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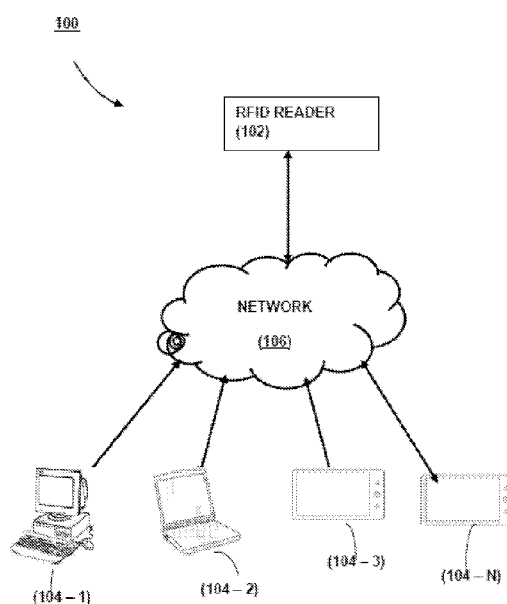


Figure 1

(57) Abstract: A mobile/fixed RFID reader 102 is disclosed. In one embodiment, the mobile/fixed RFID reader 102 comprises four port antennas. Further, the mobile/fixed RFID reader 102 is developed using a UHF RFID module 201, for example Thing Magic™ M6e reader module. The mobile/fixed RFID reader 102 comprises a plurality of data transferee mediums, such as USB, Bluetooth™, Ethernet, and GPRS, and a GPS port for real time location. In one example, the Ethernet port may be a Wiznet™ 5500, the Bluetooth™ port may be a RN42XV module, and the GSM port may be SIM 900-RS232 port. In one embodiment, disclosed mobile/fixed RFID reader 102 enables data transfer to one or more device simultaneously over four output ports. Further, the mobile/fixed RFID reader 102 comprising the GPS port enables identification of the location and monitoring of the fixed RFID reader 102 in real time.



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RADIO FREQUENCY IDENTIFICATION READER

CROSS REFERENCE TO RELATED APPLICATIONS

[001] This patent application claims priority from an Indian provisional application (having application number as 201621015561) filed on May 4, 2016.

TECHNICAL FIELD

[002] The present subject matter described herein, in general, relates to a field of Radio Frequency Identification (RFID) reader. More specifically, to the RFID reader for transmitting data associated with a RFID tag.

BACKGROUND

[003] Radio Frequency Identification (RFID) technology may be understood as a type of Automatic Identification and Data Capture (AIDC) technology, that enables fast and reliable means of identifying objects. Typically, RFID technology comprises two main components a RFID reader, and a RFID tag. The RFID reader may be understood as the device which transmits and receives the signal and the RFID tag may be understood a tag attached to an object. The RFID tag is composed of a miniscule microchip and antenna.

[004] Generally, communication between the RFID reader and the RFID tag occurs wirelessly. Conventionally, the RFID reader emits a low-power radio wave field which is used to power up the RFID tag so as to pass on any information that is contained on the RFID tag. In addition, the RFID reader may be fitted with an additional interface that converts the radio waves returned from the tag into a form that may then be passed on to another system, like a computer or any programmable logic controller.

[005] Conventionally, the RFID reader make use of the electromagnetic spectrum with single output port, thus are relatively easy to jam using energy at the right frequency. Such jamming could be disastrous in critical environments where the RFID reader is used for real time monitoring and tracking. Example of the critical environments may include hospitals, military in the field, school bus, and others. Further, the RFID reader collision and the RFID tag collision are encountered. It may be understood that the RFID reader collision occurs when the signals from two or more readers overlap. Because of the RFID reader collision, the RFID tag is unable in responding to simultaneous queries. Furthermore, the RFID tag collision occurs when many tags are present in a small area.

SUMMARY

[006] Before the present systems and methods, are described, it is to be understood that this application is not limited to the particular systems, and methodologies described, as there may be multiple possible embodiments which are not expressly illustrated in the present disclosure. It is also to be understood that the terminology used in the description is for the purpose of describing the particular versions or embodiments only, and is not intended to limit the scope of the present application. This summary is provided to introduce concepts related to a Radio Frequency Identification (RFID) reader for transmitting data associated with a RFID tag and the concepts are further described below in the detailed description. This summary is not intended to identify essential features of the claimed subject matter nor is it intended for use in determining or limiting the scope of the claimed subject matter.

