. 11. Real-time images captured by CCD camera.

Ex. 1018, Figs. 9, 11.

- xv. Claim 9: The system as recited in claim 8 wherein said liquid crystal module includes selectable graphic icons corresponding to current environmental information being monitored or controlled.***

591. The combination of Bielski and Wu disclose the limitations of Claim 9.

592. Bielski discloses that the display of the mobile device (the remote unit) can include graphic icons, or buttons, that correspond to current environmental information being monitored. In particular, Bielski discloses that the mobile unit includes a user interface in which a user can “actuate[] a button on the mobile terminal and then the associated monitoring, control and/or regulation program is implemented.” Ex. 1017, [0032]. Bielski further discloses an implementation of an “application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels.” Ex. 1017, [0081]. In a particular example, Bielski discloses that a user

could “specify a room temperature with a slider inserted onto the user interface, wherein the exact temperature values would be shown on a separate display and the user, however, moves the slider to a desired value. . .” Ex. 1017, [0081].

Moreover, Bielski shows example mobile units with graphic icons. For example, in an excerpt from annotated Figure 6, Bielski illustrates a PDA device with 12 graphic icons:

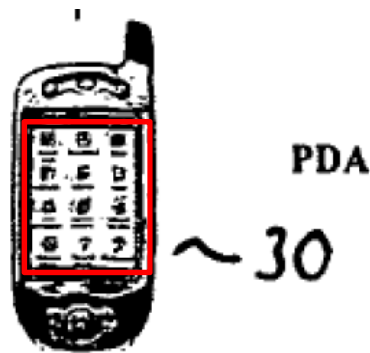


Fig. 6

Ex. 1017, Fig. 6 (excerpt).

593. Likewise, Wu illustrates a display that includes information and selectable text related to devices to be controlled. Ex. 1018, Fig. 9, p. 500. In annotated Figure 9 and 11, Wu illustrates its interface in relation to an appliance subsystem, such as an air conditioner as well as a camera:

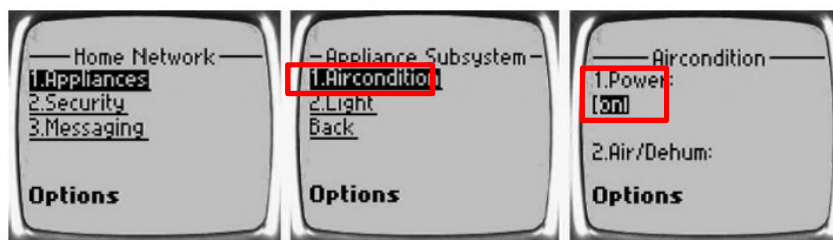


Fig. 9. HNS status.

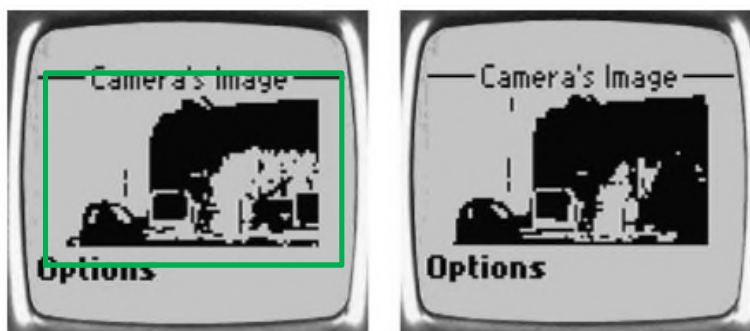


Fig. 11. Real-time images captured by CCD camera.

Ex. 1018, Figs. 9, 11.

xvi. Claim 11: [11Pre] A wireless system comprising:

594. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitation 1Pre.

xvii. Claim 11: [11A] an environmental device configured to send environmental information, and adapted to receive a command to control an operation of the environmental device;

595. See Limitation 1A. Unlike Limitation 1A, Limitation 11A Also recites that the environmental device is “configured to send environmental information, and adapted to receive a command to control an operation of the environmental device.” Bielski and Wu disclose Limitation 11A.

596. Bielski discloses that the check unit (base unit) receives data from the devices in the home and also sends control commands to these same devices:

The check unit can be implemented as a monitoring unit which receives data from the device(s) and forwards them to the communication unit. Alternatively or in addition, it can be provided that the check unit is embodied as a control unit which transfers data for the purpose of control to the one or more devices, or that the check unit is embodied as regulation unit which receives actual values from the one or more devices and compares them with nominal values and, in the case of a deviation, transfers the data reducing the system deviation to the one or more devices. The nominal values can be transferred to the check unit by means of the inventive system, wherein the user enters them into their mobile terminal and they are then transferred by means of the inventive communication system. The nominal values can be transferred to the check unit and not to the device itself. The check unit makes the regulation according to the transferred nominal values. The data exchange between the check unit and the device(s) relates to the case of data concerning regulation. Alternatively, it is also possible to transfer the nominal values to the device where the corresponding actual values are set by means of a regulation device.

Ex. 1017, [0014] (emphasis added).

597. Bielski expands on this transfer of data, disclosing that the check unit monitors devices by “receiving data from the mentioned devices.” Ex. 1017, [0056]. Additionally, Bielski expands on the check unit’s control functionality,

disclosing that the check unit will “transfer data to the mentioned devices, such as temperatures, opening or closing conditions etc.” Ex. 1017, [0056]. Bielski also discloses that “at least one check unit which is wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that data can be transferred from the check unit to the device(s) and/or from the device(s) to the check unit.” Ex. 1017, [0005].

598. Likewise, Wu discloses Limitation 11A. Wu provides various figures that show the connection between the HNS gateway (base unit) and home network (which includes the monitored devices).

599. In annotated Figure 2, Wu illustrates that the HNS gateway both sends and receives data/information from the home network through bi-directional arrows showing two-way communication:

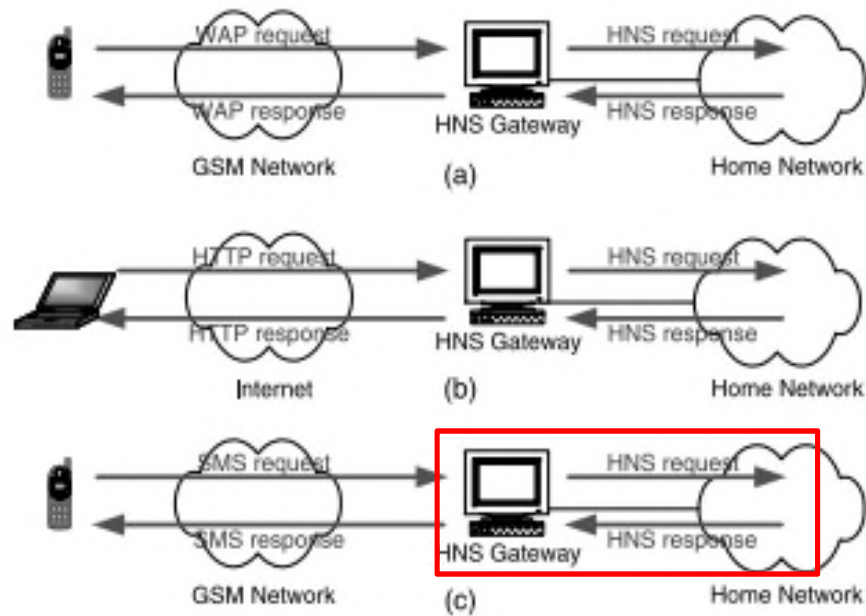


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

600. In annotated Figure 1, Wu illustrates that the home network includes the monitored environmental devices such as the security subsystem, as well as an appliance subsystem, which includes a variety of environmental devices (see table 1):

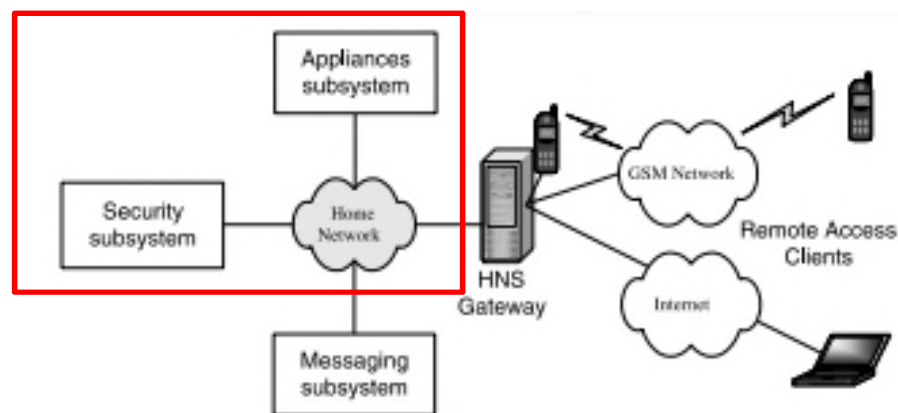


Fig. 1. Home network system architecture.

Ex. 1018, Fig. 1.

601. Wu discloses that the HNS gateway is configured to “supervise[] home devices.” Ex. 1018, p. 494.

602. Wu explicitly discloses that the environmental unit sends environmental information. Wu discloses that appliances “can actively send an alerting message to the HNS gateway (by posting information) when detecting an abnormal situation or a warning signal.” Ex. 1018, pp. 495-496. Wu discloses that this could be, for example, information about an alarm condition. Ex. 1018, p. 496.

603. Wu also discloses that control information is sent to the home network, which includes managed devices. For example, Wu discloses that based on the request-response mechanism in Figure 1, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495.

xviii. Claim 11: [11B] a remote unit having wireless connectivity and being configured to:

604. Bielski and Wu disclose Limitation 11B for at least the reasons outlined above with respect to Limitation 1C.

xix. Claim 11: [11C] receive a first short message service (SMS) message, wherein the first SMS message includes the environmental information;

605. Bielski and Wu disclose Limitation 11C. *See also* 1E.

606. Bielski discloses that the monitoring function can be performed by the mobile unit without using the Internet:

For example, a solution is conceivable in which the application is fully stored on the mobile terminal and upon the actuation of a user interface, for example, control or regulation signals are transferred to the terminals which are to be monitored, controlled or regulated. In this case, the interposing of the internet is not necessary.

Ex. 1017, [0036].

607. Bielski discloses that one of advantages of his invention is that it “enables to passively inform the user of the mobile terminal about the status of the devices to be monitored.” Ex. 1017, [0010]. Bielski confirms, however, that its system is not limited to a passive or “pull” system but that the user can be automatically informed (*e.g.*, pushed information) about the status of devices, such as about an alarm condition. Ex. 1017, [0069]. Bielski discloses that the notification to the mobile terminal can be “in the form of an SMS.” Ex. 1017, [0069].

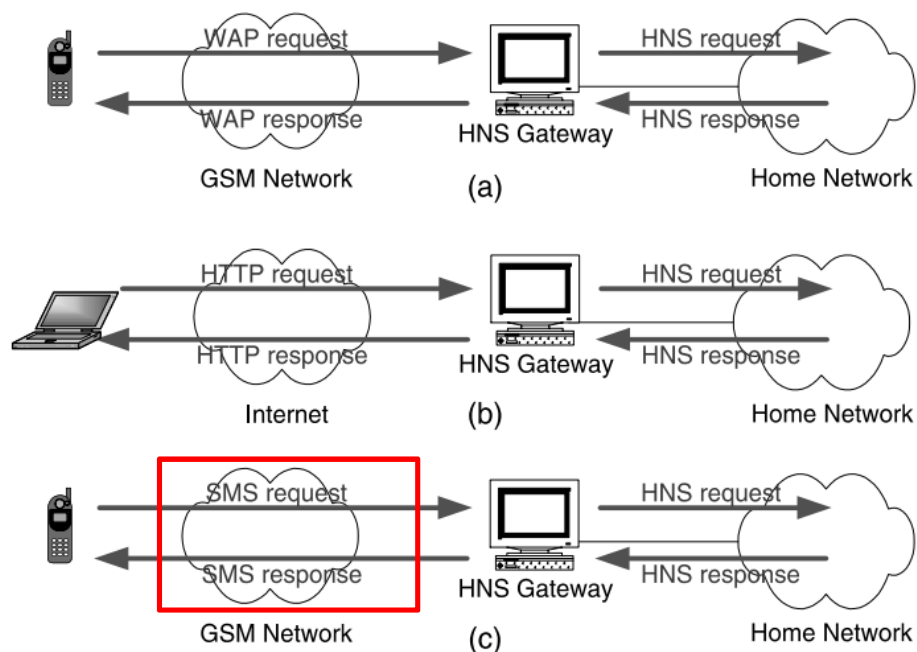
608. Bielski further discloses:

In a further design of the present invention, means can be provided by means of which *a status report concerning the device state is transmitted to the mobile terminal* in time intervals or upon occurrence of particular operating states of the one or more devices. This makes it possible to inform or warn the user of the mobile terminal about the

device status, either in regular time intervals, for example, or in case of special conditions, such as alarm conditions.

Ex. 1017, [0031] (emphasis added).

609. Likewise, Wu discloses that the wireless system allows users to “remotely monitor and control the devices in the HNS via . . . a GSM mobile terminal.” Ex. 1018, Abstract. In particular, Wu discloses a mobile station that includes SMS capability for communicating with the HNS gateway. Ex. 1018, p. 495. As shown in annotated Figure 2 of Wu, the “mobile station with SMS capability can communicate with the HNS via SMS protocol” including bi-directional SMS communication. Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

610. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495.

611. Likewise, Wu discloses that “the HNS gateway can actively notify the home user when an abnormal state occurs.” Ex. 1018, p. 494. In particular, the “HNS manager also employs the function provided by the short message driver to send alerting messages received from the home network to the mobile station.” Ex. 1018, p. 495. An example of the environmental alerting message disclosed in Wu is when “a burglar alarm rings or a surveillance system detects intruders.” Ex. 1018, p. 496. Annotated Figure 3 of Wu illustrates an example SMS message alert sent from the environmental device on the home network to the HNS gateway, which is then “pushe[d] [] to the home user in SMS.” Ex. 1018, p. 496, Fig. 3.

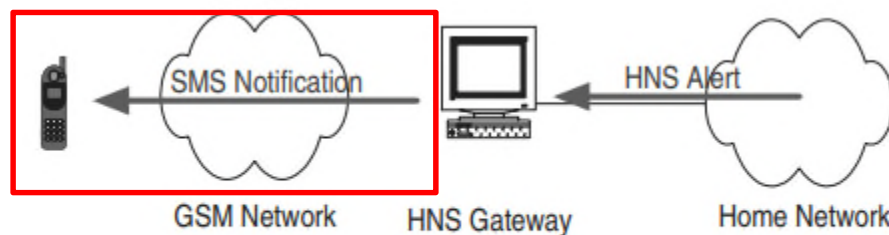


Fig. 3. Notification sent by SMS.

Ex. 1018, Fig. 3.

xx. Claim 11: [11D] notify a user of said remote unit of receipt of the first SMS message; and

612. Bielski and Wu disclose Limitation 19D. Bielski's and Wu's disclosures of their remote unit being configured to send and receive SMS messages was discussed above for Limitation 1C.

