INVALIDITY SEARCH REPORT

Device for short-range communication, adapted to provide access to a remote service

US9924448B2

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1 PROJECT METHODOLOGY

1.1 METHODOLOGY

Project Methodology	
Step	**Task**
I - Understanding of the Subject Matter	1. Analyze the patent(s) to identify technological aspects, potential weaknesses in claim support, enablement, and specification gaps. 2. Examine **file wrappers** of the patents-in-suit and their international family members to uncover key insights.
II - Keyword-Based Patent Search and Analysis	1. Formulate a robust search strategy using keywords, patent classifications (e.g., CPC/IPC), applicant and inventor names, priority dates, citations and their combinations in major patent databases (e.g., **Questel Orbit** and/or **PatSeer**) and AI-based tools. 2. Conduct a thorough analysis of retrieved **patent** and **non-patent literature** to identify the most relevant prior art references. 3. Analysis of the identified patents/patent-applications to shortlist potentially relevant patents/patent-applications
III – Detailed Analysis	1. Detailed analysis of the shortlisted patents/patent applications. 2. Analyze identified patents using two approaches: a. **Claimed Methods:** Use the invention's claimed methods as the Initial Source of Information (ISI) to identify similar technical solutions. b. **Problem-Solution:** Use the problem addressed by the invention as the ISI to identify alternative solutions or methods in the same technical domain.
IV - Non-Patent Literature Search	1. Conduct searches for non-patent literature (e.g., academic papers, technical journals, conference proceedings) using databases like **Google Scholar, IEEE Xplore, or PubMed**. 2. Identify disclosures that may impact the novelty or non-obviousness of the invention. 3. Analyze and categorize relevant non-patent literature based on its technical relevance.
VI – Preliminary Report Preparation	1. Preparation of a preliminary report containing prior art publication numbers, key excerpts from the references, and a summary for your review and feedback.
V – Final Report Preparation	1. Collate all relevant patents, patent applications, and non-patent literature identified during the search. 2. Present findings in a **structured MS Word document**, including: ○ Bibliographic data (e.g., patent numbers, publication dates, assignees, inventors). ○ Summaries of relevant prior art, **mapping with the patent excerpts**. 3. **Analysis of novelty and non-obviousness** based on the identified prior art.

1.2 DATA SOURCES

	Data sources applicable to this search
	Data sources NOT applicable to this search

Data Sources	Industrial Design Search	Special Databases
• Thomson Innovation • Questel Orbit • Patent Insight Pro • National Patent Databases of Individual (100+) Countries	• Questel Orbit Design Patent Module, • Design View • National Industrial Design Databases of Individual Countries.	• SciFinder • Patent Lens (Please check the coverage here) • EMBL-EBI (EPO, JPO, KIPO and USPTO) • NCBI (USPTO, EPO and JPO)

Non-Patent Literature Databases

Journal Articles:
Thomson Innovation, Dialog, ScienceDirect, Scitation, Springerlink, IEEE, ACM, PubMed, PubChem, MedLine, PaperChem, Google Scholar, JournalSeek, Chemical Engineering and Biotechnology Abstracts, Food Science and Technology Abstracts, Biosys, Embase, Compendex, INSPEC, Others by the Technical Domain

Books:
Google Books, Other Online Books Archives

Academic Projects/ Thesis:
Dissertation Abstracts Online, Stanford University Library, Harvard University Library, 99 Resources, Open Thesis, DeepDyve

Conference Proceedings:
Inside Conferences, Specific Conference Archives/ Websites by the Technical Domain

Product Literature & Standards:
Company Websites, Youtube Videos, Product Brochures, Regulatory Submission Databases like FDA, CRDH, etc. Specific sources based on technical domain like National Technical Information Service, Transportation Research Information Services, International Construction Database

Foreign Language Databases:
Non-patent literature sources of individual countries (example): China National Knowledge Infrastructure (CNKI), WanFang Data, J-Stage, CiNii); Traditional Knowledge Digital Library (TKDL) of India

1.3 PATENT COVERAGE

- Worldwide Patent search in 104+ Jurisdictions using **Questel Orbit** and **PatSeer** database.
- Full Text Coverage:
  - **42 Full Text Authorities**: EP, WO, US, JP, CN, KR, CA, DE, FR, GB, ES, AU, IN, CH, AT, BR, TH , RU, PH, SE, NO, DK , FI, BE, NL, LU, MX, AP, CO, DD, EA, IL, MA, MC, OA, TW, TJ, KG, AM, UZ, MD, GE
- **Full Text Machine Translations in English**: JP, KR, CN, FR, DE, DK, FI, RU, BE, NL, LU
- **104+ Bibliographic Authorities**

2 PROJECT OVERVIEW

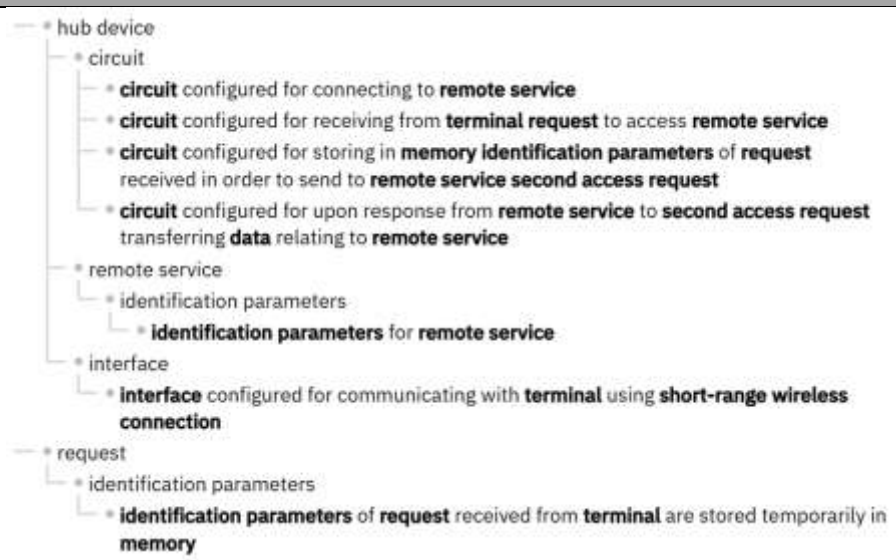
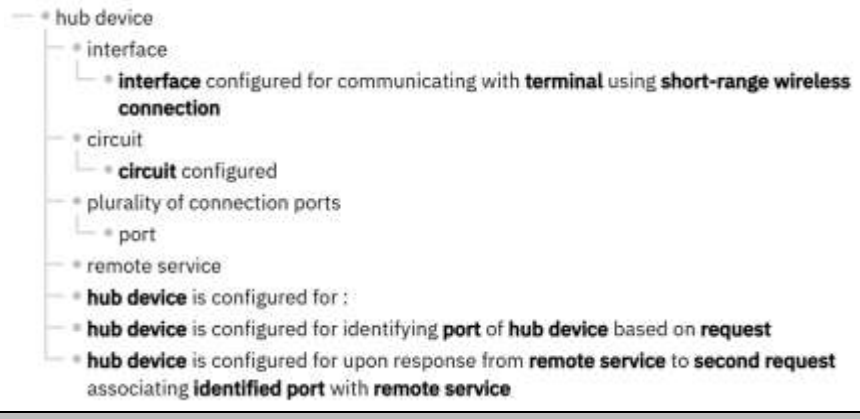
2.1 OBJECTIVE & BACKGROUND

The client requested that Synoptic IP conduct a prior art search to identify patent references that could challenge the validity of all claims in Patent No. **US9924448B2**, titled 'Device for short-range communication, adapted to provide access to a remote service'.