[007] In one implementation, a method for transmitting data associated with a Radio Frequency Identification (RFID) tag is disclosed. In order to transmit the data associated with the RFID tag, initially, the data associated with the RFID tag may be captured by a RFID reader. In one aspect, the data may be captured by scanning the RFID tag with the RFID reader. Furthermore, the data may be stored in a memory of the RFID reader. Subsequent to storing the data in the memory, a data transferee port may be selected amongst a plurality of data transferee ports installed in the RFID reader. In one aspect, the data transferee port may be selected based on a priority assigned to each port. Further to selection of the data transferee port, the data may be transmitted via the data transferee port to at least one system for further analysis.

[008] In another implementation, a Radio Frequency Identification (RFID) reader for transmitting data associated with a RFID tag is disclosed. The RFID reader may comprise a processor and a memory coupled to the processor. The processor may execute a plurality of modules present in the memory. The plurality of modules may comprise a data capturing module, a storage module, a selection module, and a transmission module. The data capturing module may capture the data associated with the RFID tag. In one aspect, the data may be captured by scanning the RFID tag. The storage module may store the data in the memory of the RFID reader. The selection module may select a data transferee port amongst a plurality of data transferee ports installed in the RFID reader. In one aspect, the data transferee port may be selected based on a priority assigned to each port. Furthermore, the transmission module may transmit the data via the data transferee port to at least one system for further analysis.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The foregoing detailed description of embodiments is better understood when read in conjunction with the appended drawings. For the purpose of illustrating the disclosure, example constructions of the disclosure are shown in the present document; however, the disclosure is not limited to the specific methods and apparatus disclosed in the document and the drawings.

[0010] The detailed description is given with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same numbers are used throughout the drawings to refer like features and components.

[0011] Figure 1 illustrates a network implementation of a Radio Frequency Identification (RFID) reader for transmitting data associated with a RFID tag, in accordance with an embodiment of the present subject matter.

[0012] Figure 2 illustrates the RFID reader, in accordance with an embodiment of the present subject matter.

[0013] Figures 3 illustrates a method for transmitting data associated with the RFID tag, in accordance with an embodiment of the present subject matter.

DETAILED DESCRIPTION

[0014] Some embodiments of this disclosure, illustrating all its features, will now be discussed in detail. The words "capturing," "storing," "selecting," "connecting," "receiving," and "transmitting," and other forms thereof, are intended to be equivalent in meaning and be open ended in that an item or items following any one of these words is not meant to be an exhaustive listing of such item or items, or meant to be limited to only the listed item or items. It must also be noted that as used herein and in the appended claims, the singular forms "a," "an," and "the" include plural references unless the context clearly dictates otherwise. Although any systems and methods similar or equivalent to those described herein may be used in the practice or testing of embodiments of the present disclosure, the exemplary, systems and methods are now described. The disclosed embodiments are merely exemplary of the disclosure, which may be embodied in various forms.

[0015] Various modifications to the embodiment will be readily apparent to those skilled in the art and the generic principles herein may be applied to other embodiments.

However, one of ordinary skill in the art will readily recognize that the present disclosure is not intended to be limited to the embodiments illustrated, but is to be accorded the widest scope consistent with the principles and features described herein.

[0016] The present invention facilitates to transmit data associated with a Radio Frequency Identification (RFID) tag to at least one system for analysis. RFID technology is used to capture the data associated with the RFID tag. In RFID technology, the RFID tag is attached to all items that are to be tracked. The RFID tag is comprised of an integrated circuit (called an IC or chip) attached to an antenna that has been printed, etched, stamped or vapour-deposited onto a mount which is often a paper substrate or Polyethylene Terephthalate (PET). The chip and antenna combo, called an inlay, is then converted or sandwiched between a printed label and its adhesive backing or inserted into a durable structure. The chip is pre-programmed with a tag identifier (TID), a unique serial number assigned by the chip manufacturer, and includes a memory bank to store the items' unique tracking identifier (called an electronic product code or EPC). The electronic product code (EPC) stored in a tag chip's memory is written to the tag by an RFID printer and takes the form of a 96-bit string of data. Tag antennas collect energy and channel it to the chip to turn it ON. Generally, the larger the RFID tag antenna's area, the more energy may be collected and channel towards the tag chip, and the larger read range the RFID tag may have.