613. Bielski further discloses that automatic notifications can be sent to the user based on the status of household devices. For example, in annotated Figure 3, Bielski includes a dialog box which indicates that the user receives automatic notifications from the home-zone:

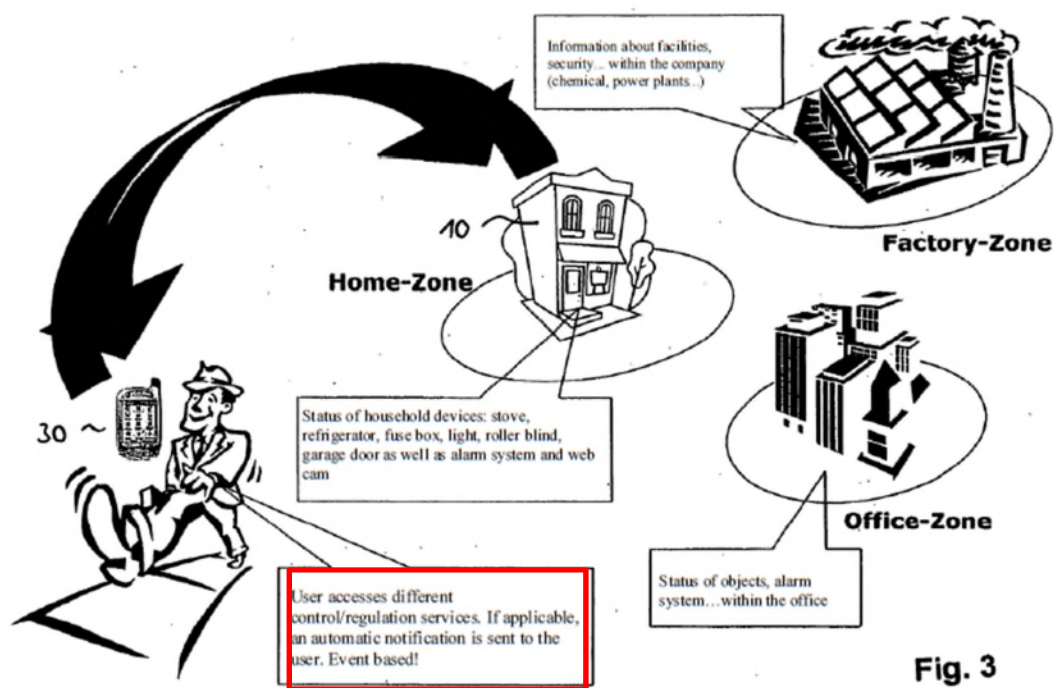


Fig. 3

Ex. 1017, Fig. 3.

614. Consistent with a POSITA's knowledge of SMS messaging, a POSITA would have understood that Bielski's disclosure that the user receives

“notifications” means that the user is notified of the message and thus that Bielski’s disclosure meets this limitation.

615. Bielski further discloses that the disclosed system allows users to be “passively inform[ed] [] about the status of the devices to be monitored.” Ex. 1017, [0010]. This provides additional support that the user is notified about the message from the check and communication unit. Indeed, a POSITA would have understood that passively informing the user means the user will be notified and thus that Bielski’s disclosure meets this limitation.

616. Likewise, Wu also discloses that the remote unit notifies the user of messages. Wu discloses:

In addition, the HNS gateway can actively *notify* the home user when an abnormal state occurs. For example, an appliance can send an alerting message to the HNS gateway if an abnormal state occurs. The HNS gateway receives this *alerting message* and relays it to the user using GSM Short Message Service (SMS) [13]. The home user may control the appliance remotely via WAP MS or go home *immediately* upon receipt of the message.

Ex. 1018, pp. 494-495 (emphasis added).

617. A POSITA would have understood that an “alerting message” that prompts the user to take action “immediately” indicates that the user is notified about the receipt of the message. Indeed, Wu discloses that the user is “notif[ied]”

when an abnormal state occurs in the home. Accordingly, a POSITA would have understood that both Wu and Bielski disclose Limitation 11D.

xxi. Claim 11: [11E] send a second SMS message, wherein the second SMS message includes the command; and

618. Bielski and Wu disclose Limitation 11E for at least the reasons outlined above with respect to Limitation 1F.

xxii. Claim 11: [11F] a wireless base unit configured to:

619. Bielski and Wu disclose Limitation 11F for at least the reasons outlined above with respect to Limitation 1B. *See also* 1Pre.

xxiii. Claim 11: [11G] receive the environmental information from the environmental device;

620. Bielski and Wu disclose Limitation 11G.

621. Bielski discloses a check and communication unit and that the check unit is connected to the managed devices such that “data can be transferred from the check unit to the device(s) and/or from the device(s) to the check unit.” Ex. 1017, Abstract.

622. Bielski discloses:

The *check unit can be implemented as a monitoring unit which receives data from the device(s)* and forwards them to the communication unit. Alternatively or in addition, it can be provided that the check unit is embodied as a control unit which transfers data for the purpose of control to the one or more devices, or that the check unit is embodied as regulation unit which receives actual values from the one

or more devices and compares them with nominal values and, in the case of a deviation, transfers the data reducing the system deviation to the one or more devices. The nominal values can be transferred to the check unit by means of the inventive system, wherein the user enters them into their mobile terminal and they are then transferred by means of the inventive communication system. The nominal values can be transferred to the check unit and not to the device itself. The check unit makes the regulation according to the transferred nominal values. The data exchange between the check unit and the device(s) relates to the case of data concerning regulation. Alternatively, it is also possible to transfer the nominal values to the device where the corresponding actual values are set by means of a regulation device.

Ex. 1017, [0014] (emphasis added).

623. Bielski expands on this transfer of data, disclosing that the check unit monitors devices by “receiving data from the mentioned devices.” Ex. 1017, [0056]. Additionally, Bielski discloses that the check unit will “transfer data to the mentioned devices, such as temperatures, opening or closing conditions etc.” Ex. 1017, [0056]. Bielski also discloses that “at least one check unit which is wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that data can be transferred from the check unit to the device(s) and/or *from the device(s) to the check unit.*” Ex. 1017, [0005] (emphasis added).

624. Likewise, Wu discloses Limitation 11G. Wu provides various figures that show the connection between the HNS gateway and home network (which includes the monitored devices).

625. In annotated Figure 2, Wu illustrates that the HNS gateway both sends and receives data/information from the home network through bi-directional arrows showing two-way communication:

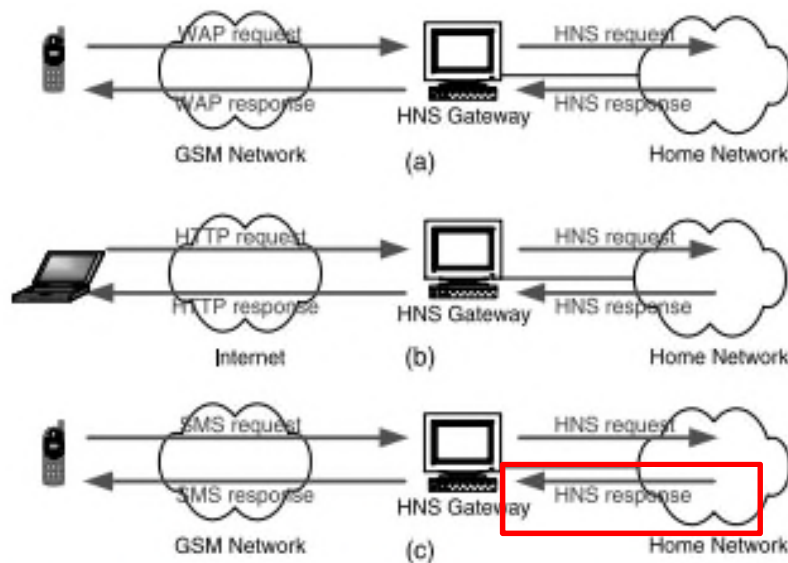


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

626. In annotated Figure 1, Wu shows that the home network includes the monitored environmental devices such as the security subsystem, as well as an appliance subsystem, which includes a variety of environmental devices (*see* Ex. 1018, Table 1):

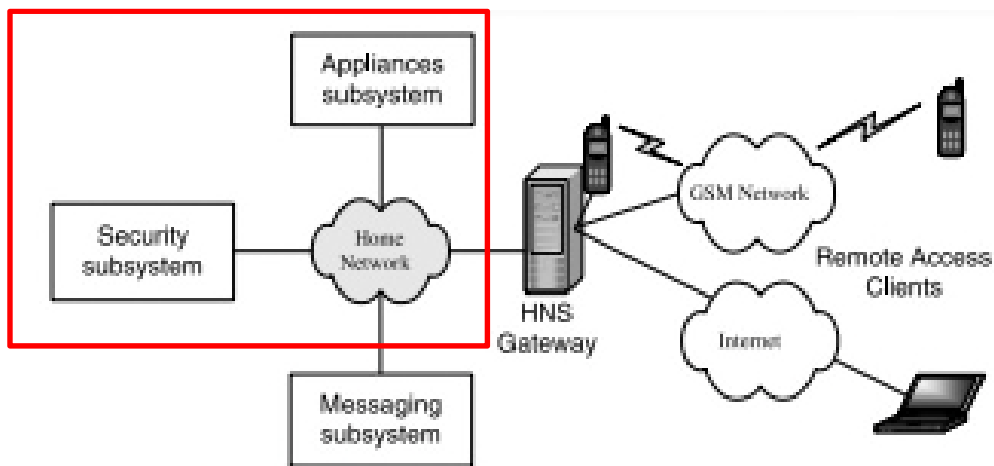


Fig. 1. Home network system architecture.

Ex. 1018, Fig. 1.

627. Wu discloses that the HNS gateway (base unit) is configured to “supervise[] home devices.” Ex. 1018, p. 494.

628. Wu further discloses that appliances “can actively send an alerting message to the HNS gateway (by posting information) when detecting an abnormal situation or a warning signal.” Ex. 1018, pp. 495-496. Wu discloses that this could be, for example, information about an alarm condition. Ex. 1018, p. 496. A particular example is shown in Wu’s annotated Figure 3 where the base unit receives an “HNS Alert” from the “environmental device”:

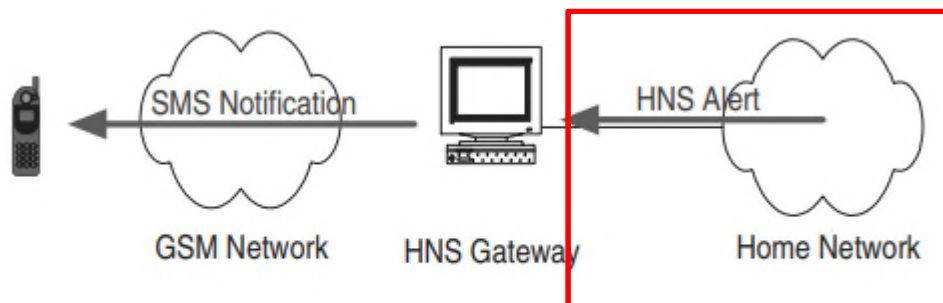


Fig. 3. Notification sent by SMS.

Ex. 1018, Fig. 3.

xxiv. Claim 11: [11H] transmit the first SMS message to the remote unit;

629. Bielski and Wu disclose Limitation 11H for at least the reasons outlined above with respect to Limitation 1E.

xxv. Claim 11: [11I] receive the second SMS message from the remote unit; and

630. Bielski and Wu disclose Limitation 11I for the reasons discussed in Limitations 1F and 1G.

631. Bielski explicitly discloses active control and regulation of the home devices by the check and communication unit through inputs by the user of the mobile terminal (remote unit). Ex. 1017, [0008]. In particular, Bielski discloses:

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, *they enter the corresponding commands, such as on/off conditions or temperatures*

etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network of a network operator, either with the help of the internet or directly, and from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.

Ex. 1017, [0063].

632. Bielski further discloses:

For this purpose, the user enters the dialing number of the check and communication unit 20, which is assigned to the building 10, into their mobile phone or presses the corresponding symbol on the display. The control and communication unit 20 is clearly identifiable in the network of the telecommunication operator and can therefore be controlled by means of the internet or the mentioned direct mobile communications or land line connection. The check and communication unit takes over the desired addressing of the device.

Ex. 1017, [0064].

633. Accordingly, Bielski discloses that the mobile device and the check and communication unit communicate directly and that this communication can be performed without the Internet.

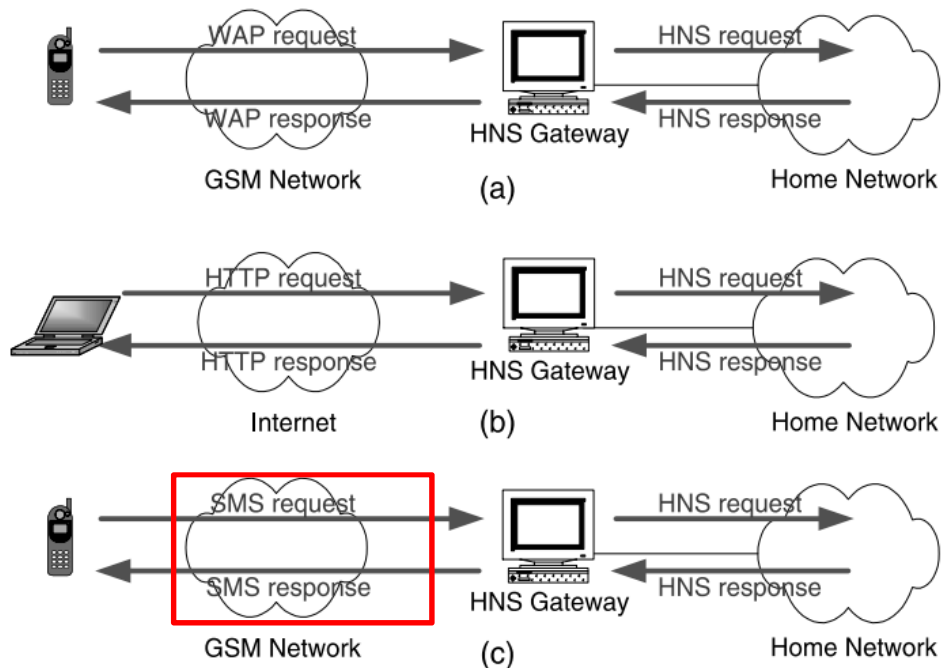
634. In my opinion Limitation 11I does not require the second SMS message be sent in response to the first message.

635. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, in my opinion a POSITA would

have understood that the request and response messages are disclosed by Bielski and Wu. Indeed, Bielski discloses that the user “receives information from a household or a company, wherein they can actively react thereto with commands via the keyboard or the user interface.” Ex. 1017, [0070].

636. Wu discloses a “request-response mechanism” in the same manner as contemplated by at least Limitations 1E and 1F. Ex. 1018, p. 495.

637. Wu discloses a remote unit that is configured to send a SMS message to the HNS gateway. Wu discloses that after receiving an alerting message, the user can “control the appliance remotely.” Ex. 1018, p. 495. The mobile device in Wu has SMS capability such that the mobile station “can communicate with the HNS via SMS protocol,” which allows “the user [to] monitor and control the home devices.” Ex. 1018, p. 495. An example of this SMS communication is illustrated in annotated Figure 2 of Wu:



Ex. 1018, Fig. 2.

638. In describing Figure 2, Wu discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Wu discloses that the command from the mobile device to HNS gateway can include, for example, “turning on/off” home appliances and systems, such as those listed in Table 1 (air-conditioning, lighting, burglar alarm). Ex. 1018, p. 495.

xxvi. Claim 11: [11J] send the command to the environmental device.

639. Bielski and Wu disclose Limitation 11J for at least the reasons discussed in Limitation 1G.

640. Bielski discloses a check unit that sends commands to the environmental device. Ex. 1017, Abstract. Bielski describes that the check unit

controls operation of the environmental devices in that the check unit is “wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that *data can be transferred from the check unit to the device(s)* and/or from the device(s) to the check unit.” Ex. 1017, [0005] (emphasis added).

641. In particular, Bielski discloses that the check unit sends control commands to these same devices:

The check unit can be implemented as a monitoring unit which receives data from the device(s) and forwards them to the communication unit. Alternatively or in addition, it can be provided that the *check unit is embodied as a control unit which transfers data for the purpose of control to the one or more devices*, or that the check unit is embodied as regulation unit which receives actual values from the one or more devices and compares them with nominal values and, in the case of a deviation, transfers the data reducing the system deviation to the one or more devices. The nominal values can be transferred to the check unit by means of the inventive system, wherein the user enters them into their mobile terminal and they are then transferred by means of the inventive communication system. The nominal values can be transferred to the check unit and not to the device itself. The check unit makes the regulation according to the transferred nominal values. The data exchange between the check unit and the device(s) relates to the case of data concerning regulation. Alternatively, it is also possible to transfer the nominal values to the device where the corresponding actual values are set by means of a regulation device.