2.2 SEARCH STRING

The following table lists the search strings used to identify relevant patents and published applications.

Key-words Search Strings	
Questel Orbit Patent Database	
1	**Title, Abstract, Claims and Description:** ((SHORT RANGE OR "NFC" OR (NEAR 2D FIELD) OR BLUETOOTH) **AND** ((REMOTE OR ONLINE OR INTERNET OR CLOUD) 3D (SERVICE? OR STREAMING OR MEDIA OR MULTIMEDIA OR MULTI MEDIA OR STORAGE OR APPLICATION)) AND (((STOR+ OR SAV+) 5D (TEMPORAR+ OR VOLATILE)) AND (HUB 7D (PORT? OR JACK OR "USB"))) AND ((DELET OR ERAS+ OR REMOV+) 5D (IDENTIF+)))/TI/AB/CLMS/ICLM/DESC/ODES **AND** **Date restriction:** PRD <= 2015-06-26
2	**Title, Abstract, Claims and Description:** ((HUB AND (REMOTE OR ONLINE OR INTERNET OR CLOUD) 3D (SERVICE? OR STREAMING OR MEDIA OR MULTIMEDIA OR MULTI MEDIA OR STORAGE OR APPLICATION)))/TI/AB/CLMS/ICLM AND ((SHORT RANGE OR "NFC" OR (NEAR 2D FIELD) OR BLUETOOTH) AND ((DELET OR ERAS+ OR REMOV+) 5D (IDENTIF+))/TI/AB/CLMS/DESC/ODES/ADB/ICLM **AND** **Date restriction:** PRD <= 2015-06-26
3	**Title, Abstract and Claims:** ((REMOTE OR ONLINE OR INTERNET OR CLOUD) 3D (SERVICE? OR STREAMING OR MEDIA OR MULTIMEDIA OR MULTI_MEDIA OR STORAGE OR APPLICATION)) AND (SHORT_ RANGE OR "NFC" OR (NEAR 2D FIELD) OR BLUETOOTH) AND (DELET OR ERAS+ OR REMOV+) 5D (IDENTIF+))/TI/AB/CLMS/ICLM **AND** **Date restriction:** PRD <= 2015-06-26
4	**Title, Abstract and Claims:** (REMOTE OR ONLINE OR INTERNET OR CLOUD) 3D (SERVICE? OR STREAMING OR MEDIA OR ULTIMEDIA OR MULTI MEDIA OR STORAGE OR APPLICATION)) AND (SHORT RANGE OR "NFC" OR (NEAR 2D FIELD) OR BLUETOOTH) AND (((STOR+ OR SAV+) 5D (TEMPORAR+ OR VOLATILE)) AND (HUB 7D (PORT? OR JACK OR "USB")))/TI/AB/CLMS/ICLM **AND** **Date restriction:** PRD <= 2015-06-26

5	**CITATION** = (US10230783 OR US6910064 OR US10263918 OR US11223882 OR US10104145 OR US10798244 OR US10135823 OR KR100777811B1 OR US10972523 OR US10200523 OR US10846683) **AND** **Date restriction:** PRD <= 2015-06-26
AI Graph based Search [IP Rally]	
1	
2	
Non-Patent Literature Search	
6	HUB (REMOTE SERVICE) (SERVICE IDENTIFICATION) (TEMPORARY MEMORY)
7	HUB PORTS CLOUD IDENTIFICATION ((DELETE OR ERASE) IDENTIFICATION)
8	HUB REMOTE STREAMING ((DELETE OR ERASE) IDENTIFICATION) MEMORY

2.3 DATE RESTRICTION

Search was conducted to identify any patent filed/published till **23 August 2002**.

3 PATENT RESULTS

3.1 RELEVANT RESULTS TABLE

The table summarizes the mapping of relevant results identified in the prior art search analysis.

Key-features:	US2012182939A1	JPH07317429 (A)	US6910064B1
Key-feature 1: A hub device, comprising:	Para [0057]	Para [0046]	Column: [1-2] & Line: [65-08] Column: [2] & Line: [09-25]
Key-feature 2: An interface configured for communicating with a terminal using a short-range wireless connection;	Para [0057] Para [0084]	Para [0044] Para [0046]	Column: [2] & Line: [09-25]
Key-feature 3: A circuit configured for: connecting to a remote service	Para [0063] Para [0085]	Para [0046]	Column: [2] & Line: [09-25]
Key-feature 4: Receiving from the terminal a request to access the remote service, the access request comprising identification parameters for said service,	Para [0098] Para [0101] Para [0098]	Para [0046] Para [0116]	Column: [7] & Line: [24-31] Column: [07-08] & Line: [63-04]
Key-feature 5: Storing in memory the identification parameters of the request received, in order to send to the remote service a second access request including the identification parameters,	Para [0091] Para [0098] Para [0101]	**NA**	**NA**
Key-feature 6: Upon response from the remote service to the second request, transferring data relating to the service,	Para [0105] Para [0118]	Para [0046]	Column: [8] & Line: [17-27] Column: [1-2] & Line: [65-08]
Key-feature 7: identification parameters of the request received from the terminal are stored temporarily in the memory,	Para [0091] Para [0098]	NA	NA

Key-feature 8: and wherein the hub device comprises a plurality of connection ports, and wherein the hub device is further configured for: a. identifying a port of the hub device based on the request, and b. upon response from the remote service to the second request, associating the identified port with the remote service.	Para [0061] Para [0082] Para [0118] Para [0137]	Para [0034] Para [0037] Para [0044]	Column: [2] & Line: [09-25]

4 SEARCH SUMMARY

4.1 RELEVANT RESULTS

4.1.1 US2012182939A1

Title	Publication Date	Filing Date	Inventor	Assignee
Telehealth wireless communication hub and service platform system	July 19, 2012	January 13, 2012	Rajeev D. Rajan | Mark D. JERGER | Robert B. Ganton | Kumar V. Senthil | Jatin C. Kadakia | Vishwajeet Lohakarey | Thien H. Lee | Christopher D.B. Talbot	Capsule Technologies Inc

Abstract

Methods and devices provide a wireless communications hub device and services enabling remote access to electronic medical or fitness devices in a manner that simplifies device networking A wireless communication hub device may include a processor and wireless communication transceivers configured to connect to cellular and/or WiFi networks to access a remote server, and wired and/or wireless local networks for connecting to electronic medical or fitness devices. The wireless communication hub device may plug into a power source, connect to an electronic medical or fitness device, and communicate via a second wireless network with an associated server-based service. The system enables discovery of the wireless communication hub device and connected electronic medical or fitness devices. The associated remote server based service platform services may provide drivers for various electronic medical or fitness devices, store and forward data, and provide remote access to the various electronic medical or fitness devices.