[0017] The RFID reader may be understood as a device that may communicate with the RFID tag. In other words, an RFID reader, also known as an interrogator, is a device that provides the connection between the RFID tag data and an enterprise system software that needs the information from the RFID tag. The RFID reader communicates with the RFID tag when one or more RFID tags is present in a proximity of the RFID reader.

[0018] In an embodiment, the RFID reader may transmit data associated with the RFID tag to at least one system for analysis. Example of the system includes, but not limited to, a mobile, a laptop, other a computer. In order to transmit the data, initially, the RFID reader may capture data by scanning the RFID tag. Furthermore, the RFID reader may select at least one data transferee port amongst the plurality of the data transferee ports installed in the RFID reader. Examples of the data transferee ports include, but not limited to, a Universal Serial Bus (USB) port, a Bluetooth™ port, a Wi-Fi port, a Global System for Mobile (GSM) port, and a Power Over Ethernet (POE) port. Once the data transferee port is selected, the RFID reader may transmit the data to the system for analysis.

[0019] It may be understood that the RFID reader uses an attached antenna to capture data from the RFID tag. The RFID reader then passes the data to an external device for further processing. The RFID reader and the RFID reader antennas work together to read the RFID tag. The RFID reader antennas convert electrical current into electromagnetic waves that are then radiated into space where the electromagnetic waves may be received by the RFID tag antenna and converted back to electrical current. Similar to the RFID tag antennas, there is a large variety of reader antennas and optimal antenna. Out of the large variety, antenna selection may vary according to the solution's specific application and environment. The RFID reader antennas and the optimal antenna are linear and circular-polarized antennas respectively. Further, reader control and application software, also known as middleware, helps connect the RFID readers with the one or more applications. The middleware sends control commands to the RFID reader and receives the RFID tag data from the reader.

[0020] In one implementation, the RFID readers may be affixed at a stationary position or portable. Examples of the RFID readers affixed at the stationary position includes a store or a factory. Example of the portable RFID reader includes a mobile device integrated with RFID reader or a vehicle equipped with the RFID reader. The mobile RFID reader may be used at remote locations with little or no network coverage. Fixed readers are generally used for large-scale deployments, for example installed in portals at dock doors and conveyor belts to capture data of an inventory or for tracking parts, tools and equipment. While aspects of described system and method for transmitting data associated with the RFID tag may be implemented in any number of different computing systems, environments, and/or configurations, the embodiments are described in the context of the following exemplary RFID reader.

[0021] Referring now to Figure 1, a network implementation 100 of a Radio Frequency Identification (RFID) reader 102 for transmitting data associated with a RFID tag is disclosed. In order to transmit the data, initially, the RFID reader 102 may capture data associated with the RFID tag. In one aspect, the RFID reader 102 may capture data by scanning the RFID tag associated with an object. Subsequent to the capturing of data, the RFID reader 102 may store the data in memory. Subsequently, the RFID reader 102 may select a data transferee port amongst a plurality of data transferee ports. In one aspect, the RFID reader may select the data transferee port based on a priority assigned to each port. After selecting the data transferee port, the RFID reader 102 may transmit the data via the data transferee port to at least one system for analysis.

[0022] Although the present disclosure is explained considering the RFID reader 102, it may be understood that the RFID reader 102 may be implemented in a variety of computing systems, such as a laptop computer, a desktop computer, a notebook, a workstation, a mainframe computer, a server, a network server, a cloud-based computing environment. It will be understood that the RFID reader 102 may be accessed by multiple users through one or more user devices 104-1, 104-2...104-N, collectively referred to as user 104 or stakeholders, hereinafter, or applications residing on the user devices 104. In one implementation, the RFID reader 102 may comprise the cloud-based computing environment in which a user may operate individual computing systems configured to execute remotely located applications. Examples of the user devices 104 may include, but are not limited to, a portable computer, a personal digital assistant, a handheld device, and a workstation. The user devices 104 are communicatively coupled to the RFID reader 102 through a network 106.

[0023] In one implementation, the network 106 may be a wireless network, a wired network or a combination thereof. The network 106 may be implemented as one of the different types of networks, such as intranet, local area network (LAN), wide area network (WAN), the internet, and the like. The network 106 may either be a dedicated network or a shared network. The shared network represents an association of the different types of networks that use a variety of protocols, for example, Hypertext Transfer Protocol (HTTP), Transmission Control Protocol/Internet Protocol (TCP/IP), Wireless Application Protocol (WAP), and the like, to communicate with one another. Further the network 106 may include a variety of network devices, including routers, bridges, servers, computing devices, storage devices, and the like.