Ex. 1017, [0014] (emphasis added).

642. Bielski also discloses:

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as *on/off conditions or temperatures etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network* of a network operator, either with the help of the internet or directly, and *from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.*

Ex. 1017, [0063] (emphasis added).

643. Bielski expands on the check unit's control functionality, disclosing that the check unit will "transfer data to the mentioned devices, such as temperatures, opening or closing conditions etc." Ex. 1017, [0056]. Bielski also discloses that "at least one check unit which is wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that data can be transferred from the check unit to the device(s) and/or from the device(s) to the check unit." Ex. 1017, [0005]

644. Likewise, Wu discloses Limitation 11J. Wu discloses an HNS gateway device, such as a personal computer, that "connects to home devices and runs a home automation management application that supervises home devices."

Ex. 1018, pp. 494-495. Wu discloses that the HNS gateway includes a management application that “supervises home devices.” Ex. 1018, p. 494.

645. Wu also discloses that a manager in the HNS gateway “is used to control the devices.” Ex. 1018, p. 496. Wu expands on this control operation, disclosing that the HNS gateway includes a configuration tool that allows for “locally monitoring, controlling, and coordinating a diverse set of independent appliances connected to the HNS.” Ex. 1018, p. 498.

646. In annotated Figure 2, Wu illustrates that the HNS gateway sends commands to the home network (which includes environmental devices) in the form of an “HNS request”:

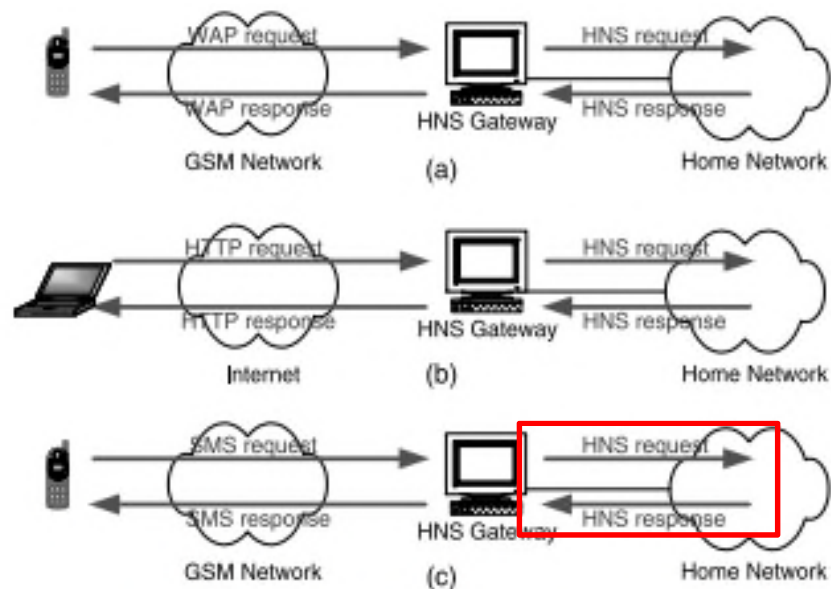


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

647. In annotated Figure 1, Wu illustrates that the home network includes the monitored environmental devices such as the security subsystem, as well as an appliance subsystem, which includes a variety of environmental devices (see table 1):

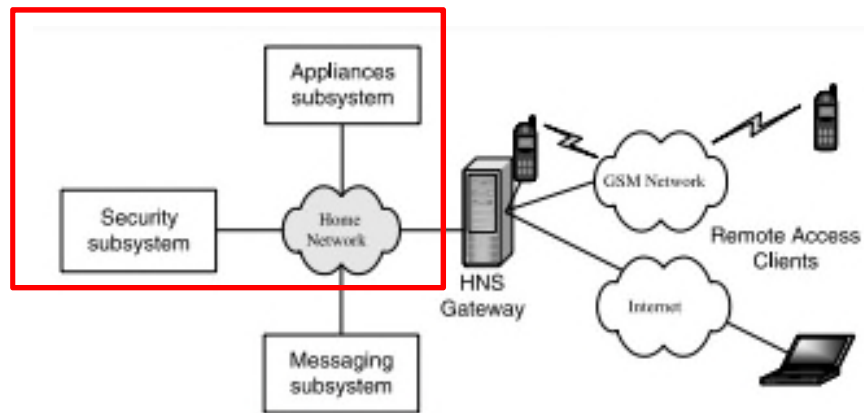


Fig. 1. Home network system architecture.

Ex. 1018, Fig. 1.

648. Wu discloses that, for example, based on the request-response mechanism in Figure 1, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495.

xxvii. Claim 12: The system of claim 11 wherein the wireless connectivity connection further comprises a first wireless connection interfacing with the base unit, a second wireless connection interfacing with the remote unit, and a non-wireless connection interfacing between the first wireless connection and the second wireless connection.

649. The combination of Bielski and Wu disclose the limitations of Claim 12. Claim 12 depends from Claim 11 and recites: “wherein the wireless connectivity connection further comprises,” however the term “wireless connectivity connection” is not found in Claim 11. Instead, Claim 11 recites: “a remote unit having *wireless connectivity* and being configured.” Ex. 1001, Claim 11 (emphasis added). To the extent Claim 12 is interpreted as describing a cellular network connection whereby cellular network infrastructure is positioned between the base unit and the remote unit, such infrastructure is disclosed by Bielski and Wu. *See also* 1B.

650. Bielski discloses such network infrastructure:

The data transfer or data receipt on the side of the network operator is by Firewall FW and a SGSN/GGSN system which connects the GPRS system to the internet or to another mobile communications network or to the land line. In a preferred design, the connection to the internet according to the present example embodiment is by mobile communications technologies. However, if the transfer on the side of the control and communication unit 20 is direct without the interposing of the internet, a connection of the network operator to the internet is not required. The GPRS system is connected to a GSM

system by means of the SGSN system. The SGSN system handles the data transfer from and to the mobile communications stations. The data transfer is now by means of the mobile communications network of a network operator to the base station and from there to the mobile terminal 30 by means of the standard transfer technologies.

Ex. 1017, [0060-0061].

xxviii. Claim 13: The system of claim 11 wherein the environmental device includes electronic and electromechanical switching portions for controlling the environmental information.

651. Bielski and Wu disclose the limitations of Claim 13 for at least the reasons outlined above with respect to Claims 2 and 11.

xiv. Claim 14: The system of claim 11 wherein the base unit further comprises a microcontroller-based processing unit having customizable application specific software.

652. Bielski and Wu disclose the limitations of Claim 14 for at least the reasons outlined above with respect to Claims 3 and 11. *See also* 1G.

xv. Claim 15: The system of claim 11 wherein the remote unit further comprises a cellular telephone handset.

653. Bielski and Wu disclose the limitations of Claim 15 for at least the reasons outlined above with respect to Claims 4 and 11.

xvi. Claim 17: The system of claim 11 further comprising a cellular telephone network.

654. Bielski and Wu disclose the limitations of Claim 17.

655. Bielski discloses that its communication system is based on standard cellular networks such as GSM, GPRS, and/or UMTS. Ex. 1017, [0070]. In particular Bielski discloses:

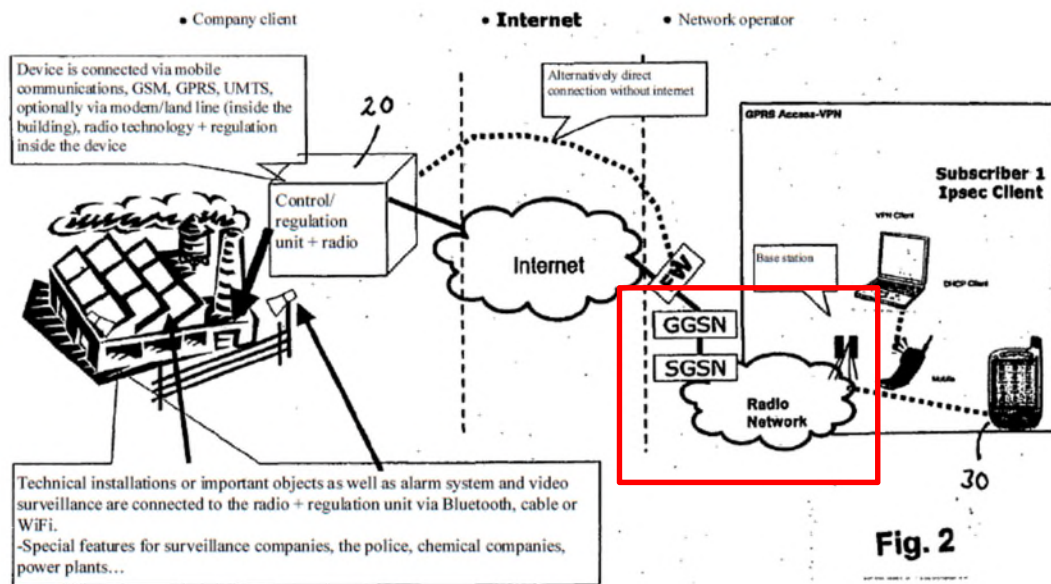
The check and communication unit 20 further contains a communication unit which comprises a sending and/or receiving unit by means of which data can be sent and/or received by mobile communication, in particular according to the GSM, GPRS or UMTS standard. Alternatively, it is conceivable that the communication unit is connected to the land line by means of a modem.

In the present embodiment, the data transfer from and to the communication unit is preferably via the GSM, GPRS or UMTS mobile communications standards.

Communication with the network operator can be direct via one of these mobile communications techniques or via land line. Alternatively, it is also conceivable that the control and communication unit 20 is connected to the internet, also preferably by means of mobile communication, for example WAP or GPRS. In accordance with the mentioned modem equipment of the sending and receiving unit of the communication unit, the connection to the internet can also be via land line.

Ex. 1017, [0057]-[0059].

656. Bielski depicts some of these cellular communication networks in annotated Figure 2:



Ex. 1017, Fig. 2.

657. Likewise, the system of Wu also relies on a cellular network. Wu discloses that the Home Network System is based on “Mobile Communication (GSM) networks.” Ex. 1018, Abstract. In annotated Figure 1, Wu depicts how the communication system can be based on, for example, the GSM network:

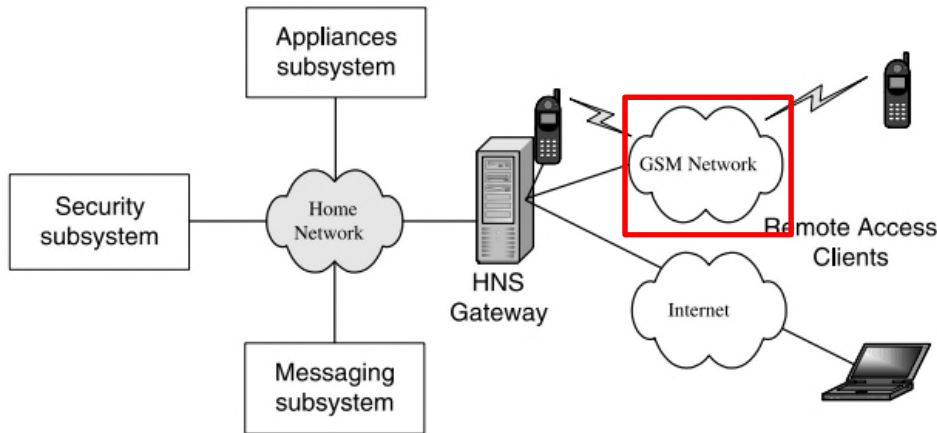


Fig. 1. Home network system architecture.

Ex. 1018, Fig. 1.

658. A POSITA would be familiar with cellular networks including GSM, GPRS, and UMTS and thus would have understood that both Bielski and Wu disclose this limitation.

xvii. Claim 18: [18Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

659. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitations 1A, 1B and 1D.

xviii. Claim 18: [18A] a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device;

660. Bielski and Wu disclose Limitation 18A. See 11G, 11J.

661. Bielski discloses a check unit and a communication unit, which together can form a structural unit within the building, and which is connected to the devices through a variety of communication media. Ex. 1017, [0005], [0020], [0054]. Bielski describes that the check unit controls operation of the environmental devices in that the check unit is “wired to the device(s) or is connected thereto in a wireless manner, wherein the connection is such that data can be transferred from the check unit to the device(s) and/or from the device(s) to the check unit.” Ex. 1017, [0005]. Bielski discloses that communication between the device and the check unit can be established “by means of cabling, Bluetooth, or WiFi.” Ex. 1017, [0013]. A POSITA would understand these disclosures in Bielski to be disclosures of the claimed communication interface.

662. For example, Bielski illustrates both the check/communication unit (20) and various environmental devices that are connected to the check/communication unit (20) in at least annotated Figure 4:

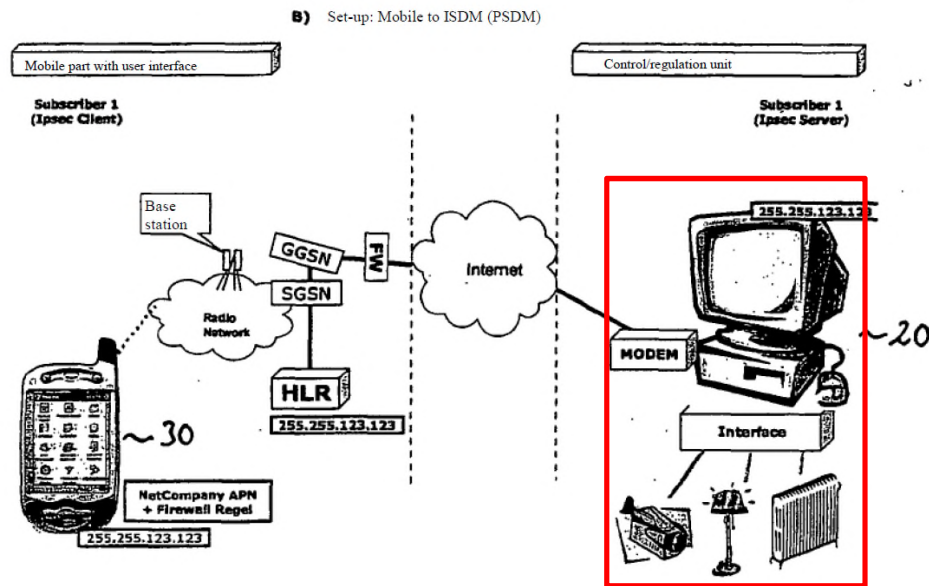


Fig. 4

Ex. 1017, Fig. 4.

663. Bielski discloses that the check and communication unit is configured to receive environmental information and is adapted to send controls to the environmental device. In particular, Bielski discloses that the check unit receives data from the devices in the home and also sends control commands to these same unit:

The check unit can be implemented as a monitoring unit which receives data from the device(s) and forwards them to the communication unit. Alternatively or in addition, it can be provided that the check unit is embodied as a control unit which transfers data for the purpose of control to the one or more devices, or that the check unit is embodied as regulation unit which receives actual values from the one or more devices and compares them with nominal values and, in the case of a deviation, transfers the data reducing the system

deviation to the one or more devices. The nominal values can be transferred to the check unit by means of the inventive system, wherein the user enters them into their mobile terminal and they are then transferred by means of the inventive communication system. The nominal values can be transferred to the check unit and not to the device itself. The check unit makes the regulation according to the transferred nominal values. The data exchange between the check unit and the device(s) relates to the case of data concerning regulation. Alternatively, it is also possible to transfer the nominal values to the device where the corresponding actual values are set by means of a regulation device.

Ex. 1017, [0014] (emphasis added).