Relevant Text

Key-feature 1: A **hub device**, comprising:	**Para [0057]** FIG. 1A illustrates system components that may be included in the communication system that is enabled by the various embodiments. As illustrated in FIG. 1A, a variety of electronic medical or fitness devices 102, 104, 108 (e.g., a blood pressure sensor, a glucose sensor, and a scale) may transmit data via a local network 105 (such as a local area wireless network (e.g., WiFi, Bluetooth, Zigbee, and ANT+) or wired network (e.g., USB)) to the **wireless communication hub device 112**, which packages the data encrypted and transmits it via a wireless communication link, such as a wireless wide area network 130 (e.g., 3G cellular wireless network), to a service platform server 140 where the data may be unpacked and stored in a database or transferred to other systems where the data may be stored and processed. ***Comment:*** *Para [0057] + FIG. 1A give a complete system diagram of the hub receiving data from multiple devices and forwarding it encrypted to the remote server.*

Key-feature 2: **An interface configured for communicating with a terminal using a short-range wireless connection;**	**Para [0057]** FIG. 1A illustrates system components that may be included in the communication system that is enabled by the various embodiments. As illustrated in FIG. 1A, **a variety of electronic medical or fitness devices 102, 104, 108 (e.g., a blood pressure sensor, a glucose sensor, and a scale) may transmit data via a local network 105 (such as a local area wireless network (e.g., WiFi, Bluetooth, Zigbee, and ANT+) or wired network (e.g., USB))** to the wireless communication hub device 112, which packages the data encrypted and transmits it via a wireless communication link, such as a wireless wide area network 130 (e.g., 3G cellular wireless network), to a service platform server 140 where the data may be unpacked and stored in a database or transferred to other systems where the data may be stored and processed. FIG. 1A also provides **a high-level illustration of the flow of data from various electronic medical and fitness devices through the hub over three short range radio protocols**. The various embodiments, the data collected from each device may be encrypted and securely managed from end-to-end so that each data set is stored in its own, perhaps proprietary format, by the device and by technology. In this manner, the wireless communication hub device acts as a gateway that securely enables wireless transport of data or information from the various electronic medical and fitness devices through the service platform server to the caregiver or provider's servers and databases located in the Internet cloud. **Para [0084]** Since **the wireless communication hub device is intended to be simple for users to implement, it may include a very rudimentary user interface**. For example, the processor **301** may be coupled to one or more light emitting diodes (LEDs) **334 for communicating status, and to one or more buttons 332 for receiving simple user command inputs (e.g., push to activate or restart).** ***Comment:*** *The cited text (para [0057]) describes short-range links to medical/fitness devices, not to a user "terminal" (computer). The user terminal interacts with the server via web browser/Internet; direct short-range hub-to-terminal communication is not clearly shown.*
Key-feature 3: **A circuit configured for: connecting to a remote service**	**Para [0063]** **The service platform server 140 may be configured to provide a variety of data and communication services related to wireless communication hub devices 112**, the electronic medical and fitness devices 102, 104, 108 that may be connected to them, and data that may be obtained from such electronic medical and fitness devices 102, 104, 108. Such services are generally referred to herein as "service platform services." One service platform service provided by the service platform server 140 may support user-authenticated discovery and **communication between the electronic medical and fitness devices 102, 104, 108 connected to the wireless communication hub device 112 and remote computer(s) 138 accessing the electronic medical and fitness devices 102, 104, 108.** **Para [0085]** While FIG. 3A shows the various components of **the wireless communication hub device 112 as separate integrated circuits, several components may be integrated into a single very large-scale integrated (VLSI) chip or assembled as an integrated chipset on a single circuit board** as is well-known in the art. For example, many modern cellular telephone transceivers, such as the Gobi™ cellular chipset module manufactured by QUALCOMM, Inc.,

	include a powerful processor, transceivers for connecting to WiFi networks and Bluetooth enabled devices, a built-in GPS receiver, and circuitry for connecting to wired connections such as a data port for receiving USB, FireWire and/or Ethernet connections. ***Comment:*** *Multiple citations (cellular transceiver, service platform server functions, registration flow).*
Key-feature 4: Receiving from the terminal a request to access the remote service, the access request comprising identification parameters for said service,	**Para [0098]** Once the processor 301 determines that a communication link is established with the service platform server **140** (i.e., determination 510="Yes"), at block 510, the processor 301 may apply steady power to the yellow LED (e.g., to indicated that the registration and configuration process is underway). **At block 514, at the same time the processor 301 may communicate** the identifier of the hub device 112 to the service platform server 140 to identify itself and register **with** the service platform server **140.** The wireless communication hub device 112 may stay in this state for some pre-configured period of time (e.g., 5 minutes). During this time, at block 516 the user may access the service platform server 140 from any computer with a web browser and access to the Internet. **Para [0101]** Referring once again to FIG. 5, once the configuration and registration process is completed, the wireless communication hub device 112 can be moved to any location that has cellular wireless network connectivity. Different electronic medical or fitness devices may be plugged into the wireless communication hub device 112. In an embodiment, **the wireless communication hub device 112 may discovery electronic medical or fitness devices plugged into or wirelessly linked to it, step 526. As electronic medical or fitness devices coupled to the wireless communication hub device 112 are identified,** the wireless communication hub device 112 may identify the electronic medical or fitness devices **to the** service platform server **140, step 528, such** as by transmitting their media access control (MAC) identifier (ID). The service platform server 140 may store the electronic medical or fitness device identifier in data fields associated with the user or the particular wireless communication hub device 112, step 530. The service platform server 140 may also assign an IPv6 address to each electronic medical or fitness device which also may be stored in the data records of the service platform server 140. **Para [0098]** In an embodiment, the number used to identify a hub device 112 to the service platform server 140 may be a six-digit number. At block 520, the service platform server 140 validates the number entered by the user with the number provided by the hub device 112 during its own online registration. **If the user entered code and the code communicated by the wireless communication hub device 112 match, at block 522 the service platform server 140 may** generate encryption and authentication keys **to be used in future communications with the wireless communication hub device 112 and the user's computer, and** transmits those keys to the device and the user's computer to complete the registration process. As part of the registration process the user's computer may download driver software that may be used to communicate with the wireless communication hub device 112 and/or the service platform server 140. Such drivers may be pre-configured to enable secure communications with the specific wireless communication hub device 112 (i.e.,