[0024] Referring now to Figure 2, the RFID reader 102 is illustrated in accordance with an embodiment of the present subject matter. In one embodiment, the RFID reader 102 may include at least an Ultra High Frequency (UHF) RFID module 201, one processor 202, a user interface 203, and a memory 214. The at least one UHF RFID module 201 may be configured to detect a RFID tag and share data associated with the RFID tag to the at least one processor 202. The at least one processor 202 may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, state machines, logic circuitries, and/or any devices that manipulate signals based on operational instructions. Among other capabilities, the at least one processor 202 is configured to fetch and execute computer-readable instructions stored in the memory 214.

[0025] The user interface 203 may include a variety of hardware interfaces. The user interface 203 may allow the RFID reader 102 to interact with the user directly or through the client devices 104. Further, the user interface 203 may enable the RFID reader 102 to communicate with other computing devices, such as web servers and external data servers (not shown). The user interface 203 may facilitate multiple communications within a wide variety of networks and protocol types, including wired networks, for example, LAN, cable, etc., and wireless networks, such as WLAN, cellular, or satellite. The user interface 203 may include a Bluetooth™ port 204, a Wi-Fi port 206, a GSM port 208, a USB port 210, and a Power Over Ethernet (POE) port 212 for connecting a number of devices to one another or to another server.

[0026] An example of the Bluetooth™ port 204 may comprise a RN42XV module. Further, the Bluetooth™ port 204 may be based on 802.15.4 standards. Some examples of features of the Bluetooth™ port 204 include, but not limited to, backward compatibility, pin compatibility with widely use 2x10 2-mm socket, UART data connection interface, secure simple paring, embedded Bluetooth™ stack profile, and the like.

[0027] On the other hand, the GSM port 208 may comprise one or more GSM/General Packet Radio Service (GPRS) port and Code Division Multiple Access (CDMA) port. In the present implementation, the GSM/GPRS Modem is built with SIMCOM, make SIM900, Quad-band GSM/GPRS engine, and works on frequencies 850 MHz, 900 MHz, 1800 MHz and 1900 MHz. Further, the GSM/GPRS Modem may be designed with RS232 Level converter circuitry, allowing direct interface to PC Serial port. A baud rate of the GSM/GPRS Modem may be configurable from 9600-115200 through AT command. The GSM/GPRS Modem may have internal TCP/IP stack for connecting with internet via GPRS.

[0028] In yet another implementation, the POE port 212 may comprise a Wiznet™ 5500 Ethernet module. The POE module 212 is a gateway port / a protocol convertor that converts the data provided by serial equipment in to TCP/IP protocol and vice-versa. The POE module 212 enables remote gauging, managing and controlling of a device through a network by connecting to client devices 104 with the RS-232 serial interface.

[0029] The memory 214 may include any computer-readable medium or computer program product known in the art including, for example, volatile memory, such as static random access memory (SRAM) and dynamic random access memory (DRAM), and/or non-volatile memory, such as read only memory (ROM), erasable programmable ROM, flash

memories, hard disks, optical disks, and magnetic tapes. The memory 214 may include modules 216 and software database 228.

[0030] The modules 216 include routines, programs, objects, components, data structures, etc., which perform particular tasks or implement particular abstract data types. In one implementation, the modules 216 may include a data capturing module 218, a storage module 220, a selection module 222, a transmission module 224, and other modules 226. The other modules 226 may include programs or coded instructions that supplement applications and functions of the RFID reader 102. The modules 216 described herein may be implemented as software modules that may be executed in the cloud-based computing environment of the RFID reader 102.

[0031] The software database 228, amongst other things, serves as a repository for storing data processed, received, and generated by one or more of the modules 216.

[0032] As there are various challenges observed in the existing art, the challenges necessitate the need to build the RFID reader 102 for transmitting data associated with a Radio Frequency Identification (RFID) tag. In order to transmit the data, at first, a user may use the client device 104 to access the RFID reader 102 via the user interface 203. The user may register them using the user interface 203 in order to use the RFID reader 102. In one aspect, the user may access the user interface 203 of the RFID reader 102. The RFID reader 102 may employ the data capturing module 218, the storage module 220, the selection module 222 and the transmission module 224. The detail functioning of the modules is described below with the help of figures.