664. Bielski expands on this transfer of data, disclosing that the check unit monitors devices by “receiving data from the mentioned devices.” Ex. 1017, [0056]. Additionally, Bielski expands on the check unit’s control functionality, disclosing that the check unit will “transfer data to the mentioned devices, such as temperatures, opening or closing conditions etc.” Ex. 1017, [0056].

665. Likewise, Wu discloses a base unit that interfaces with an environmental device. Wu discloses an HNS gateway device, such as a personal computer, that “connects to home devices and runs a home automation management application that supervises home devices.” Ex. 1018, pp. 494-495. Wu discloses that the environmental devices interface with the gateway such that

“an appliance can send an alerting message to the HNS gateway (by *posting information*).” Ex. 1018, p. 495 (emphasis in original).

666. Wu also describes that the base unit communicates with the environmental units to send control commands and receive data. Wu provides various figures that show the connection between the base unit and home network (which includes the monitored devices).

667. In annotated Figure 2, Wu illustrates that the HNS gateway both sends and receives data/information from the home network through bi-directional arrows showing two-way communication:

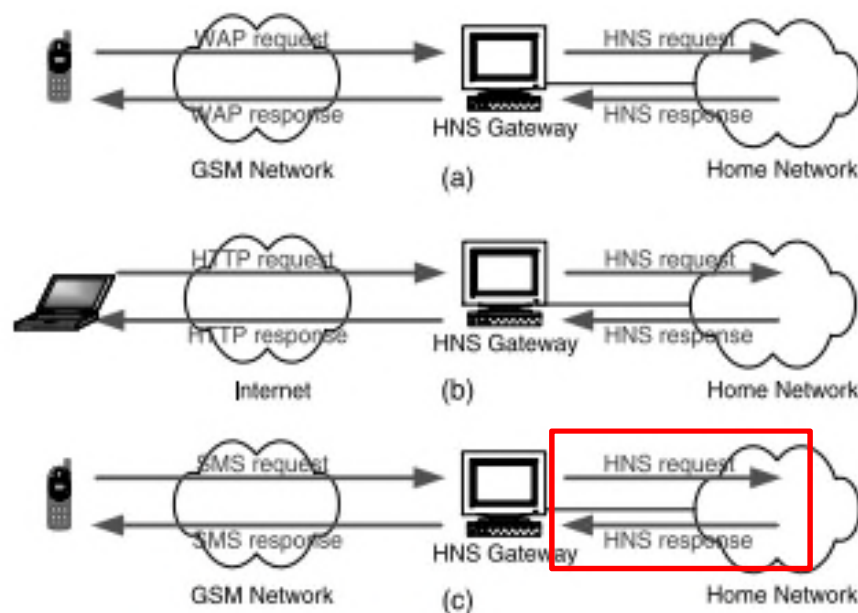


Fig. 2. Communication with the HNS in (a) WAP and (b) HTTP (c) SMS.

Ex. 1018, Fig. 2.

668. In annotated Figure 1, Wu illustrates that the home network includes the monitored environmental devices such as the security subsystem, as well as an appliance subsystem, which includes a variety of environmental devices (see table 1):

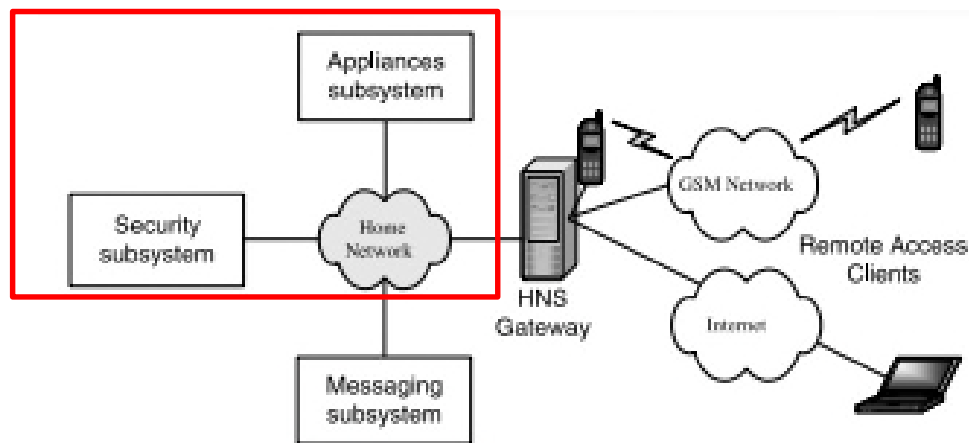


Fig. 1. Home network system architecture.

Ex. 1018, Fig. 2.

669. Wu discloses that the HNS gateway (base unit) is configured to “supervise[] home devices.” Ex. 1018, p. 494.

670. Wu further discloses that appliances “can actively send an alerting message to the HNS gateway (by posting information) when detecting an abnormal situation or a warning signal.” Ex. 1018, pp. 495-496. Wu discloses that this could be, for example, information about an alarm condition. Ex. 1018, p. 496.

671. Wu also discloses that control information is sent to the home network, which includes managed devices. For example, Wu discloses that based

on the request-response mechanism in Figure 1, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495. A POSITA would understand these disclosures in Wu to be disclosures of the claimed communication interface.

xix. Claim 18: [18B] a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit,

672. Bielski and Wu disclose Limitation 18B for at least the reasons outlined above with respect to Limitations 1D, 1E, 1F.

xx. Claim 18: [18C] wherein the first message is a first short message service (SMS) message including the environmental information, and

673. Bielski and Wu disclose Limitation 18C for at least the reasons outlined above with respect to Limitation 1E.

xxi. Claim 18: [18 D] wherein the second message is a second short message service (SMS) message including the command to the environmental device; and

674. Bielski and Wu disclose Limitation 18D for at least the reasons outlined above with respect to Limitation 1E.

xxii. Claim 18: [18 E] a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

675. Bielski and Wu disclose Limitation 18E for at least the reasons outlined above with respect to Limitation 1G. See also Claim 3.

676. Based on the disclosure in the 935 Patent that the microcontroller “is electrically interconnected with random access memory 44, read only memory 46, the keypad 32, and the LCD display 38,” a POSITA would understand the “microcontroller” to be a generic processor in an embedded system. Ex. 1001, 4:10-13.

677. Moreover, Bielski discloses that the check and communication unit can be embodied as a computer, such as an embedded PC. Ex. 1017, [0085]. In particular, Bielski illustrates the check and communication unit as a computer in at least annotated Figure 4:

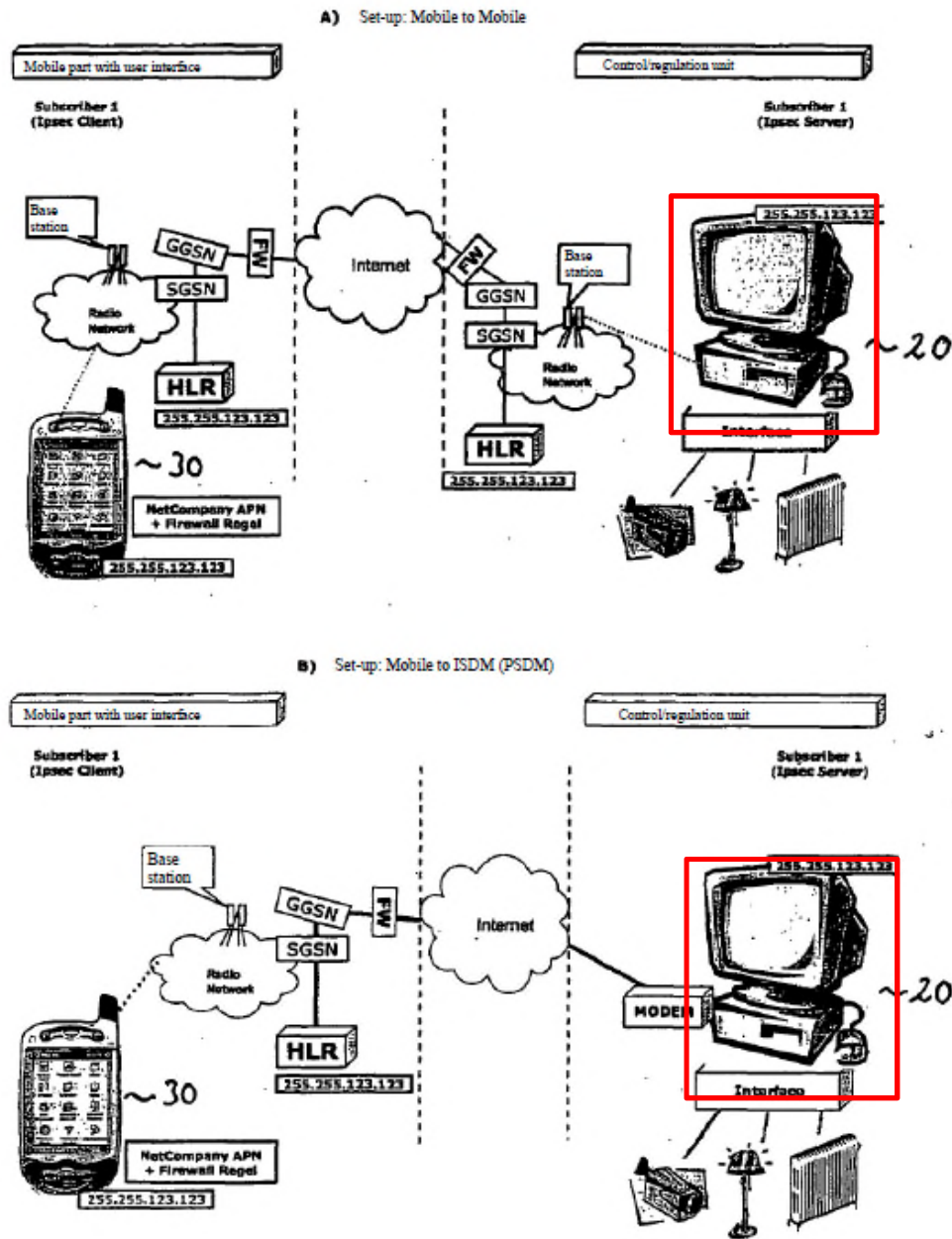


Fig. 4

Ex. 1017, Fig. 4.

678. A POSITA would have understood that a computer includes a processor (the claimed microcontroller).

679. Bielski discloses that the check and communication unit receives the command from the mobile device and sends this command to the environmental unit. For example, Bielski discloses:

Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. ***It is transferred to the control and communication unit 20 via the telecommunication network*** of a network operator, either with the help of the internet or directly, and ***from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.***

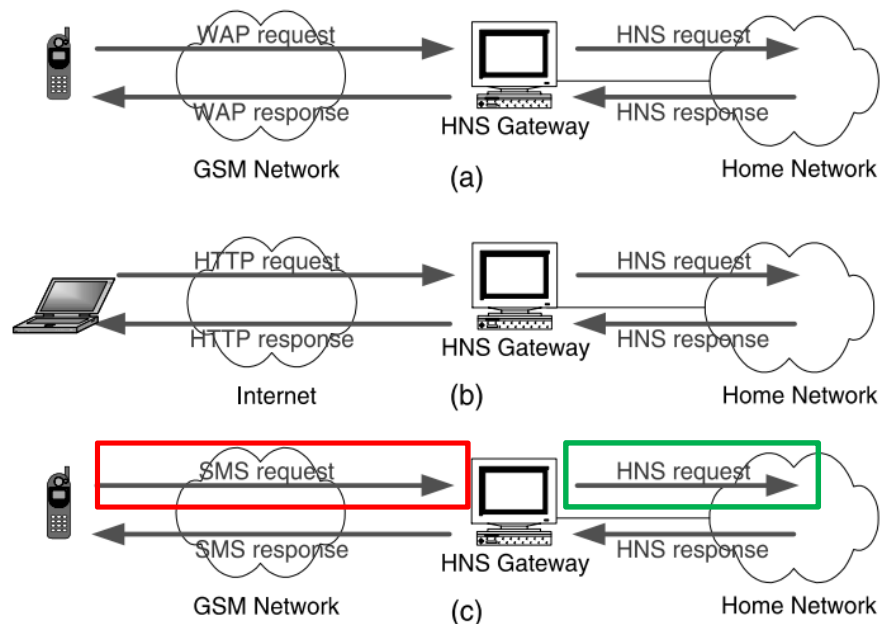
Ex. 1017, [0063] (emphasis added).

680. Bielski discloses that the check unit has complex applications that allow for “effecting control and regulation processes in the direction of the controlling/regulation devices is provided (heater, light switch, etc.).” Ex. 1017, [0082]. Bielski also discloses that the check and communication unit can be embodied as an embedded PC that accepts commands sent by the mobile device and “processes the values and correspondingly carries out the control/regulation commands via its I/O interfaces.” Ex. 1017, [0085].

681. Likewise, Wu discloses processing of messages for various devices. Likewise, Wu depicts the HNS gateway as a computer. Ex. 1018, Figs. 1-3. As stated above, a POSITA would have understood that a computer would include a microprocessor to control the general operations of the computer.

682. Wu also discloses that the base unit accepts control messages from the remote unit and sends corresponding commands to the environmental devices. Wu discloses that the HNS gateway includes a management application that “supervises home devices.” Ex. 1018, p. 494.

683. The mobile device in Wu has SMS capability such that the mobile station “can communicate with the HNS via SMS protocol,” which allows “the user [to] monitor and control the home devices.” Ex. 1018, p. 495. SMS communication is illustrated in at least annotated Figure 2 of Wu:



Ex. 1018, Fig. 2.

684. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Figure 2 also illustrates how the message from the remote unit is sent and received by the HNS Gateway in the form of the “SMS request” with an arrow from the remote unit to the HNS gateway.

685. Wu also discloses that control information is sent to the home network, which includes managed devices. As seen in Wu Figure 2, the HNS gateway sends an “HNS request” (green box) to the home network, which includes the environmental devices, which is based on an “SMS request” (red box) from the user. *See* Ex. 1018, Figs. 1, 2. For example, Wu discloses that based on the request-response mechanism in Figure 2, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495.

xxiii. Claim 19: [19Pre] A communication system having wireless connectivity, the communication system comprising:

686. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitation 1Pre. *See also* 1B-1C.

xxiv. Claim 19: [19A] a base unit operatively interfaced with an environmental device, and configured to receive a current status of an environmental device;

687. Bielski and Wu disclose Limitation 19A for at least the reasons outlined above with respect to Limitations 11F and 11G. *See also* 1E.

xxv. Claim 19: [19B] a transmitter associated with said base unit, and configured to send a first message to a remote unit having wireless connectivity, wherein the first message is a wireless message including the current status of the environmental device;

688. Bielski and Wu disclose Limitation 19B for at least the reasons discussed in Limitations 1C-1E. A POSITA would understand that an SMS message is an example of a wireless message.