	the device with the same six-digit number received by the service platform server 140). Also as part of the registration process, the service platform server 140 may download to the wireless communication hub device 112 data and software to support the various functions, such as software updates for the hub device, appropriate peripheral drivers for interfacing with peripheral devices coupled to the hub device, communication look up tables (e.g., updated IP addresses), etc. ***Comment:*** *The registration flow (paras [0098], [0101]) is user then server (browser enters 6-digit code) and separately hub then server (sends its own ID). The hub does not directly receive an access request from the terminal.*
Key-feature 5: **Storing in memory the identification parameters** of the request received, in order to send to the **remote service** a **second access request including the identification parameters**,	**Para [0091]** FIG. 3E is a data structure diagram illustrating potential configurability **functions and parameters that may be stored in a memory 302 resident in a wireless communication hub device** 112 of the various embodiments. The memory 302 may contain: transaction data upload flags 352, such as a flag indicating if transaction data is to be uploaded off-peak or not; Quality of Service (QoS) parameters, such as minimum QoS levels required before transmitting data; data call periodicity parameters 356, such as a parameter indicating how many times a day the wireless communication hub device should establish a data call with the service platform server and/or a parameter indicating how often keep alive pings should be sent to the service platform server to keep a given communication link open (i.e., alive); URL and DNS port information 358, such as the URL and port for DNS resolution of the service platform server (e.g., www.2net.com/data:56) and/or a backup URL; a transaction storage limit parameter 360, such as a maximum threshold of number of transactions per customer that should be stored on the wireless communication hub device before uploading data to the service platform server; a storage limit 362, such as an amount of transaction data to store (i.e., data size or total number of transactions) and/or a maximum storage capacity; security/encryption mechanisms 363 (e.g., advanced encryption standard (AES) encryption); a time out parameter 364, such as a parameter indicating how long between receiving electronic medical and fitness device data to wait before timing out; a configuration file 366, such as **applications or software to support electronic medical and fitness device discovery, pairing, and authentication; and a hub ID 368, such as the wireless communication hub device's identification code (e.g., a six-digit number printed on the housing).** In the various embodiments, the memory 302 may contain additional parameters, functions, algorithms, software, and/or controls as necessary to perform the methods and functions discussed herein. **Para [0098]** In an embodiment, **the number used to identify a hub device 112 to the service platform server 140 may be a six-digit number. At block 520, the service platform server 140 validates the number entered by the user** with the number provided by the hub device 112 during its own online registration. **If the user entered code and the code communicated by the wireless communication hub device 112 match, at block 522 the service platform server 140 may generate encryption and authentication keys to be used in future communications with the wireless communication hub device 112 and the user's computer, and transmits those keys to the device and the user's computer to complete the registration process.** As part of the registration process the user's computer may download driver software that may be used to

	communicate with the wireless communication hub device 112 and/or the service platform server 140. Such drivers may be pre-configured to enable secure communications with the specific wireless communication hub device 112 (i.e., the device with the same six-digit number received by the service platform server 140). Also as part of the registration process, the service platform server 140 may download to the wireless communication hub device 112 data and software to support the various functions, such as software updates for the hub device, appropriate peripheral drivers for interfacing with peripheral devices coupled to the hub device, communication look up tables (e.g., updated IP addresses), etc. **Para [0101]** Referring once again to FIG. 5, once the configuration and registration process is completed, the wireless communication hub device 112 can be moved to any location that has cellular wireless network connectivity. Different electronic medical or fitness devices may be plugged into the wireless communication hub device 112. In an embodiment, the wireless communication hub device 112 may discovery electronic medical or fitness devices plugged into or wirelessly linked to it, step 526. **As electronic medical or fitness devices coupled to the wireless communication hub device 112 are identified, the wireless communication hub device 112 may identify the electronic medical or fitness devices to the service platform server 140, step 528, such as by transmitting their media access control (MAC) identifier (ID). The service platform server 140 may store the electronic medical or fitness device identifier in data fields associated with the user or the particular wireless communication hub device 112, step 530. The service platform server 140 may also assign an IPv6 address to each electronic medical or fitness device which also may be stored in the data records of the service platform server 140**. ***Comment:*** *Memory (para [0091]) stores persistent hub config, hub ID, drivers, QoS, etc. There is no disclosure of the hub receiving a terminal request, temporarily buffering its identification parameters, and then generating/sending a "second access request" on behalf of the terminal. The hub's own ID registration is one-time and not portrayed as a relayed/stored terminal request.*
Key-feature 6: Upon response from the remote service to the second request, transferring data relating to the service,	**Para [0105]** **If an electronic medical or fitness device provides data for communication to the service platform server 140 or a user computer 138 (such as may occur in response to a data request message discussed above), such data is received by the hub device 112 and relayed to the service platform server 140, step 538.** In some cases, the wireless communication hub device 112 may encapsulate the device data within IP packets so that the data can be tunneled through the Internet 114 for processing by the service platform server 140 using an appropriate driver software. As described above, the data messages may be transmitted to the Internet address of the service platform server 140 via a cellular or local area network connection to the Internet 114. Electronic medical or fitness device data packets are received by the service platform server 140, processed if necessary, and relayed to a user computer 138 (if appropriate) via the Internet 114, step 540. **Para [0118]** In response to receiving a device or data access request from a user, the service platform server **140** may transmit a suitable request message to the wireless communication hub device 112 to obtain the access

	or data requested by the user, step 606. Upon receiving this request, the wireless communication hub device 112 may query the indicated electronic medical or fitness device for the requested data, step 608. In response, the queried electronic medical or fitness device may begin providing the requested data in its native format (i.e., in a format that requires a device driver to receive), step 610. For example, if the request is for images from an electronic medical or fitness device 102 (e.g., a webcam or blood pressure monitor), the wireless communication hub device 112 may signal the electronic medical or fitness device 102 (e.g., a webcam or blood pressure monitor) to activate and begin transmitting image data to the wireless communication hub device 112. In this embodiment, the wireless communication hub device 112 receives the native format electronic medical or fitness device data and packages the data into IP packets that can be tunneled via the Internet 114 to the service platform server 140, step 612. Methods and protocols for tunneling data via the Internet 114 are well-known in the computer communication arts. ***Comment:*** *Paras [0105], [0118] describe the exact sequence: 'server sends request' followed by 'hub queries device' followed by 'hub packages native data' followed by 'tunnels to server'.*
Key-feature 7: identification parameters of the request received from the terminal are stored temporarily in the memory,	**Para [0091]** FIG. 3E is a data structure diagram illustrating potential configurability **functions and parameters that may be stored in a memory 302 resident in a wireless communication hub device** 112 of the various embodiments. The memory 302 may contain: transaction data upload flags 352, such as a flag indicating if transaction data is to be uploaded off-peak or not; Quality of Service (QoS) parameters, such as minimum QoS levels required before transmitting data; data call periodicity parameters 356, such as a parameter indicating how many times a day the wireless communication hub device should establish a data call with the service platform server and/or a parameter indicating how often keep alive pings should be sent to the service platform server to keep a given communication link open (i.e., alive); URL and DNS port information 358, such as the URL and port for DNS resolution of the service platform server (e.g., www.2net.com/data:56) and/or a backup URL; a transaction storage limit parameter 360, such as a maximum threshold of number of transactions per customer that should be stored on the wireless communication hub device before uploading data to the service platform server; a storage limit 362, such as an amount of transaction data to store (i.e., data size or total number of transactions) and/or a maximum storage capacity; security/encryption mechanisms 363 (e.g., advanced encryption standard (AES) encryption); a time out parameter 364, such as a parameter indicating how long between receiving electronic medical and fitness device data to wait before timing out; a configuration file 366, such as **applications or software to support electronic medical and fitness device discovery, pairing, and authentication; and a hub ID 368, such as the wireless communication hub device's identification code (e.g., a six-digit number printed on the housing).** In the various embodiments, the memory 302 may contain additional parameters, functions, algorithms, software, and/or controls as necessary to perform the methods and functions discussed herein. **Para [0098]** In an embodiment, **the number used to identify a hub device 112 to the service platform server 140 may be a six-digit number. At block 520, the**