[0033] The present RFID reader 102 facilitates to transmit the data, associated with the RFID tag, to one or more client devices 104 for performing analysis. To do so, initially, the data capturing module 218 may capture data associated with the RFID tag. It may be understood that the RFID tag is attached to an object in order to distinctly identify one object from other objects. The data associated with the RFID may include, but not limited to, a unique identification number, type of object having the RFID tag, date, and time. In one aspect, the data capturing module 218 may capture the data by scanning the RFID tag. In one embodiment, RFID reader 102 may be communicatively coupled with a scanner / camera in order to scan the RFID tag. In another embodiment, the RFID reader 102 may be configured to remotely scan the RFID tag present in a predefined proximity of the RFID reader 102. The

limited proximity may vary depending upon the RFID tag, range of a Radio Frequency (RF) module installed in the RFID reader 102, type of the object and nature of a business.

[0034] Subsequent to capturing the data, the storage module 220 may store the data in the memory 214 of the RFID reader 102. Example of the memory 214 may be at least a local memory of the RFID reader 102 and an external memory connected to the RFID reader 102. Example of the external memory may include Storage Device (SD) card, flash drives, pen drives, memory stick, a thumb drive, and portable hard drives. In one embodiment, the storage module 220 may store the data in the software database 228.

[0035] Further to storing the data in the memory 214, the selection module 222 may select at least one data transferee port amongst a plurality of data transferee ports. Example of the data transferee port includes, but not limited to, the Bluetooth™ port 204, the Wi-Fi port 206, the GSM port 208, the USB port 210, and the POE port 212. It may be understood that the data transferee port may be selected based on a priority assigned to each port. In one aspect, the priority may vary depending upon distance between the client device 104 and the RFID reader 102 and an availability of the data transferee port to transmit the data. In one embodiment, the priority may also vary based upon type of data, data transfer speed, nature of the RFID reader 102, client device 104, number of objects and others. It may also be noted that the data transfer speed of the POE/USB port 212/210 is highest as compared to other data transferee ports depending upon which of the data transferee port is detected. It may also be noted that the nature of the RFID reader 102 may be portable or fixed. In another embodiment, a combination of one or more ports may also be selected to transfer the data the client device 104.

[0036] Subsequent to the selection of the data transferee port, the transmission module 224 establishes a connection with the at least one client device. Further to establishing the connection, the transmission module 224 transmits the data via the data transferee port to at least one system for analysis. In one embodiment, the transmission module 224 may monitor transfer of the data from the RFID reader 102 to the at least one system.

[0037] In another embodiment, the transmission module 224 may receive an acknowledgement of the completion of the transfer of data from the client device 104. When the acknowledgement is not received, the transmission module 224 may continuously sense an available data transferee port and the at least one system for transmitting the data. By

doing so, the data transfer module 224 may re-initiate the transfer of data with another available data transferee port. It may be understood that the acknowledgement indicates success of the transfer of data. In one example, when one or more data transferee ports are available, the transmission module 224 may recommend a user to select the data transferee port with the highest data transfer speed to transmit the data.

[0038] In another embodiment, the transmission module 224 may remove redundancy associated with the data stored in the memory 214. In order to elucidate further, consider an example when the client device 104 gets disconnected from the RFID reader 102 because of a failure/unavailability of one or more data transferee ports. It may be noted that the transmission module 224 may assign a token number to every packet of data to be transmitted over the network 106. The token number may be unique for every packet of data. It may also be noted that the transmission module 224 may increment token number after successful transmission of data. It may also be noted that the token number may be at least an alphanumeric number, a numeric number and a cryptographic signature. When the client device 104 gets disconnected during the transfer of data, the transmission module 224 fails to receive an acknowledgement from the client device 104. When the acknowledgement from the client device 104 is not received, the transmission module 224 may not increment the token number during a retransmission of a data packet. Thus, the transmission module 224 may assign the token number to the data packet while attempting to transmit the data via another available data transferee port.

[0039] In yet another embodiment, the transmission module 224 may further be configured to track a real-time location of the RFID reader 102. To do so, the transmission module 224 may transmit the real-time location of the RFID reader 102. It may be understood that the real-time location may be obtained from a Global Positioning System (GPS) module installed in the RFID reader 102. In one example, the transmission module 224 may generate real-time alerts, based upon the location of the RFID reader 102, to the at least one system.