689. Bielski discloses a transmitter in the form of a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent and/or received via. . .a mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. This

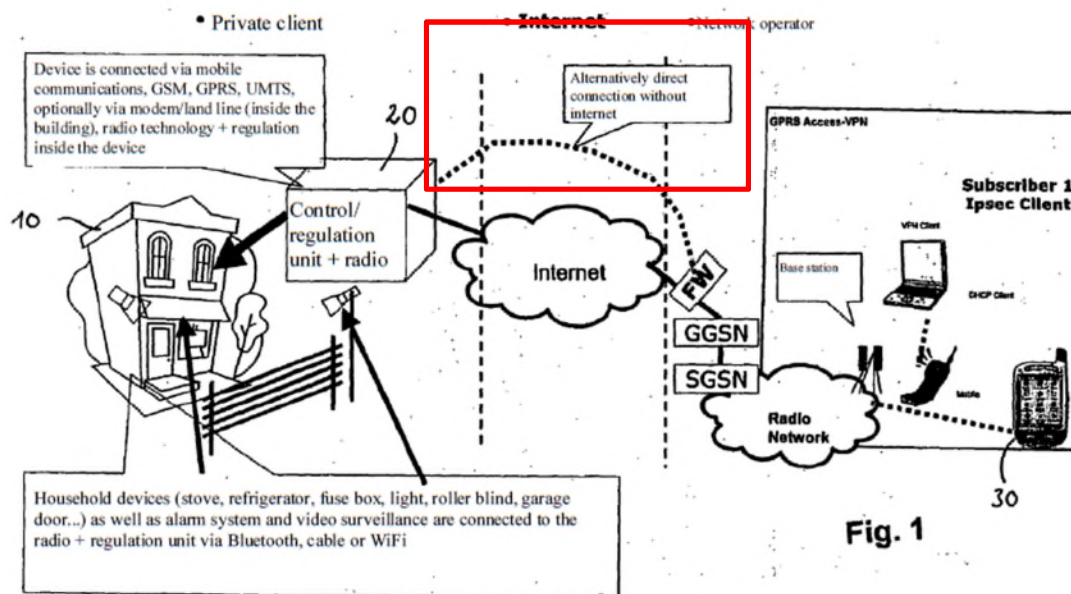
unit allows a direct cellular connection between the communication unit and the user's mobile device. Ex. 1017, [0023]. Indeed Bielski discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

690. The remote unit of Bielski is discussed in Limitation 1C.

691. Bielski also illustrates a direct connection between the mobile device and check and communication unit in the home in at least annotated Figure 1:



Ex. 1017, Fig. 1.

692. A POSITA would have understood that Bielski's disclosure that the communication unit can send data to the user's mobile device means that Bielski's wireless module includes a transmitter. This is further supported by Bielski's disclosure that a status report can be "transmitted to the mobile terminal." Ex. 1017, [0031].

693. Bielski discloses that the check and communication unit is configured to send a first message, such as an SMS message, to the remote unit. Bielski discloses that one of advantages of his invention is that it "enables to passively inform the user of the mobile terminal about the status of the devices to be monitored." Ex. 1017, [0010]. Bielski confirms, however, that it is not limited to a passive or "pull" system but that the user can be automatically informed (*e.g.*,

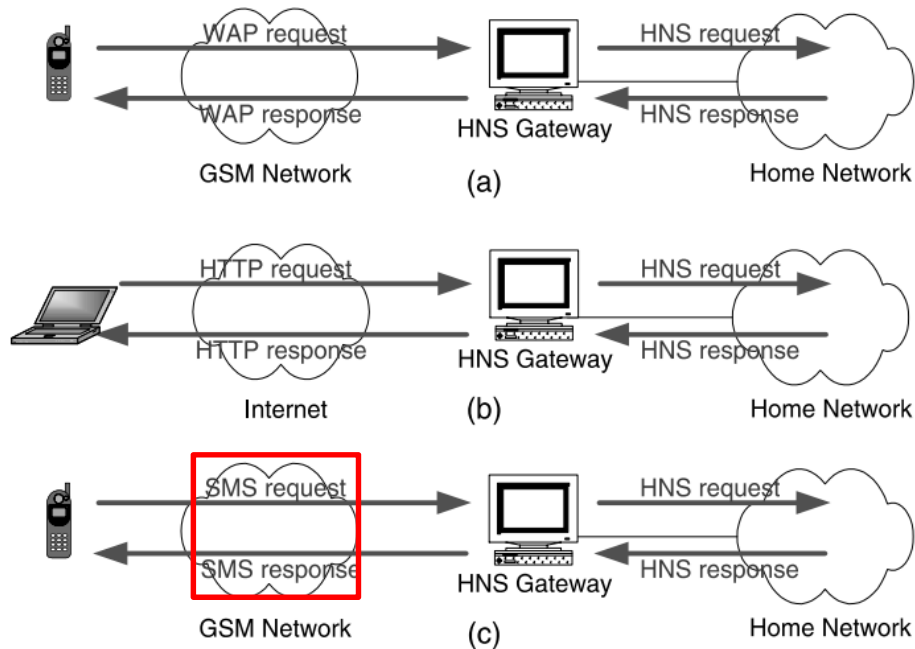
pushed information) about the status of devices, such as about an alarm condition.

Ex. 1017, [0069]. Bielski discloses that the notification to the mobile terminal can be “in the form of an SMS.” Ex. 1017, [0069]. Bielski further discloses:

In a further design of the present invention, means can be provided by means of which a status report concerning the device state is transmitted to the mobile terminal in time intervals or upon occurrence of particular operating states of the one or more devices. This makes it possible to inform or warn the user of the mobile terminal about the device status, either in regular time intervals, for example, or in case of special conditions, such as alarm conditions.

Ex. 1017, [0031].

694. Likewise, Wu discloses that the HNS gateway device includes a transmitter in the form of a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, p. 497; *see also id.* at Fig. 6. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499. As illustrated in annotated Figure 2 of Wu, the HNS gateway is interfaced with the mobile device, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

695. In annotated Figure 6, Wu illustrates the transmitter that resides within the HNS gateway and that directly connects to the remote unit:

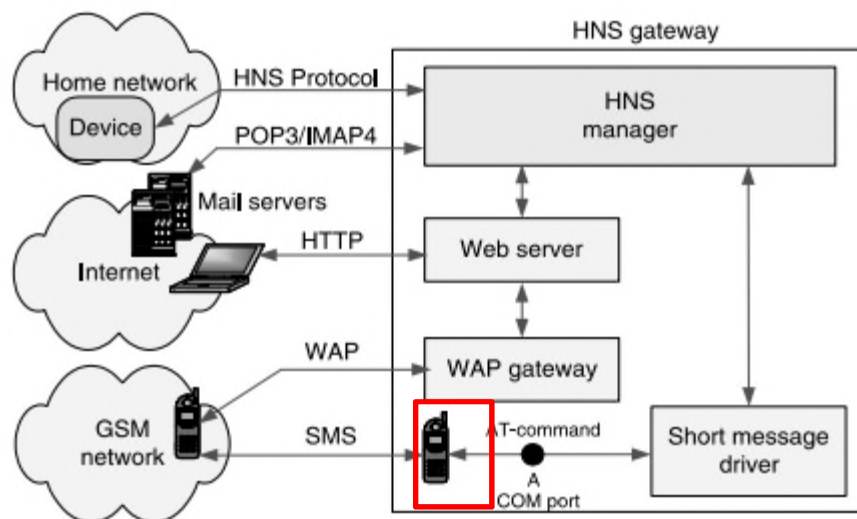


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

696. Figure 6 illustrates direct communication, by way of SMS, between the user's mobile device and the HNS gateway (base unit). Further, a POSITA would have understood that Figure 6 of Wu illustrates bidirectional communication given the double arrows between the mobile device and base unit.

697. The remote unit of Wu is discussed in Limitation 1C.

698. Wu also discloses that “the HNS gateway can actively notify the home user when an abnormal state occurs.” Ex. 1018, p. 494. In particular, the “HNS manager also employs the function provided by the short message driver to send alerting messages received from the home network to the mobile station.” Ex. 1018, p. 495. An example of the environmental alerting message disclosed in Wu is when “a burglar alarm rings or a surveillance system detects intruders.” Ex. 1018, p. 496. Annotated Figure 3 of Wu illustrates an example alert sent from the environmental device on the home network to the HNS gateway, which is then “pushe[d] [] to the home user in SMS.” Ex. 1018, p. 496, Fig. 3.

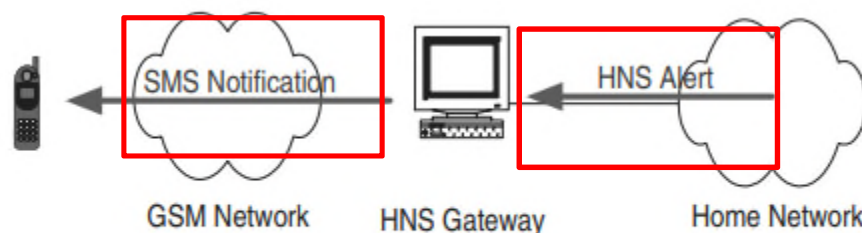


Fig. 3. Notification sent by SMS.

Ex. 1018, Fig. 3.

xxvi. Claim 19: [19C] a receiver associated with said base unit, and configured to receive a second message from the remote unit, wherein the second message is a wireless message including a command for the environmental device; and

699. Bielski and Wu disclose Limitation 19C for at least the reasons discussed in Limitations 1F and 1G. *See also* 19B, 1D.

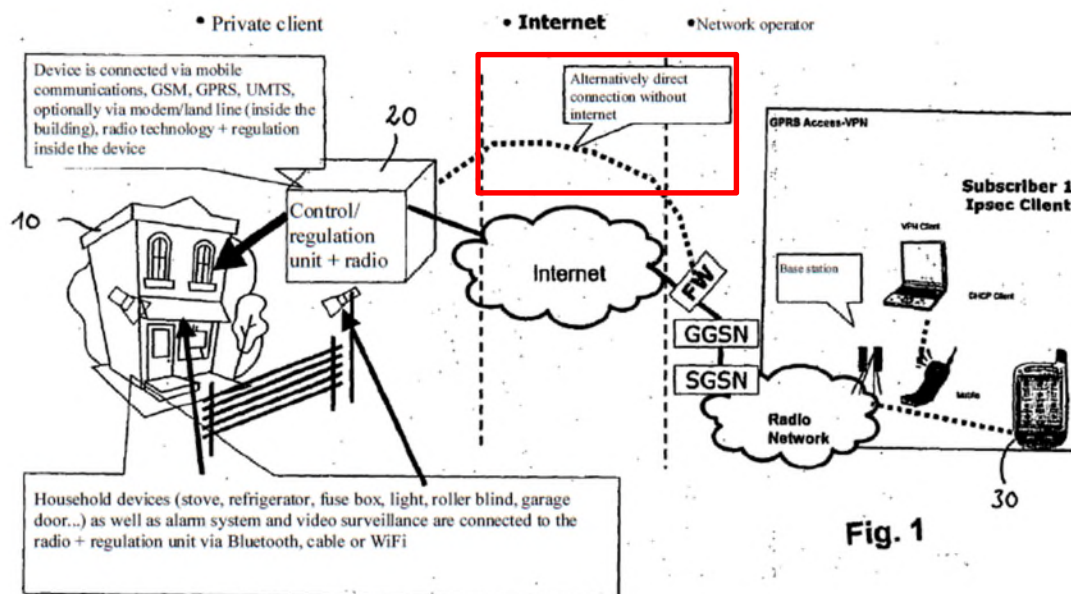
700. Bielski discloses a receiver in the form of a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent and/or received via. . .mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. This unit allows a direct cellular connection between the communication unit and the user’s mobile device. Ex. 1017, [0023]. Indeed Bielski discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network

operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

701. Bielski further illustrates a direct connection between the mobile device and check and communication unit in the home in at least annotated Figure 1:



Ex. 1017, Fig. 1.

702. A POSITA would have understood that Bielski's disclosure that the communication unit can receive data from the user's mobile device means that

Bielski's wireless module includes a receiver. Indeed, Bielski discloses that messages from the user are "transferred to the control and communication unit."

Ex. 1017, [0063].

703. Bielski discloses active control and regulation of the home devices by means of the mobile terminal. Ex. 1017, [0008]. In particular, Bielski discloses:

Using the device represented in Fig. 1, the *user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them* or can themselves influence the devices by controlling or regulating them. For this purpose, *they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network of a network operator*, either with the help of the internet or directly, and from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.

Ex. 1017, [0063] (emphasis added).

704. Bielski further discloses:

For this purpose, the user enters the dialing number of the check and communication unit 20, which is assigned to the building 10, into their mobile phone or presses the corresponding symbol on the display. The control and communication unit 20 is clearly identifiable in the network of the telecommunication operator and can therefore be controlled by means of the internet or the mentioned direct mobile communications

or land line connection. The check and communication unit takes over the desired addressing of the device.

Ex. 1017, [0064].

705. Bielski discloses that the second message includes a command for the environmental device. Specifically, Bielski discloses that the message can include commands such as “on/off conditions or temperatures etc.” Ex. 1017, [0063]. This command is then sent to the environmental device to effectuate control. *Id.*

706. In my opinion Limitation 19C does not require the second SMS message be sent in response to the first message.

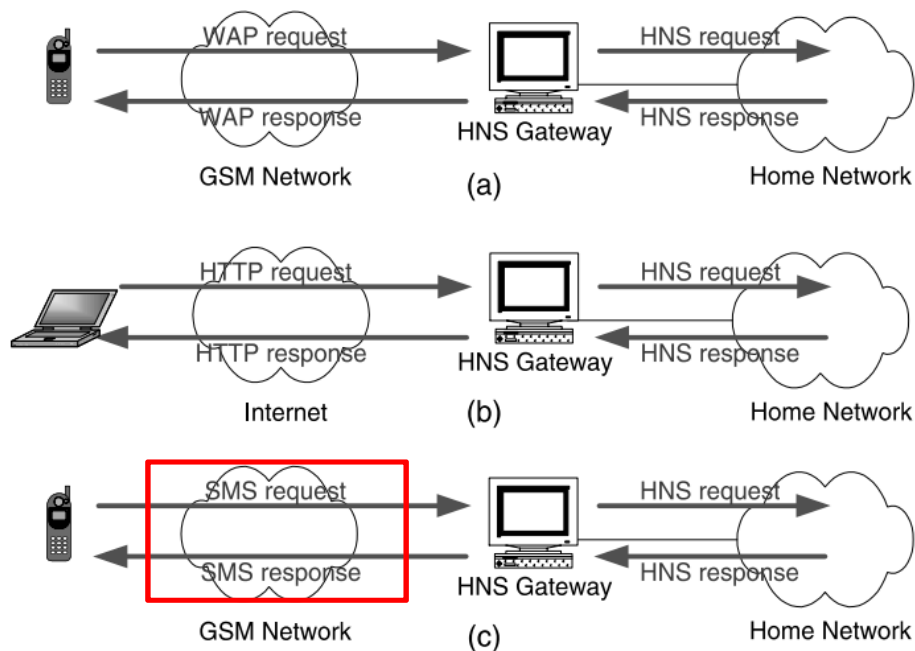
707. However, to the extent the claim is interpreted as requiring the second message be sent in response to the first message, in my opinion a POSITA would have understood that the request and response messages are disclosed by Bielski and Wu. Indeed, Bielski discloses that the user “receives information from a household or a company, wherein they can actively react thereto with commands via the keyboard or the user interface.” Ex. 1017, [0070].

708. Likewise, Wu discloses a remote unit that is configured to send a message to the HNS gateway. Wu discloses that after receiving an alerting message, the user can “control the appliance remotely.” Ex. 1018, p. 495. Indeed, a POSITA would have understood that Wu discloses a “request-response

mechanism” in the same manner as contemplated by at least Limitations 1E and 1F. Ex. 1018, p. 495.

709. Wu discloses that the HNS gateway device includes a receiver in the form of a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, p. 497; *see also id.* at Fig. 6. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499.

710. As illustrated in annotated Figure 2 of Wu, the HNS gateway is interfaced with the mobile device, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

711. In annotated Figure 6, Wu illustrates the cellular module that resides within the HNS gateway and that directly connects to the remote unit.