	service platform server 140 validates the number entered by the user with the number provided by the hub device 112 during its own online registration. **If the user entered code and the code communicated by the wireless communication hub device 112 match, at block 522 the service platform server 140 may generate encryption and authentication keys to be used in future communications with the wireless communication hub device 112 and the user's computer, and transmits those keys to the device and the user's computer to complete the registration process.** As part of the registration process the user's computer may download driver software that may be used to communicate with the wireless communication hub device 112 and/or the service platform server 140. Such drivers may be pre-configured to enable secure communications with the specific wireless communication hub device 112 (i.e., the device with the same six-digit number received by the service platform server 140). Also as part of the registration process, the service platform server 140 may download to the wireless communication hub device 112 data and software to support the various functions, such as software updates for the hub device, appropriate peripheral drivers for interfacing with peripheral devices coupled to the hub device, communication look up tables (e.g., updated IP addresses), etc. **Para [0106]** When not actively responding to a data request or relaying data from an electronic medical or fitness device, the wireless communication hub device 112 may await messages from the service platform server 140 or a computer 138 coupled to the wireless communication hub device or to a local area network, step 542. To minimize costs associated with maintaining a data connection via a cellular data network, **the wireless communication hub device 112 may be configured to terminate an active data connection when activity ceases for a predetermined amount of time ("timeout interval"). Thus, the processor 301 of the wireless communication hub device 112 may be configured to determine whether the timeout interval has transpired since a last communication event, determination 544.** If the timeout interval has not expired (i.e., determination 544="No"), the wireless communication hub device 112 may continue to monitor the open cellular data communication link for messages from the service platform server 140. Once the timeout interval has expired (i.e., determination 544="Yes"), the wireless communication hub device 112 may terminate the open cellular data communication link and enter a "sleep" mode, step 546. In embodiments in which the wireless communication hub device 112 is plugged into an inexhaustible power supply, such as an AC wall socket, the sleep mode may involve terminating the open cellular data communication link but continuing to monitor messages or telephone calls placed to the telephone number of the wireless communication hub device 112. For example, as described more fully below with reference to FIG. 8A, the wireless communication hub device 112 may be configured to receive a simple message service (SMS) message during the sleep mode which prompts the wireless communication hub device 112 to place a data call to the service platform server 140 and initiate a new data communication link. In embodiments in which the wireless communication hub device 112 is battery powered, the sleep mode may further entail reducing processing performed on the wireless communication hub device in order to economize battery consumption.

	Comment: *Memory (para [0091]) stores persistent hub config, hub ID, drivers, QoS, etc. There is no disclosure of the hub receiving a terminal request, temporarily buffering its identification parameters, and then generating/sending a "second access request" on behalf of the terminal. The hub's own ID registration is one-time and not portrayed as a relayed/stored terminal request.*
Key-feature 8: and wherein **the hub device** comprises a **plurality of connection ports**, and wherein the hub device is further configured for: **a.** **identifying a port of the hub device based on the request, and** **b.** **upon response from the remote service to the second request,** **associating the identified port with the remote service.**	**Para [0061]** The wireless communication hub device system 100 may include two core elements, **the wireless communication hub device 112 and a service platform server ("2net Service Platform" in the figures) 140. The wireless communication hub device 112 may be sold to consumers and may be attached by USB, FireWire or wireless communication links to wireless electronic medical and fitness devices 102, 104, 108. The service platform server 140 is coupled to the Internet 114 and provides a variety of service platform services, such as secure access to the wireless communication hub device 112 to enable receiving data from and connecting to the electronic medical and fitness devices 102, 104, 108**. **Para [0082]** Example components of a wireless communication hub device **112** embodiment are illustrated in FIGS. 3A and 3B. The wireless communication hub device **112** may be configured in a case or housing **300** and may include a programmable processor **301** that is coupled to internal memory **302**, and to a WWAN transceiver **303** (e.g., a cellular telephone transceiver) which is coupled to an antenna **304**. A power supply **308** may be coupled to the processor **301** and other components. In some embodiments, the power supply **308** may include a battery. In a preferred embodiment, the power supply **308** may be electrically connected to a power plug **309** for plugging into a standard utility wall socket. **The processor 301 may also be coupled to one or more wired network connection sockets, such as a USB port 310, a FireWire port 311 and/or an Ethernet socket 312.** In a simple embodiment, only a single USB port **310** may be provided. **In other embodiments, the wireless communication hub device 112 may include multiple USB ports 310, FireWire ports 311, and Ethernet sockets 312 to enable connecting a number of electronic medical and fitness devices via data cables** Providing an optional Ethernet socket **312** within the wireless communication hub device **112** may enable connecting the hub directly to a LAN or local network router. The number of ports may differ among the various embodiments depending upon the physical design of the housing and the particular market or application for which the wireless communication hub device **112** is configured. **Para [0118]** In response to receiving a device or data access request from a user, **the service platform server 140 may transmit a suitable request message to the wireless communication hub device 112 to obtain the access or data requested by the user,** step 606. Upon receiving this request, the wireless communication hub device 112 may query the indicated electronic medical or fitness device for the requested data, step 608. In response, the queried electronic medical or fitness device may begin providing the requested data in its native format (i.e., in a format that requires a device driver to receive), step 610. For example, if the request is for images from an electronic medical or fitness device 102 (e.g., a webcam or blood pressure monitor), the wireless communication hub device 112 may signal the electronic medical or fitness device 102 (e.g., a webcam or blood pressure monitor) to activate and begin

	transmitting image data to the wireless communication hub device 112. In this embodiment, the wireless communication hub device 112 receives the native format electronic medical or fitness device data and packages the data into IP packets that can be tunneled via the Internet 114 to the service platform server 140, step 612. Methods and protocols for tunneling data via the Internet 114 are well-known in the computer communication arts. **Para [0137]** Example messages that may be passed among system components in method 900 are illustrated in FIG. 9B. Referring to FIGS. 9A (for steps) and 9B (for messages), when an electronic medical and fitness device 102 determines that it has data that should be transmitted to an appropriate data user (e.g., a medical facility, a device manufacturer, a user, etc.) it may transmit the data to the wireless communication hub device 112 via the established communication connection. **Upon receiving the data message, the wireless communication hub device 112 may recognize the particular electronic medical and fitness device providing the data. This may be accomplished based upon the particular communication port through which the data signal was received or information provided with the data message, such as a device identifier. As part of this step, the wireless communication hub device processor 301 may obtain the IPv6 address, MAC ID or other unique identifier for the reporting electronic medical and fitness device that is known to be service platform server 140 (i.e., the identifier that was reported to the server during a registration and configuration process)**. ***Comment:*** *Para [0082] lists multiple USB/FireWire/Ethernet ports; para [0137] explicitly states the hub identifies the device "based upon the particular communication port through which the data signal was received" and associates it with the service platform.*