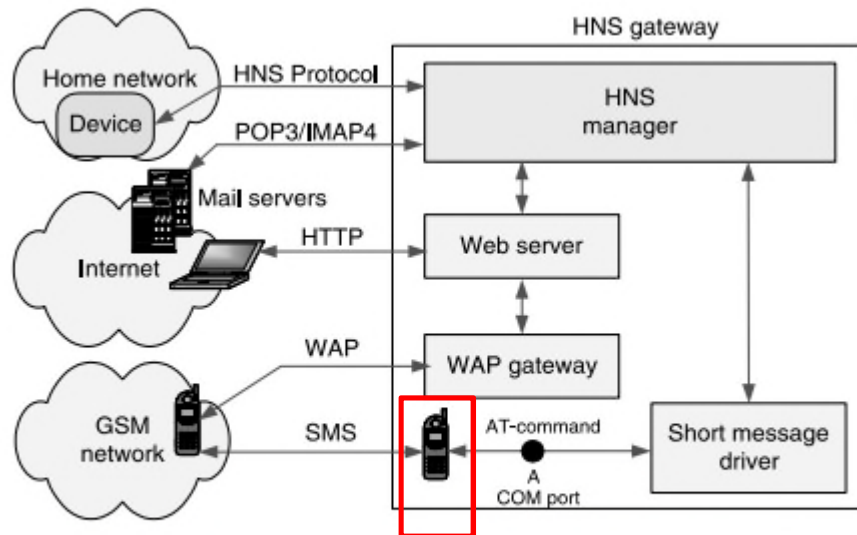


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

712. Figure 6 illustrates direct communication, by way of SMS, between the user's mobile device and the HNS gateway (base unit). Further, a POSITA would have understood that Figure 6 of Wu illustrates bidirectional communication given the double arrows between the mobile device and base unit.

713. Wu further discloses that after receiving an alerting message, the user can "control the appliance remotely." Ex. 1018, p. 495. The mobile device in Wu has SMS capability such that the mobile station "can communicate with the HNS via SMS protocol," which allows "the user [to] monitor and control the home

devices.” Ex. 1018, p. 495. SMS communication is illustrated in at least Figure 2 of Wu (above):

714. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Wu discloses that the command from the mobile device to HNS gateway can include “turning on/off” home appliances and systems, such as those listed in Table 1 (air-conditioning, lighting, burglar alarm). Ex. 1018, p. 495.

xxvii. Claim 19: [19D] a controller operatively associated with the base unit and operatively connected with the environmental device, and configured to send the command to the environmental device.

715. Bielski and Wu disclose Limitation 19D for at least the reasons outlined above with respect to Limitation 18E. *See also* 1B.

xxviii. Claim 21: [21Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

716. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitation 18Pre.

xxix. Claim 21: [21A] a communication interface configured to receive environmental information from the environmental device and to send a command to the environmental device

717. Bielski and Wu disclose Limitation 21A for at least the reasons outlined above with respect to Limitation 18A.

xxx. Claim 21: [21B] a wireless module configured to send a first message to the remote unit and to receive a second message from the remote unit, wherein the first message includes the environmental information and travels via short message and/or data bearer services, and

718. Bielski and Wu disclose Limitation 21B for at least the reasons outlined above with respect to Limitations 18B and 18C.

xxxi. Claim 21: [21C] wherein the second message includes the command to the environmental device and travels via short message and/or data bearer services; and

719. Bielski and Wu disclose Limitation 21C for at least the reasons outlined above with respect to Limitation 18D.

xxxii. Claim 21: [21D] a microcontroller configured to process the second message including the command, and to send the command through the communication interface to the environmental device.

720. Bielski and Wu disclose Limitation 21D for at least the reasons outlined above with respect to Limitation 18E.

G. Count 2B: Bielski, Wu, and Sears

i. Motivation to combine Bielski and Wu with Sears

721. Sears is directed to Java and/or Java-like applications for wireless devices and “seamless and optimized” interaction between users, mobile communication devices and applications in a network environment. Ex. 1019, Abstract. A POSITA would have combined the teachings of Bielski and Wu with Sears because Sears provides methods and means for optimizing interactions

between users and devices, including mobile communications devices, such as the devices disclosed by Bielski and Wu. Indeed, each of Bielski, Wu, and Sears are analogous given that they all relate to applications that are executable on a mobile device.

722. Bielski discloses “an application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels or can set specifications for the control/regulation unit is particularly advantageous.” Ex. 1017, [0081]. Bielski discloses that its application “which bypasses the standard problems to be found with the special “Pocket InternetExplorer” [and that] can be stored on an Embedded PC or WEB server.” Ex. 1017, [0085]. Bielski also discloses that “applications which solve this problem with HTML Code, CGI Scripts, *Java Script Code* and *special servlets* were programed on the Embedded PC or EB server.” Ex. 1017, [0085] (emphasis added). Additionally, as discussed in Claim 3, Bielski discloses “TOMCAT,” a reference the Apache Tomcat® which is an open source implementation of several Java specifications for supporting Java applications and services including the Java Servlet. Ex. 1017, Fig. 5. Like Bielski, Wu implements an application that operates on a mobile device. An example of the Wu application is shown in at least annotated Figure 9 of Wu:



Fig. 9. HNS status.

Ex. 1018, Fig. 9.

723. A POSITA would have been motivated to incorporate the disclosures of Sears in the applications of Bielski and Wu for at least the following several reasons. First, Sears discloses that “Java technology provides a single open platform that allows developers to create dynamic, personal, and functionality-rich applications, which content providers can provide and deliver to mobile devices” and further that “J2ME provides a modular, scalable architecture to support the flexible deployment of technology to devices with diverse features, functions, and memory/performance capabilities. Such technology provides the next logical step in maximizing the portability of applications and the performance and memory of mobile devices.” Ex. 1019, [0032]. Indeed, a POSITA would have understood that writing an application in JAVA also provides for “rich dynamic personalized services and applications for use on mobile devices. *Id.* at [0007]. A POSITA therefore would have understood that rich dynamic personalized services would be a desirable benefit to the user of Bielski and Wu.

724. Second, a POSITA would have understood that JAVA applications can be stored and run locally on a user device. JAVA-enabled devices allow applications to reside on mobile devices so they can run even when a mobile device is out of a network's coverage area. Ex. 1019, [0008]. Such local applications not only have the benefit of being executable without a browser, but also can include content-rich graphics and faster interaction. *Id.* at [0007]. A POSITA would have understood that such applications therefore would be able to process the SMS commands of Bielski and Wu for transmission even if the device were to go offline after receipt of the message, such that once connected, the stored commands could be sent to monitor and/or control devices within the home or business. As such, a POSITA would have understood that the implementation of a JAVA application would provide a more desirable, robust, and fault tolerant application that would allow the users to interact with the devices in the home or office as disclosed by Bielski and Wu.

725. Third, JAVA technology is not only well suited for mobile devices, but is also well suited for control applications. A POSITA would have appreciated that the data security provided by JAVA (through, for example, the absence of direct memory pointers in JAVA, see, Ex. 1019, [0008]) would enhance the control applications disclosed by Bielski and Wu. In addition, as disclosed by Sears, JAVA applications themselves can be secured through JAVA's byte-code verification and

digital signatures for dynamic applications. Ex. 1019, [0008]. Indeed, Bielski and Wu both confirm security is a necessary upgrade for future implementations. Ex. 1017, [0083]; Ex. 1018, p. 501.

726. Finally, the inclusion of JAVA based applications was well within the skill of a POSITA. By 2004, JAVA was well known programming technology that would be known to a POSITA and Sears specifically discloses the use of JAVA on a mobile device. Indeed, the 935 Patent itself admits that the inclusion of JAVA applications was well within the skill of a POSITA as the 935 Patent discloses that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3. IN addition, as discussed above, Bielski already discloses the use of related JAVA script and JAVA servlets. As such, in my opinion a POSITA would have had a reasonable expectation of success of adding JAVA applications to obtain the predictable result of customizable applications, because adding such JAVA applications to mobile devices such as those disclosed by Bielski and Wu was well known in the art.

ii. Claim 5: The system as recited in claim 4 wherein said custom programmability is a JAVA programming kernel.

727. The combination of Bielski, Wu, and Sears disclose the limitations of Claim 5 for at least the reasons disclosed with respect to Claim 4. As discussed, in my opinion it was well known and conventional for cellular telephone handsets, such as the handset of Bielski, to be customizable. Indeed, the 935 Patent admits

that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3.

728. Bielski discloses “an application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels or can set specifications for the control/regulation unit is particularly advantageous.” Ex. 1017, 0081. Bielski discloses that its application “which bypasses the standard problems to be found with the special “Pocket InternetExplorer” [and that] can be stored on an Embedded PC or WEB server.” Ex. 1017, [0085]. Bielski also discloses that “applications which solve this problem with HTML Code, CGI Scripts, *Java Script Code* and *special servlets* were programed on the Embedded PC or EB server.” Ex. 1017, [0085] (emphasis added). Bielski also discloses TOMCAT. Ex. 1017, Fig. 5. Like Bielski, Wu implements an application that operates on a mobile device. *See* Ex. 1018, pp. 500-501.

729. As is illustrated above, a POSITA would have been motivated to incorporate the disclosures of Sears in the applications of Bielski and Wu. Sears is directed to Java-based programmability for wireless mobile devices. *See* Ex. 1019, Abstract. These devices can be “a cellular phone and/or a Personal Digital Assistant (PDA).” Ex. 1019, [0034]. In the background, Sears discloses that “[m]obile device users want services and applications that can deliver

individualized information.” Ex. 1019, [0006]. To address this need, Sears discloses Java and Java-like applications “where the content and information may be optimized for use by specific users or for use on specific mobile device platforms.” Ex. 1019, [0012]. Indeed, Sears discloses a device that comprises a “Java native processor and supporting software and hardware provides an open platform for mobile Internet device applications. The described processor natively executes Java byte-code and supports an optimized and enhanced J2ME/CLDC framework, and delivers to mobile devices an efficient, optimized balance between high speed and low power consumption.” Ex. 1019, [0033]. A POSITA would understand that Sears’ disclosures of a JAVA processor and specifically of JAVA runtime support would constitute a disclosure of a programming kernel as that term is used in the 935 Patent. Ex. 1019, [0030]. As such, a POSITA would have understood that the programs of Bielski, Wu, and Sears were customizable via a JAVA programming kernel.

iii. Claim 6: The system as recited in claim 4 wherein said custom programmability is a J2ME programming kernel.

730. The combination of Bielski, Wu, and Sears disclose the limitations of Claim 6 for at least the reasons disclosed with respect to Claim 4. As discussed, in my opinion it was well known and conventional for cellular telephone handsets, such as the handset of Bielski, to be customizable. Indeed, the 935 Patent admits

that cellular telephone handsets with programming kernels, such as Java or J2ME, were “conventional” and known. Ex. 1001, 6:65-7:3.

731. While Bielski discloses “Java Script Code and special servlets” for customizability of a mobile device such as a Pocket PC (Ex. 1017, [0085]), Bielski does not explicitly disclose J2ME. In addition to Pocket PCs, Bielski discloses other devices suitable for use as the mobile device, such as a personal digital assistant (PDA) as well as portable computers/notebooks. Ex. 1017, [0082]. A POSITA would have understood that these types of devices could use J2ME programming kernel for customizability.

732. Bielski discloses “an application with a corresponding user interface with which the user can comfortably activate special features using buttons and various control panels or can set specifications for the control/regulation unit is particularly advantageous.” Ex. 1017, [0081]. Bielski discloses that its application “which bypasses the standard problems to be found with the special “Pocket InternetExplorer” [and that] can be stored on an Embedded PC or WEB server.” Ex. 1017, [0085]. Bielski also discloses that “applications which solve this problem with HTML Code, CGI Scripts, *Java Script Code* and *special servlets* were programed on the Embedded PC or EB server.” Ex. 1017, [0085] (emphasis added). Bielski also discloses TOMCAT. Ex. 1017, Fig. 5. Like Bielski, Wu implements an application that operates on a mobile device.

733. As is illustrated above, a POSITA would have been motivated to incorporate the disclosures of Sears in the applications of Bielski and Wu. Sears is directed to Java-based programmability for wireless mobile devices. *See* Ex. 1019, Abstract. These devices can be “a cellular phone and/or a Personal Digital Assistant (PDA).” Ex. 1019, [0034]. In the background, Sears discloses that “[m]obile device users want services and applications that can deliver individualized information.” Ex. 1019, [0006]. To address this need, Sears discloses Java and Java-like applications “where the content and information may be optimized for use by specific users or for use on specific mobile device platforms.” Ex. 1019, [0012]. Indeed, Sears discloses a device that comprises a “Java native processor and supporting software and hardware provides an open platform for mobile Internet device applications. The described processor natively executes Java byte-code and supports an optimized and enhanced J2ME/CLDC framework, and delivers to mobile devices an efficient, optimized balance between high speed and low power consumption.” Ex. 1019, [0033]. Sears also discloses that “J2ME provides a modular, scalable architecture to support the flexible deployment of technology to devices with diverse features, functions, and memory/performance capabilities. Such technology provides the next logical step in maximizing the portability of applications and the performance and memory of mobile devices.” Ex. 1019, [0032]. That is, Sears discloses the use of J2ME on

mobile devices. A POSITA would understand that Sears' disclosures of a JAVA processor and specifically of JAVA runtime support supporting J2ME would constitute a disclosure of a J2ME programming kernel as that term is used in the 935 Patent. Ex. 1019, [0030]. As such, a POSITA would have understood that the programs of Bielski, Wu, and Sears were customizable via a J2ME programming kernel.

iv. Claim 16: The system of claim 15 wherein the cellular telephone handset includes at least one of a customizable JAVA programming kernel and a customizable J2ME programming kernel.

734. Bielski, Wu, and Sears disclose the limitations of Claim 16 for at least the reasons outlined above with respect to Claims 4, 5, 6 and 15.

H. Count 2C: Bielski, Wu, and Ehlers

i. Motivation to combine Bielski and Wu with Ehlers

735. Ehlers discloses a system of managing energy consumption within a building wherein users may “directly access and control in-home devices” through an interface on, among other devices, a mobile phone. Ex. 1022, Abstract, [0069, 0115, 0116]. A POSITA would have combined the teachings of Bielski, Wu, and Ehlers as each reference teaches similar functionalities and architectures with respect to controlling in-home devices via mobile devices and, thus, would yield predictable results.

736. As is described above and below, the combination of Bielski and Wu disclose the ability to monitor and control devices within a home or business via direct mobile communications, such as SMS. Ehlers, like Bielski and Wu discloses mobile phones, personal digital assistants (PDA), laptop computers, desktop computers, or other suitable devices “may be linked to the system 1.02 via the internet, a wireless data network, or other suitable system.” Ex. 1022, [0069].

737. Ehlers is directed to the energy management, and more specifically, to the control of in-home devices, such as thermostats, to increase efficiency and to reduce costs. Ex. 1022, Abstract, [0017]. Ehlers discloses a system that is configured to balance user defined minimum and maximum values with “user defined preferences, price points and historical data (the gathering and retention of which is described later) to achieve the optimum environmental conditions.” Ex. 1022, [0089]. Moreover, Ehlers enables a user to participate in well-known demand reduction programs so as to obtain financial incentives. Ex. 1022, [0007], [0335]. A POSITA would have understood that Ehlers provides such benefits without requiring users to individually manage the setting of each controlled device because most end use consumers do not have the time, experience, and/or access to data to monitor and track the usage of controlled devices in the home. Ex. 1022, [0013].

738. Next, Ehlers incorporates occupancy sensing as a mechanism to further reduce cost and/or to increase comfort. *See e.g.*, Ex. 1022, [0251]. For example, Ehlers discloses “occupancy sensitive control is further enhanced by the addition of occupancy sensing devices that communicate with the system 3.08.” Ex. 1022, [0245]. A POSITA would have understood occupancy sensors and/or location-based control beneficially reduces the burden on end consumers to monitor and track the usage controlled devices in the home. Ex. 1022, [0013]. As such, for these reasons and at least the same reasons espoused above with respect to the combination of Bielski and Wu, a POSITA would have been further motivated to incorporate the disclosure of Ehlers.

739. Next, a POSITA would have sought out the ability to improve operational and performance characteristics of devices operating in a home or business. Ex. 1022, [0187]. Ehlers discloses the reliance on third party data, such as weather data, to setup and/or adjust current settings. For example, Ehlers notes that the use of “temperature and environmental sensing” advantageously allows the system to control the “operation of the appropriate heating, filtration, conditioning and cooling equipment in conjunction with damper and fresh air input ducts, electrostatic filters and ionization devices to maximize comfort and indoor air quality.” Ex. 1022, [0230]-[0231].