4.1.2 JPH07317429 (A)

Title	Publication Date	Filing Date	Inventor	Assignee
System and method for caching data	September 11, 2014	May 22, 2014	Hug; Joshua D.	NA

Abstract

A method of obtaining radio content from a remote electronic device for a user electronic device includes transmitting a request for radio media content to a first remote electronic device via a network. Radio media content that includes a plurality of media data files is received via the network. The received plurality of media data files are stored in a storage device of the user electronic device. A radio playlist that defines a rendering sequence for the plurality of media data files is requested. In response to the request for the radio playlist, the radio playlist is received. The radio playlist is processed in the user electronic device to enable the stored plurality of media data files to be rendered on the user electronic device in accordance with the radio playlist.

Relevant Text

Key-feature 1: A hub device, comprising:	**Para [0046]** **Proxy computer 54 may function as an Internet gateway for personal media device 12**. Accordingly, personal media device 12 may use proxy computer 54 to access media distribution system 18 via network 30 (and network 32) and obtain media content 16. Specifically, **upon receiving a request for media distribution system 18 from personal media device 12, proxy computer 54 (acting as an Internet client on behalf of personal media device 12), may request the appropriate web page/service from computer 28 (i.e., the computer that executes media distribution system 18). When the requested web page/service is returned to proxy computer 54, proxy computer 54 relates the returned web page/service to the original request (placed by personal media device 12) and forwards the web page/service to personal media device 12.** Accordingly, proxy computer 54 may function as a conduit for coupling personal media device 12 to computer 28 and, therefore, media distribution system 18.
Key-feature 2: An interface configured for communicating with a terminal using a short-range wireless connection;	**Para [0044]** For example and referring also to FIG. 2, **personal media device 12 may be connected to proxy computer 54 via a docking cradle 60. Typically, personal media device 12 includes a bus interface (to be discussed below in greater detail) that couples personal media device 12 to docking cradle 60. Docking cradle 60 may be coupled (with cable 62) to e.g., a universal serial bus (i.e., USB) port, a serial port, or an IEEE 1394 (i.e., FireWire) port included within proxy computer 54**. **Para [0046]** Proxy computer 54 may function as an Internet gateway for personal media device 12. Accordingly, personal media device 12 may use proxy computer 54 to access media distribution system 18 via network 30 (and network 32) and obtain media content 16. Specifically, **upon receiving**

	a request for media distribution system 18 from personal media device 12, proxy computer 54 (acting as an Internet client on behalf of personal media device 12), may request the appropriate web page/service from computer 28 (i.e., the computer that executes media distribution system 18). When the requested web page/service is returned to proxy computer 54, proxy computer 54 relates the returned web page/service to the original request (placed by personal media device 12) and forwards the web page/service to personal media device 12. Accordingly, proxy computer 54 may function as a conduit for coupling personal media device 12 to computer 28 and, therefore, media distribution system 18.
Key-feature 3: A circuit configured for: connecting to a remote service	**Para [0046] Proxy computer 54 may function as an Internet gateway for personal media device 12.** Accordingly, personal media device 12 may use proxy computer 54 to access media distribution system 18 via network 30 (and network 32) and obtain media content 16. Specifically, **upon receiving a request for media distribution system 18 from personal media device 12, proxy computer 54 (acting as an Internet client on behalf of personal media device 12), may request the appropriate web page/service from computer 28 (i.e., the computer that executes media distribution system 18). When the requested web page/service is returned to proxy computer 54, proxy computer 54 relates the returned web page/service to the original request (placed by personal media device 12) and forwards the web page/service to personal media device 12.** Accordingly, proxy computer 54 may function as a conduit for coupling personal media device 12 to computer 28 and, therefore, media distribution system 18.
Key-feature 4: Receiving from the terminal a request to access the remote service, the access request comprising identification parameters for said service,	**Para [0046]** Proxy computer 54 may function as an Internet gateway for personal media device 12. Accordingly, personal media device 12 may use proxy computer 54 to access media distribution system 18 via network 30 (and network 32) and obtain media content 16. Specifically, **upon receiving a request for media distribution system 18 from personal media device 12, proxy computer 54 (acting as an Internet client on behalf of personal media device 12), may request the appropriate web page/service from computer 28 (i.e., the computer that executes media distribution system 18). When the requested web page/service is returned to proxy computer 54, proxy computer 54 relates the returned web page/service to the original request (placed by personal media device 12) and forwards the web page/service to personal media device 12.** Accordingly, proxy computer 54 may function as a conduit for coupling personal media device 12 to computer 28 and, therefore, media distribution system 18. **Para [0116]** Media distribution system 18 is typically a subscription-based service, in that e.g., user 14 subscribes to media distribution system 18 and pays e.g., a monthly subscription fee to be granted access to media distribution system 18. Once user 14 subscribes to media distribution system 18, user 14 may obtain media content (for use with personal media device 12) in the form of: purchased downloads received from media

	distribution system 18 (i.e., media content licensed to e.g., user 14 for use in perpetuity); subscription downloads received from media distribution system 18 (i.e., media content licensed to e.g., user 14 for use while a valid subscription exists with media distribution system 18); and media content streamed from media distribution system 18, for example. **Typically, when accessing media distribution system 18, user 14 must provide user "credentials" that identify the user (e.g., user 14) and/or the device (e.g., device 12) to media distribution system 18. Upon receiving these credentials, media distribution system 18 may attempt to verify the credentials and, if verified, grant user 14 and/or device 12 access to media distribution system 18**. The credentials received and verified by media distribution system 18 may include, but are not limited to, a user name, a user password, a user key, a device name, a device password, a device key, and/or one or more digital certificates.
Key-feature 5: Storing in memory the identification parameters of the request received, in order to send to the remote service a second access request including the identification parameters,	NA
Key-feature 6: Upon response from the remote service to the second request, transferring data relating to the service,	**Para [0046]** Proxy computer 54 may function as an Internet gateway for personal media device 12. Accordingly, personal media device 12 may use proxy computer 54 to access media distribution system 18 via network 30 (and network 32) and obtain media content 16. Specifically, upon receiving a request for media distribution system 18 from personal media device 12, proxy computer 54 (acting as an Internet client on behalf of personal media device 12), may request the appropriate web page/service from computer 28 (i.e., the computer that executes media distribution system 18). **When the requested web page/service is returned to proxy computer 54, proxy computer 54 relates the returned web page/service to the original request (placed by personal media device 12) and forwards the web page/service to personal media device 12.** Accordingly, proxy computer 54 may function as a conduit for coupling personal media device 12 to computer 28 and, therefore, media distribution system 18.
Key-feature 7: identification parameters of the request received from the terminal are stored temporarily in the memory,	NA