740. Finally, a POSITA would have understood that Ehlers provides an improved user interface that allows a user to precisely control his/her own preferences. Ehlers confirms in that it discloses that its user interface comprises to a rich set of functions and features. Ex. 1022, [0115]. A POSITA would have understood that the benefits of such an improved interface.

741. As such, in my opinion a POSITA would have had a reasonable expectation of success of adding the energy management and user interface controls to the combination of Bielski and Wu. Indeed, as demonstrated by the combination of Ehlers, the use energy management controls and user interface controls were well known in the art.

ii. Claim 10: The system as recited in claim 1, wherein the remote unit is configured to selectively disable transmission of SMS messages from the base unit.

742. As is disclosed above, Bielski and Wu disclose the transmission of SMS messages from a base unit. Other than describing that communications between the devices in their respective systems occurs, Bielski and Wu are silent with respect to activation and deactivation of services. However, a POSITA would understand that such functionality is common in command and control systems especially for alarm/alert notification. This would allow a user to control her own preferences for which notifications need to be responded to and/or how those notifications should be delivered. This would include the ability to disable one

communications mechanism and/or enable another. For example, Ehlers discloses a control screen that provides the ability for a user to selectively activate and deactivate the transmission of messages via a particular means such as via notifications via email or via the web. Ex. 1022, Fig. 4J, [0327]. That is, Ehlers discloses the ability to selectively activate and deactivate particular transmissions of messages based on preferences. This is seen in annotated Figure 4J. Ex. 1022, Fig. 4J.

Configure Alert

Alerts

User Name: E. Minem
Primary email: eminem@aol.com

AccountID: 555
Phone#: 5555555555

Alert Description	Destination	Primary email	Web Page	Configurable	Priority	Single/Aggregate
Temperature out of Range	Home Occupant	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	Single
Temperature out of Range	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Gateway Not Responding	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Temperature out of Range	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Gateway Not Responding	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Single
Budget Limit Alarm	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Single
Device is Malfunctioning	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Single
Communication Failure	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	Single
Ramping Recovery Failure	Home Occupant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single
Duplicate IP address	Service Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single
Temperature out of Range	Energy Provider	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Single

Note: You may add the secondary email as another channel by updating personal data. Click here to update account personal data

Submit Reset

Figure 4J

Ex. 1022, Fig. 4J. As such, to provide the user additional control, the POSITA would have implemented Bielski and Wu to allow a user to enable/disable transmission of SMS messages.

I. Count 2D: Bielski, Wu, and Menard

i. Motivation to combine Bielski and Wu with Menard

743. Menard is directed to a bidirectional wireless system that allows for remote messaging and notification of alarms. Ex. 1020, Abstract, [0005]. Menard discloses that in response to an alarm message, a user (a “responsible party,” or “RP”) can generate response messages including instructions for responding to or verifying the alarm. Menard further discloses that selected RPs “may be notified of the outcome of the process” and, in one example, explains that the message could be notifying the user of the execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. A POSITA would have combined the teachings of Bielski and Wu with Menard as each of the references teach similar functionalities and architectures related to sending and receiving notification messages to mobile devices and thus their combination and, thus, would yield predictable results. As is described above and below, the combination of Bielski and Wu disclose the ability to monitor and control devices within a home or business via direct mobile communications, such as SMS and that these functions would be enhanced through a combination with Menard.

744. Bielski discloses the ability to monitor and control an alarm system. Ex. 1017, [0054]. Likewise, Wu discloses a security subsystem, which includes surveillance, burglar alarms, etc. Ex. 1018, p. 494. Similarly, Menard is directed to

remote notification of monitored conditions, such as notification of an alarm in a security system. In particular, Menard teaches notification of a responsible party of an alarm for verification over multiple communication channels so that the responsible party may verify the alarm. Ex. 1020, [0009]. Menard discloses the use of short message service (SMS) messages as a mode of communication between the user (a responsible party and a home base unit that monitors a security system. Ex. 1020, [0009].

745. A POSITA would have understood that the combination of Bielski and Wu already discloses confirming and/or otherwise updating a status of a device upon sending a control message. For example, Bielski discloses “that the user of the mobile terminal 30 is automatically informed about the actual status of the corresponding devices in time intervals or upon special conditions of the devices, e.g. alarm conditions.” Ex. 1017, [0069]. Moreover, Wu illustrates a current state of the monitored device through its user interface that is illustrated in annotated Figure 9. *See e.g.*, “Power: [on].” A POSITA would have understood that the current status of a device would be shown in the interface, such as a current status after the execution of a control command as a result of the Wu “Refresh” function. Ex. 1018, p. 500.



Fig. 9. HNS status.

Ex. 1018, Fig. 9.

746. While implicit in Bielski and Wu, a POSITA would be motivated to implement a message that confirms that a command has been executed. That is, a POSITA would be motivated to add such functionality so as to confirm an alarm has been activated, the police have been called or that the temperature has been adjusted. Indeed, a POSITA would have understood that Menard explicitly teaches such a confirmatory communication.

747. Menard teaches sending a second message to the user to confirm that the command has been executed. In particular, Menard discloses that responsible parties “may be notified of the outcome of the process” and in one example explains that the message could be notifying the user of execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. Such a message provides extra comfort and security to a user in that the user understands that help is on the way.

748. As such, in my opinion, a POSITA would have had a reasonable expectation of success of adding a confirmation message to a system that already exchanges and processes SMS messages in application specific manners. Indeed, as demonstrated by the combined teachings of Bielski, Wu, and Menard, transmission of SMS messages for monitoring, control, and confirmation were well known in the art.

ii. Claim 20: [20Pre] A wireless system comprising:

749. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitation 1Pre.

iii. Claim 20: [20A] a base unit operatively interfaced with an environmental device for controlling an environmental condition in a structure;

750. Bielski and Wu disclose Limitation 20A for at least the reasons outlined above with respect to Limitation 1B.

iv. Claim 20: [20B] a receiver associated with said base unit, and adapted for receiving a first wireless message from a remote unit having wireless connectivity, wherein the first wireless message includes a command for the environmental device;

751. Bielski and Wu disclose Limitation 20B. The remote unit is described with respect to Limitation 1C. Unlike Claim 19, Claim 20 characterizes the message that is received by the receiver as the “first” message. While the claim does not require that this be the actual first message received by the base unit and

thus should not be limited as such, the combination of Bielski and Wu nevertheless disclose the ability for the transmission of a first message to the base unit.

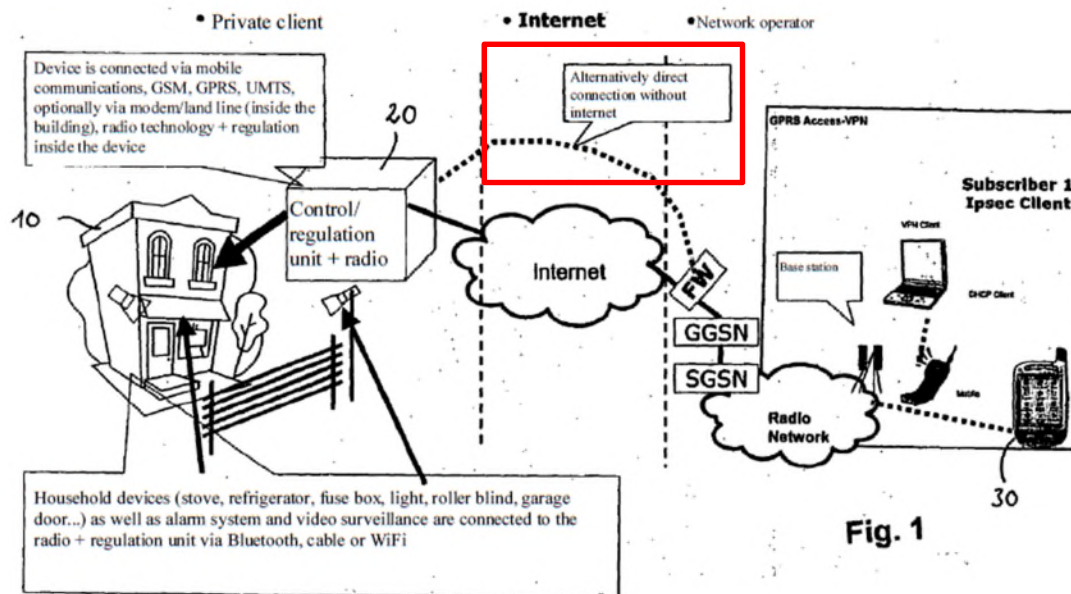
752. Bielski discloses a receiver in the form of a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent and/or received via. . .a mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. This unit allows a direct cellular connection between the communication unit and the user’s mobile device. Ex. 1017, [0023]. Indeed Bielski discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit

and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

753. Bielski illustrates a direct connection between the mobile device and check and communication unit in the home in at least annotated Figure 1:



Ex. 1017, Fig. 1

754. A POSITA would have understood that Bielski's disclosure that the communication unit can receive data from the user's mobile device means that Bielski's wireless module includes a receiver. Bielski discloses that messages from the user are "transferred to the control and communication unit." Ex. 1017, [0063].

755. Bielski discloses active control of the home devices by means of the mobile terminal. Ex. 1017, [0008]. In particular, Bielski discloses that the user can

send a first message from the mobile unit with a command for the “environmental device”:

Using the device represented in Fig. 1, the *user of the mobile terminal 30* can be informed about the operation conditions of the devices which are important to them *or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. It is transferred to the control and communication unit 20 via the telecommunication network of a network operator*, either with the help of the internet or directly, and from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.

Ex. 1017, [0063] (emphasis added).

756. Bielski further discloses:

For this purpose, the user enters the dialing number of the check and communication unit 20, which is assigned to the building 10, into their mobile phone or presses the corresponding symbol on the display. The control and communication unit 20 is clearly identifiable in the network of the telecommunication operator and can therefore be controlled by means of the internet or the mentioned direct mobile communications or land line connection. The check and communication unit takes over the desired addressing of the device.

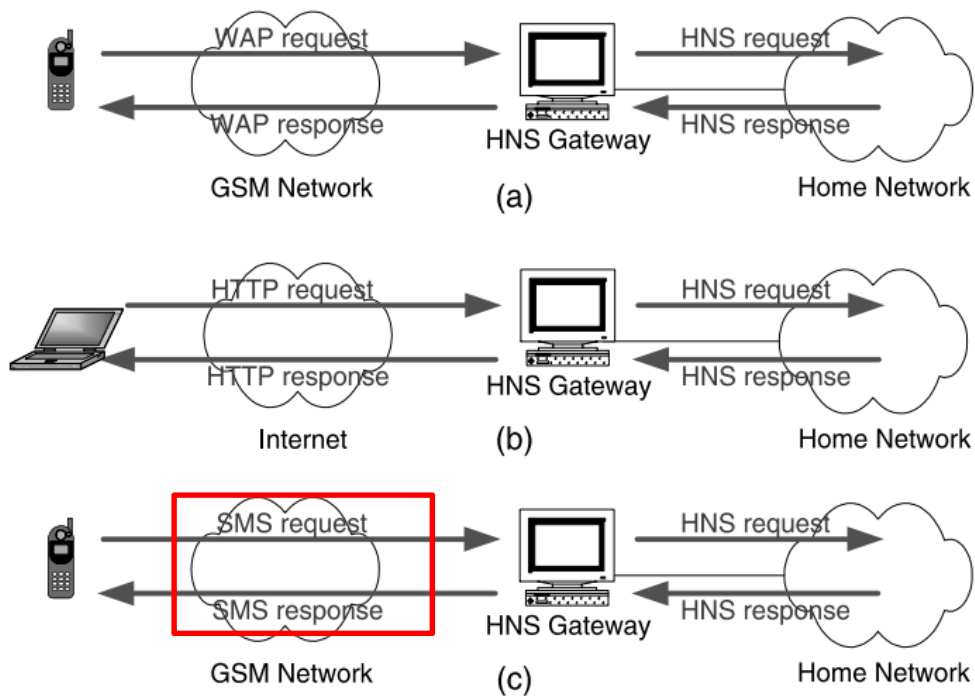
Ex. 1017, [0064].

757. Bielski discloses that the first message includes a command for the environmental device. Specifically, Bielski discloses that the message can include commands such as “on/off conditions or temperatures etc.” Ex. 1017, [0063]. This command is then sent to the environmental device to effectuate control. *Id.*

758. Likewise, Wu discloses that the HNS gateway device includes a receiver in the form of a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, 497; *see also id.* at Fig. 6.

759. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499.

760. As illustrated in annotated Figure 2 of Wu, the HNS gateway is interfaced with the mobile device, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

761. Annotated Figure 6 of Wu illustrates the cellular module that resides within the HNS gateway and that directly connects to the remote unit.

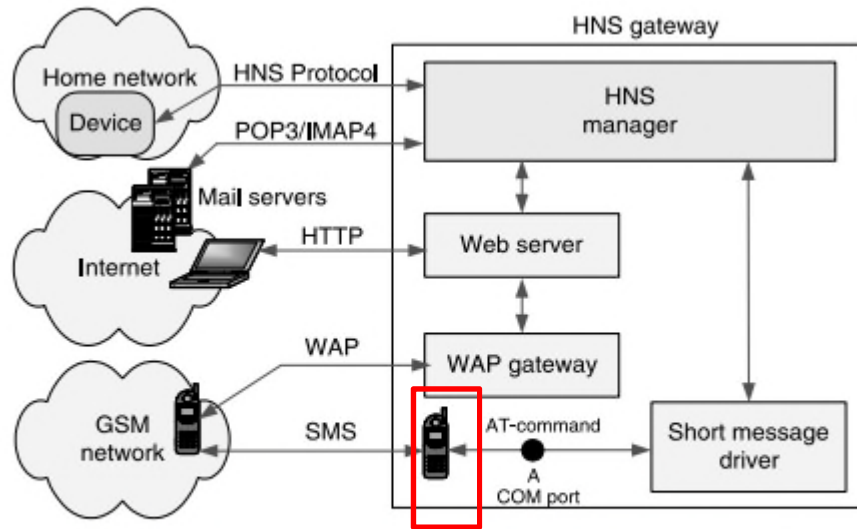


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

762. Figure 6 illustrates direct communication, by way of SMS, between the user's mobile device and the HNS gateway (base unit). Further, a POSITA would have understood that Figure 6 of Wu illustrates bidirectional communication given the double arrows between the mobile device and base unit.

763. Wu further discloses that the HNS gateway receives an SMS message that includes a command for the environmental device. Wu discloses that the user can "control the appliance remotely." Ex. 1018, p. 495. The mobile device in Wu has SMS capability such that the mobile station "can communicate with the HNS via SMS protocol," which allows "the user [to] monitor and control the home

devices.” Ex. 1018, p. 495. SMS communication is illustrated in at least Figure 2 of Wu (above).

764. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Wu discloses that the command from the mobile device to HNS gateway can include “turning on/off” home appliances and systems, such as those listed in Table 1 (air-conditioning, lighting, burglar alarm). Ex. 1018, p. 495.

- v. ***Claim 20: [20C] a controller operatively associated with said base unit, and operatively connected with the environmental device for executing the command; and***

765. Bielski and Wu disclose Limitation 20C for at least the reasons outlined above with respect to Limitation 19D. *See also* 1B.

- vi. ***Claim 20: [20D] a transmitter operatively associated with the controller for sending a second wireless message to the remote unit, wherein the second wireless message includes information indicating that the command has been executed.***

766. The combination of Bielski, Wu, and Menard disclose Limitation 20D.

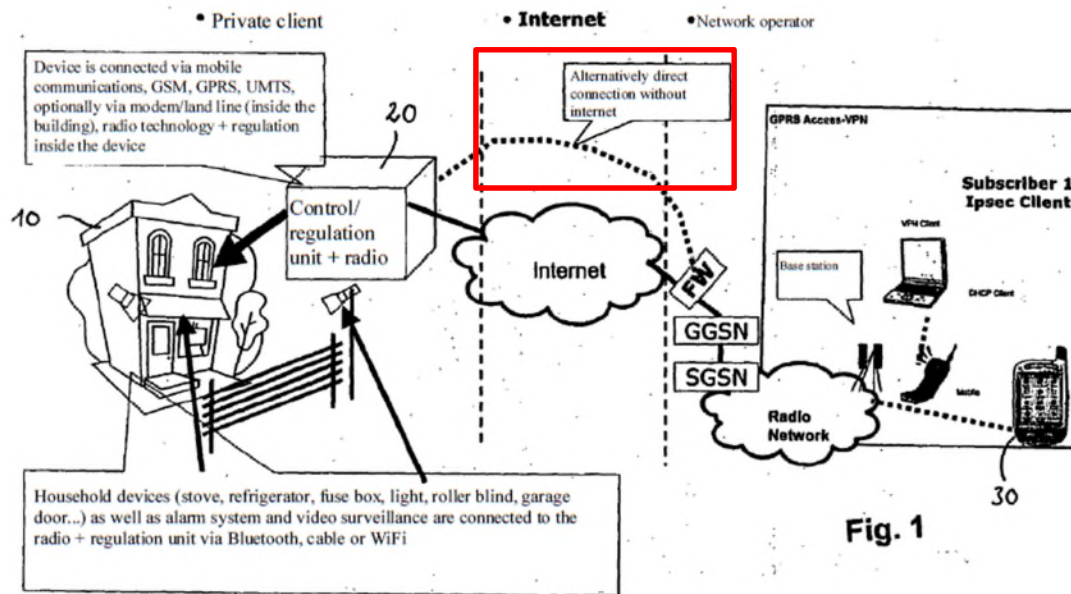
767. Bielski discloses a transmitter in the form of a communication unit in which “data can be transferred to a network operator of a telecommunication network and/or data transferred from the network operator can be received.” Ex. 1017, [0005]. In particular, Bielski discloses that the communication unit comprises a “sending and/or receiving unit by means of which the data can be sent

and/or received via. . .a mobile communications network.” Ex. 1017, [0021]. The sending/receiving unit is designed “such that it sends and/or receives data via a mobile communications network, wherein the mobile communications network operates according to the GSM, GPRS or UMTS standard.” Ex. 1017, [0022]. This unit allows a direct cellular connection between the communication unit and the user’s mobile device. Ex. 1017, [0023]. Indeed Bielski discloses:

The sending and/or receiving unit can be embodied such that a connection between the communication unit and the network operator can be made directly by means of the mobile communications network or by land line or indirectly by interposing the internet. It is conceivable that the communication unit communicates directly with the network operator via mobile communication or via land line. In a preferred design of the invention, the communication unit is identified in a mobile communications network like a mobile terminal and the connection is established and data are exchanged between the communication unit and the network, like with mobile terminals which are operated in a mobile communications network of a network operator.

Ex. 1017, [0023].

768. Bielski also illustrates a direct connection between the mobile device and check and communication unit in the home in at least annotated Figure 1:



Ex. 1017, Fig. 1.

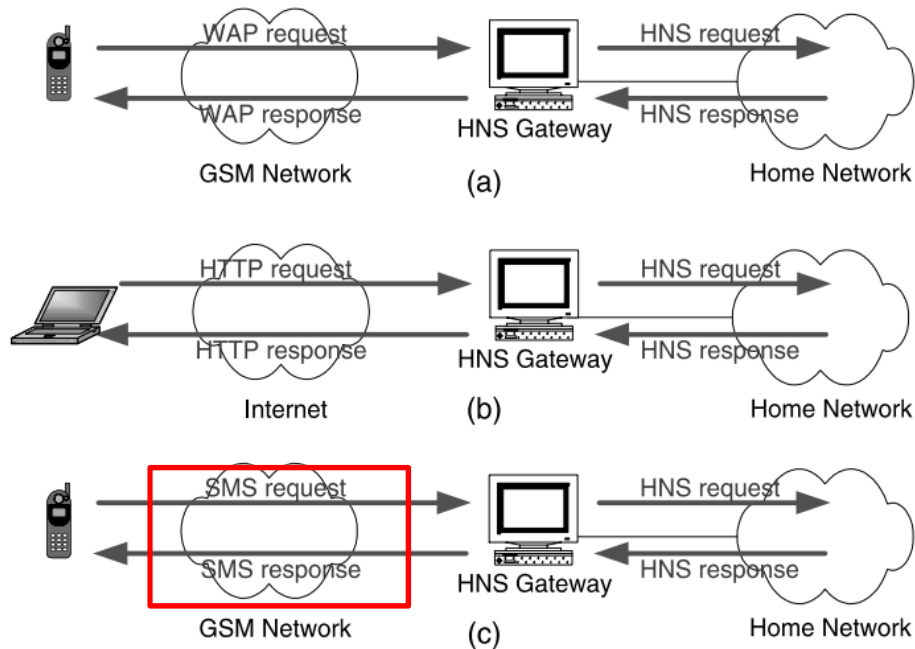
769. A POSITA would have understood that Bielski's disclosure that the communication unit can send data to the user's mobile device means that Bielski's wireless module includes a transmitter. This is further supported by Bielski's disclosure that a status report can be "transmitted to the mobile terminal." Ex. 1017, [0031].

770. Bielski discloses that the check and communication unit is configured to send an SMS message to the remote unit through the wireless module that includes environmental information. Bielski discloses that the gateway can send notification to the mobile terminal, which can be "in the form of an SMS." Ex. 1017, [0069]. Bielski further discloses:

In a further design of the present invention, means can be provided by means of which a status report concerning the device state is transmitted to the mobile terminal in time intervals or upon occurrence of particular operating states of the one or more devices. This makes it possible to inform or warn the user of the mobile terminal about the device status, either in regular time intervals, for example, or in case of special conditions, such as alarm conditions.

Ex. 1017, [0031].

771. Likewise, Wu discloses that the HNS gateway device includes a transmitter in the form of a “short message driver responsible for communications between the GSM network and the HNS manager.” Ex. 1018, p. 497; *see also id.* at Fig. 6. Wu discloses that one of the functions of this short message driver within the HNS gateway is “sending and receiving short messages.” Ex. 1018, p. 499. As illustrated in annotated Figure 2 of Wu, the HNS gateway is interfaced with the mobile device, such that the “mobile station with SMS capability can communicate with the HNS via SMS protocol.” Ex. 1018, p. 495.



Ex. 1018, Fig. 2.

772. In annotated Figure 6, Wu illustrates the transmitter that resides within the HNS gateway and that directly connects to the remote unit:

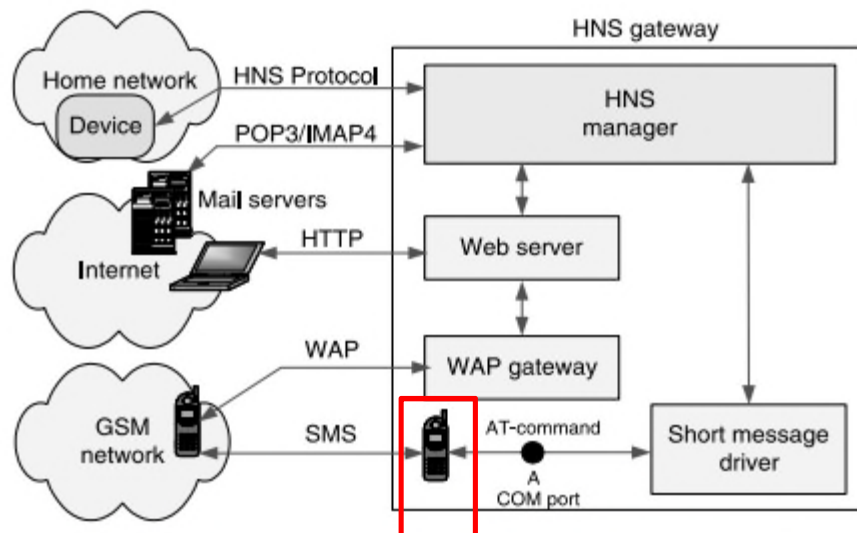


Fig. 6. Architecture of the HNS gateway.

Ex. 1018, Fig. 6.

773. Figure 6 illustrates direct communication, by way of SMS, between the user's mobile device and the HNS gateway (base unit). Further, a POSITA would have understood that Figure 6 of Wu illustrates bidirectional communication given the double arrows between the mobile device and base unit.

774. Wu also discloses that "the HNS gateway can actively notify the home user when an abnormal state occurs." Ex. 1018, p. 494. In particular, the "HNS manager also employs the function provided by the short message driver to send alerting messages received from the home network to the mobile station." Ex. 1018, p. 495.

775. Wu and Bielski do not disclose that this second message is specifically a message indicating that a command was executed.

776. However, Menard specifically discloses a second message including information indicating that the command was executed. Menard is directed to remote notification of monitored conditions, such as an alarm that may be generated in a security system, a fire detection system, a medical monitoring system, etc. Ex. 1020, [0006]. In particular, Menard teaches notification of a responsible party (RP) of an alarm so that the RP may verify the alarm. The RP then responds to the notification and the system executes a command based on the RP's response. Ex. 1020, [0068]. Subsequent to this execution, Menard teaches

sending a second acknowledgement message to the user to confirm that the command has been executed. In particular, Menard discloses that, “after instructions from an RP are completed, another round of notification may occur.” Ex. 1020, [0179]. Such notification can include that the responsible party “is notified of the outcome of the process” and in one example explains that the message could be notifying the user of execution of the process such as “the police were dispatched at 10:05 AM.” Ex. 1020, [0068] [0179]. As such, Menard discloses that “RPs are informed as to the outcome of the event.” Ex. 1020, [0179].

vii. Claim 22: [22Pre] A base unit configured to communicate with an environmental device and to communicate with a remote unit having wireless connectivity, the base unit comprising:

777. To the extent the preamble is limiting, it is disclosed by the combination of Bielski and Wu for at least the reasons outlined above with respect to Limitation 18Pre.

viii. Claim 22: [22A] a controller configured to communicate with the environmental device; and

778. Bielski and Wu disclose Limitation 22A for at least the reasons outlined above with respect to Limitation 19D.

ix. Claim 22: [22B] a wireless module configured to:

779. Bielski and Wu disclose Limitation 22B for at least the reasons outlined above with respect to Limitation 1D.

- x. ***Claim 22: [22C] receive a control message from the remote unit via short message and/or data bearer services, said control message comprising control information for controlling the environmental device;***

780. Bielski and Wu disclose Limitation 22C for at least the reasons outlined above with respect to Limitation 19C. *See also* 1G.

- xi. ***Claim 22: [22D] create a control command for the environmental device based on the control information;***

781. Bielski and Wu disclose Limitation 22D.

782. Bielski specifically discloses that the check and communication unit creates control commands for the “environmental device.” For example, Bielski discloses:

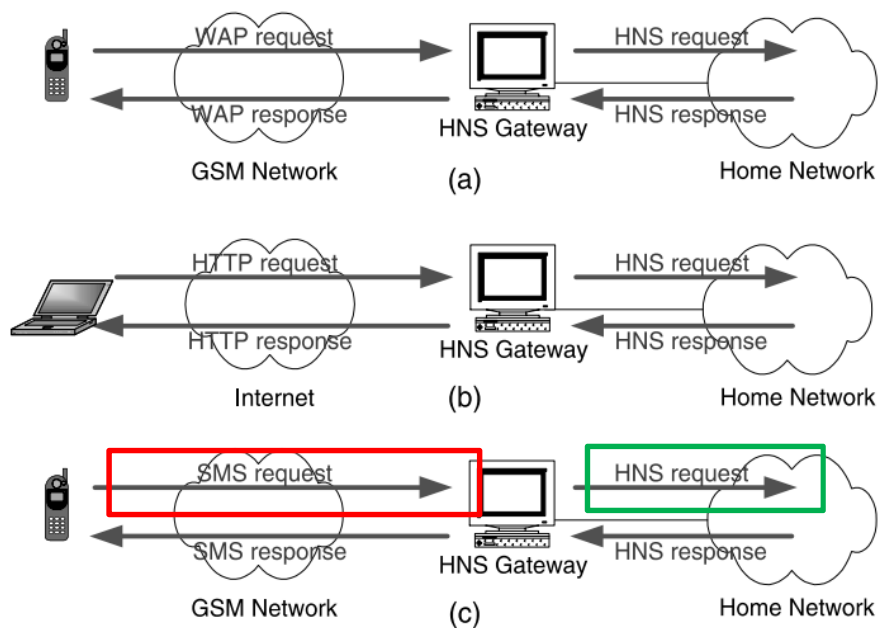
Using the device represented in Fig. 1, the user of the mobile terminal 30 can be informed about the operation conditions of the devices which are important to them or can themselves influence the devices by controlling or regulating them. For this purpose, they enter the corresponding commands, such as on/off conditions or temperatures etc., into the mobile terminal and send this information. ***It is transferred to the control and communication unit 20 via the telecommunication network*** of a network operator, either with the help of the internet or directly, and ***from there, it is transmitted to the devices inside the building 10 or serves as a nominal value which is required for the regulation of the devices.***

Ex. 1017, [0063] (emphasis added).

783. Bielski discloses that the check unit has complex applications that allow for “effecting control and regulation processes in the direction of the controlling/regulation devices is provided (heater, light switch, etc.).” Ex. 1017, [0082]. Bielski also discloses that the check and communication unit can be embodied as an embedded PC that accepts commands sent by the mobile device and “processes the values and correspondingly carries out the control/regulation commands via its I/O interfaces.” Ex. 1017, [0085].

784. Likewise, Wu discloses that the HNS gateway accepts control messages from the remote unit and prepares the corresponding commands for the “environmental device.” Wu discloses that the HNS gateway includes a management application that “supervises home devices.” Ex. 1018, p. 494.

785. Wu also discloses that a control command is created for the environmental device. As seen in Wu annotated Figure 2, the mobile device sends a “request” (red box) to the HNS gateway which then sends an “HNS request” (green box) to the home network, which includes the environmental devices. *See* Ex. 1018, Figs. 1, 2.



Ex. 1018, Fig. 2.

786. In describing Figure 2, Wu explicitly discloses that “[w]ith SMS, the user can monitor and control the home devices.” Ex. 1018, p. 495. Figure 2 also illustrates how the message from the remote unit is sent and received by the HNS Gateway in the form of the “SMS request” with an arrow from the remote unit to the HNS gateway. Figure 2 also shows a corresponding “HNS request” sent from the HNS gateway to the home network.

787. For example, Wu discloses that based on the request-response mechanism in Figure 2, the user can control appliances by setting control data in the system. Ex. 1018, p. 495. This allows the user to “turn[] on/off, check voice and e-mail messages, view real-time images captured by the surveillance system, and so on.” Ex. 1018, p. 495.

xii. Claim 22: [22E] send the control command to the environmental device via the controller; and

788. Bielski and Wu disclose Limitation 22E for at least the reasons outlined above with respect to Limitation 11J. *See also* 19D.

xiii. Claim 22: [22F] send a status message indicating execution of said control information to the remote device.

789. The combination of Bielski, Wu, and Menard disclose Limitation 22F for at least the reasons outlined above with respect to Limitation 20D.

XII. REVISION OR SUPPLEMENTATION

790. In this report, I have presented my opinions regarding the invalidity of the claims of the 935 Patent based on the information available to me. My opinions are subject to change in view of opinions provided by the Patent Owner or its expert, or any additional information that I may receive. I reserve the right to supplement my opinions accordingly.

I hereby declare that all statements made herein of my own knowledge are true and that all opinions expressed herein are my own; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.



Dr. Kevin Jeffay

July 15, 2019

Date