Key-feature 8: and wherein the hub device comprises a plurality of connection ports, and wherein the hub device is further configured for: a. identifying a port of the hub device based on the request, and b. upon response from the remote service to the second request, associating the identified port with the remote service.	**Para [0034]** **Media distribution system 18 is typically a server application that resides on and is executed by computer 28 (e.g., a server computer) that is connected to network 30 (e.g., the Internet). Computer 28 may be a web server (or series of many connected servers) running a network operating system**, examples of which may include but are not limited to Microsoft Windows 2000 Server™, Novell Netware™, or Redhat Linux™. **Para [0037]** **Users 14, 20, 22, 24, 26 may access media distribution system 18 directly through network 30 or through secondary network 32. Further, computer 28 (i.e., the computer that executes media distribution system 18) may be connected to network 30 through secondary network 32, as illustrated with phantom link line 36**. **Para [0044]** For example and referring also to FIG. 2, **personal media device 12 may be connected to proxy computer 54 via a docking cradle 60. Typically, personal media device 12 includes a bus interface (to be discussed below in greater detail) that couples personal media device 12 to docking cradle 60. Docking cradle 60 may be coupled (with cable 62) to e.g., a universal serial bus (i.e., USB) port, a serial port, or an IEEE 1394 (i.e., FireWire) port included within proxy computer 54**. ***Comment:*** *In this reference, US'475 discloses a plurality of connection ports on the proxy computer; however, it does not describe identifying a specific port based on the request or associating any port with the remote service upon receiving a response.*

4.1.3 US6910064B1

Title	Publication Date	Filing Date	Inventor	Assignee
System of delivering content on-line	June 21, 2005	September 21, 2000	Shaun Astarabadi; Glenn Swonk; Andrew McCloskey	Toshiba America Information Systems Inc.

Abstract

A system and method of providing digitized media content from a remote server through a data network is disclosed. A local content server at the premises of the subscriber hosts an agent process and includes a memory for storing the digitized content. The digitized content may be streamed on demand to client devices through the agent process for a subscription period. However, the subscriber is prevented from otherwise accessing the digitized content from the local server. Also, the digitized content delivered from the remote server to the local server is combined with encoded data identifying the subscriber.

Relevant Text

Key-feature 1: A hub device, comprising:	**Column: [1-2] & Line: [65-08]** Embodiments of the present invention are directed to providing media content to subscribers in an on-line environment. **A remote server may provide digitized media content to a subscriber's local server through a digital communication network for storage at a local memory. The local server is configured to stream the media content data to users at client devices.** In one embodiment, the client devices may access the locally stored media content only through an agent process. In another embodiment, **the remote server combines the digitized content with encoded data identifying the subscriber**. **Column: [2] & Line: [09-25]** FIG. 1 shows **a network topology including a local server 2 coupled to client computer workstations 20 through links 8 and an integrated hub 4.** In the illustrated embodiment, **the integrated hub provides a plurality of Ethernet connections 6, each Ethernet connection 6 being adapted to be coupled to a distinct computer workstation 20 through a corresponding data link 8. The local server 2 also includes a parallel port 10 coupled to a parallel port printer 12 and an Ethernet port 16. The Ethernet port 16 may be coupled to a broadband data source 26 such as a cable service or digital subscriber line (DSL) service through a compatible broadband modem 14 Alternatively, the port 16 may be coupled to other broadband data sources such as broadband satellite or terrestrial wireless communication services**. In yet another embodiment, the port 16 is coupled to a local area network (LAN) or wide area network (WAN) as part of a larger private network.

Key-feature 2: An interface configured for communicating with a terminal using a short-range wireless connection;	**Column: [2] & Line: [09-25]** FIG. 1 shows a network topology including a local server 2 coupled to client computer workstations 20 through links 8 and an integrated hub 4. In the illustrated embodiment, **the integrated hub provides a plurality of Ethernet connections 6, each Ethernet connection 6 being adapted to be coupled to a distinct computer workstation 20 through a corresponding data link 8. The local server 2 also includes a parallel port 10 coupled to a parallel port printer 12 and an Ethernet port 16. The Ethernet port 16 may be coupled to a broadband data source 26 such as a cable service or digital subscriber line (DSL) service through a compatible broadband modem 14 Alternatively, the port 16 may be coupled to other broadband data sources such as broadband satellite or terrestrial wireless communication services**. In yet another embodiment, the port 16 is coupled to a local area network (LAN) or wide area network (WAN) as part of a larger private network. ***Comment:*** *In this reference, US'064 describes wired Ethernet connections/ links; however, it does not describe not wireless.*
Key-feature 3: A circuit configured for: connecting to a remote service	**Column: [2] & Line: [09-25]** FIG. 1 shows a network topology including a local server 2 coupled to client computer workstations 20 through links 8 and an integrated hub 4. In the illustrated embodiment, the integrated hub provides a plurality of Ethernet connections 6, each Ethernet connection 6 being adapted to be coupled to a distinct computer workstation 20 through a corresponding data link 8**. The local server 2 also includes a parallel port 10 coupled to a parallel port printer 12 and an Ethernet port 16. The Ethernet port 16 may be coupled to a broadband data source 26 such as a cable service or digital subscriber line (DSL) service through a compatible broadband modem 14 Alternatively, the port 16 may be coupled to other broadband data sources such as broadband satellite or terrestrial wireless communication services**. In yet another embodiment, the port 16 is coupled to a local area network (LAN) or wide area network (WAN) as part of a larger private network. *Comment: In this reference, US'064 discloses that an integrated hub is part of a local-server topology that enables connection to a remote server.*
Key-feature 4: Receiving from the terminal a request to access the remote service, the access request comprising identification parameters for said service,	**Column: [7] & Line: [24-31]** Other embodiments of the present invention are **directed to serving content to the client computer workstations 20 from the remote server 18. For example, a user at a client computer workstation 20 may request that the remote server 18 provide contents such as video and/or audio content to be stored at the HDD 56 in digital form, and then streamed to any client computer workstation 20 on demand for presentation on demand**. **Column: [07-08] & Line: [63-04]** According to an embodiment, **the remote server 18 provides requested digitized content to the agent process having encoded information identifying the subscriber. The digitized content which is then stored on the HDD 56 in the dedicated partition includes encoded information identifying the subscriber**. Therefore, to the extent that a subscriber may copy and/or distribute the delivered content without authorization, the distributed copies will retain the encoded information identifying the subscriber.

	Column: [8] & Line: [05-16] FIG. 5 illustrates a process by which **the remote server 18 provides digitized content to the agent process at the local sever 2 in response to a user request. At step 302, the remote server 18 receives a request for a particular content title from the agent process. In addition to identifying the particular requested title, the request also includes information from which the identity of the subscriber may be obtained**. For example, **the request may include information identifying the particular local server 2 which is cross-referenced with the subscriber's identity**. The request may also specifically identify the subscriber by a subscriber's name or by an account number.
Key-feature 5: Storing in memory the identification parameters of the request received, in order to send to the remote service a second access request including the identification parameters,	NA
Key-feature 6: Upon response from the remote service to the second request, transferring data relating to the service,	**Column: [8] & Line: [17-27]** **At step 304 the remote server 18 retrieves encoded digital data identifying the subscriber. At step 306 the remote server 18 retrieves the digitized content title from a content server as identified in the received request. Step 308 combines the encoded identification data retrieved at step 304 with the digitized content title retrieved at step 306 to provide modified digitized content.** The combined data is then compressed and transmitted back to the agent process at step 310 to be stored on the HDD 56. **The digitized content stored on the HDD 56, therefore, includes the encoded data identifying the subscriber**. **Column: [1-2] & Line: [65-08]** Embodiments of the present invention are directed to providing media content to subscribers in an on-line environment. **A remote server may provide digitized media content to a subscriber's local server through a digital communication network for storage at a local memory. The local server is configured to stream the media content data to users at client devices.** In one embodiment, the client devices may access the locally stored media content only through an agent process. In another embodiment, the remote server combines the digitized content with encoded data identifying the subscriber
Key-feature 7: identification parameters of the request received from the terminal are stored temporarily in the memory,	NA

Key-feature 8: and wherein the hub device comprises a plurality of connection ports, and wherein the hub device is further configured for: a. identifying a port of the hub device based on the request, and b. upon response from the remote service to the second request, associating the identified port with the remote service.	**Column: [2] & Line: [09-25]** FIG. 1 shows a network topology including a local server 2 coupled to client computer workstations 20 through links 8 and an integrated hub 4. In the illustrated embodiment, **the integrated hub provides a plurality of Ethernet connections 6, each Ethernet connection 6 being adapted to be coupled to a distinct computer workstation 20 through a corresponding data link 8. The local server 2 also includes a parallel port 10 coupled to a parallel port printer 12 and an Ethernet port 16. The Ethernet port 16 may be coupled to a broadband data source 26 such as a cable service or digital subscriber line (DSL) service through a compatible broadband modem 14 Alternatively, the port 16 may be coupled to other broadband data sources such as broadband satellite or terrestrial wireless communication services**. In yet another embodiment, the port 16 is coupled to a local area network (LAN) or wide area network (WAN) as part of a larger private network. ***Comment:*** *In this reference, US'064 discloses that the integrated hub provides a plurality of Ethernet connections; however, it does not describe identifying a specific port based on the request or associating any port with the remote service upon receiving a response.*

4.2.1 The Promise of Wireless: An Overview of a Device-To-Cloud mHealth Solution

Title	Publication Date	Inventor	Link
The Promise of Wireless: An Overview of a Device-To-Cloud mHealth Solution	2012	Rajeev Rajan	https://doi.org/10.2345/0899-8205-46.s2.26

Relevant Text

This article aims to give an overview of the process of creating and using some mHealth solutions.
Several challenges were dealt with in order to launch Qualcomm's **2net™ wireless hub and mHealth cloud service platform**.
1.**Enabling medical devices to work with multiple radio technologies** and software
2.Determining the optimum cellular carrier and cellular technology
3.Managing lengthy product life cycles in healthcare vs. short product life cycles in wireless, while designing for regulatory compliance and process
4.**Harnessing the cloud**
5.Realizing the user experience

Figure 1 illustrates a typical use-case scenario for RHM: A patient consumer uses a wireless-assisted medical device to take a reading. The data is then sent to an mHealth gateway device, which then in turn wirelessly sends it over the cellular network to the healthcare provider.

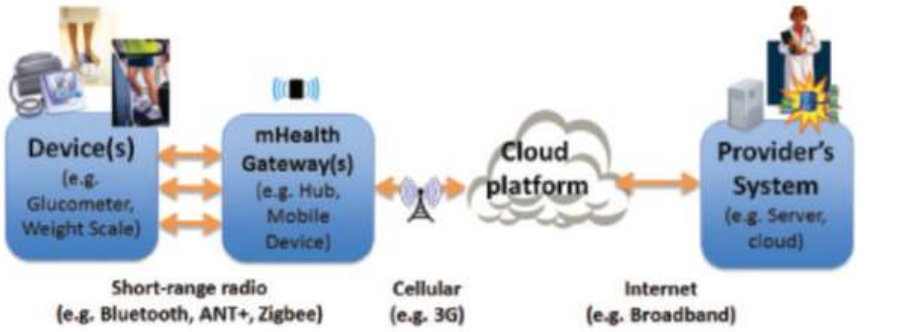


Figure 1. Typical Wireless Healthcare Use-Case Scenario

The key efficiency enhancer in the device-to-cloud mHealth solution is the hub device, which can be used in a home or office setting. Figure 2 shows archetypal features of a universal hub, illustrating the broad cross-section of spheres involved.

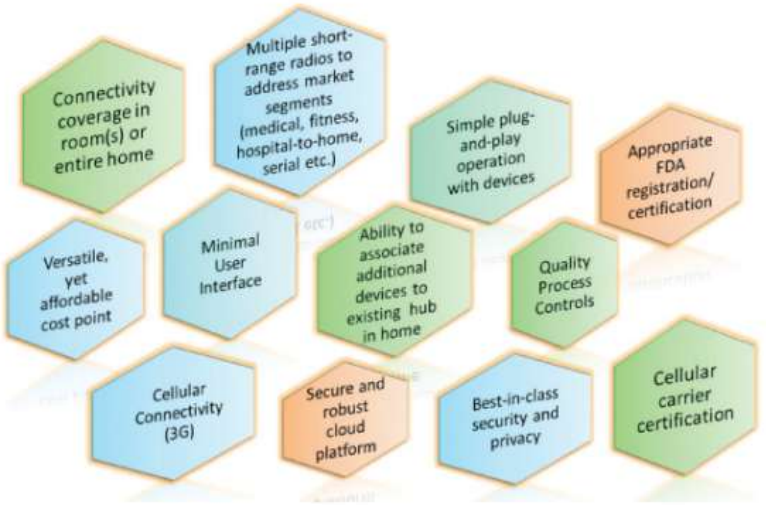


Figure 2. Broad Map of Universal Hub Features

A key common feature of **the hub is its ability to communicate with multiple devices**, such as glucose meters, blood-pressure monitors, and pulse-oximeters, in some concurrent fashion. To add to this complexity, these **devices may use the same short-range radio (e.g., Bluetooth), or different short-range radios (e.g., Bluetooth, ANT+, Zigbee).**

A key common feature of the hub is its ability to communicate with multiple devices, such as glucose meters, blood-pressure monitors, and pulse-oximeters, in some concurrent fashion.

Security is important, **and the hub should not communicate with any other device until it is authorized to do so by the platform so as to ensure data is protected**. Initial meetings during the development process with several medical device companies evidenced a wide gap in competencies between the cellphone centric experts and medical device experts for hub-to-medical- device interaction.

Cloud platforms encompass servers/infrastructure, databases/repositories, information technology (IT), and other services, systems, environments, tools, security, privacy, and capabilities. **The cloud platform is designed to interoperate with different medical devices**, mHealth gateways, and applications, **effecting end-to-end wireless connectivity while allowing providers and their systems access to the data**.

5 DISCLAIMER

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