[0040] In another implementation, the RFID reader 102 may be configured to capture the data in an offline mode. In order to elucidate further, consider an example of the RFID reader 102 operating in a remote location with a little or no network coverage. In the above example, the storage module 220 may store the data associated with the RFID tag in a memory 214 of the RFID reader 102. Further to storing the data, the selection module 222 may continuously sense availability of the data transferee port. In an event of an unavailability of data transferee port, the transmission module 224 may fail to transmit the

data to the at least one system. However, the transmission module 224 may transmit the data to the client device 104 when the availability of at least one data transferee port is sensed.

[0041] In yet another implementation, the RFID reader 102 may be a multi compatible RFID reader. It may be understood that the multi compatible indicates that the RFID reader 102 may capture data from all available RFID tags. It may be understood that one RFID tag may be different from another RFID tag because of differences in working principle. In order to elucidate further, a multi compatible RFID reader 102 is developed using the UHF RFID module 201 which is configured with one or more of Radio Frequency (RF) modules. Example of the RF module may include, but not limited to, a Thing Magic™ M6e reader module, an Impinj™ reader module and an Alien™ reader module. In order to develop a multi compatible RFID reader different programming instructions may be fired in to the RFID reader 102 using the USB port 210. In one example, the RFID reader 102 may comprise one or more of a Thing Magic™ M6e reader module, an Impinj™ reader module and an Alien™ reader module in one cabinet of the RFID reader 102. The cabinet may be made up of IP68 standards for protection from dust and water protection.

[0042] Referring now to Figure 3, a method 300 for transmitting data associated with a Radio Frequency Identification (RFID) tag is shown, in accordance with an embodiment of the present subject matter. The method 300 may be described in the general context of computer executable instructions. Generally, computer executable instructions may include routines, programs, objects, components, data structures, procedures, modules, functions, etc., that perform particular functions or implement particular abstract data types. The method 600 may also be practiced in a distributed computing environment where functions are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, computer executable instructions may be located in both local and remote computer storage media, including memory storage devices.

[0043] The order in which the method 300 is described is not intended to be construed as a limitation, and any number of the described method blocks may be combined in any order to implement the method 300 or alternate methods. Additionally, individual blocks may be deleted from the method 300 without departing from the spirit and scope of the subject matter described herein. Furthermore, the method may be implemented in any suitable hardware, software, firmware, or combination thereof. However, for ease of explanation, in the embodiments described below, the method 300 may be considered to be implemented as described in the RFID reader 102.

[0044] At block 302, data associated with a RFID tag may be captured. In one aspect, the data may be captured by scanning the RFID tag. In one implementation, the data associated with the RFID tag may be captured by the data capturing module 218.

[0045] At block 304, the data may be stored in the memory 214. In one implementation, the data may be stored in the memory 214 by the storage module 220.

[0046] At block 306, a data transferee port may be selected amongst a plurality of data transferee ports. In one aspect, the data transferee port may be selected based on a priority assigned to each port. In one implementation, the data transferee port may be selected by the selection module 222.

[0047] At block 308, the data may be transmitted via the data transferee port to at least one system for analysis. In one implementation, the data may be transmitted via the data transferee port by the transmission module 224.

[0048] Exemplary embodiments discussed above may provide certain advantages. Though not required to practice aspects of the disclosure, these advantages may include those provided by the following features.

[0049] Some embodiments may be implemented in a library for enabling the RFID reader 102 for easy check-in and check-out of books, and monitoring the members of the library.

[0050] Some embodiments may enable the RFID reader 102 for communicating real time information corresponding to electronic home appliances, such as TV or refrigerator to a user.

[0051] Some embodiments may enable the RFID reader 102 for monitoring the real time location of the RFID reader 102.

[0052] Some embodiments may enable the RFID reader 102 for capturing data associated with the RFID tag in offline mode.

[0053] Although implementations for the RFID reader 102 for transmitting data associated with a Radio Frequency Identification (RFID) tag have been described in language specific to structural features and/or methods, it is to be understood that the appended claims are not necessarily limited to the specific features or methods described.

WE CLAIM:

1. A method for transmitting data associated with a Radio Frequency Identification (RFID) tag, the method comprising:

capturing, by a RFID reader (102), data associated with a RFID tag, wherein the data is captured by scanning the RFID tag;

storing the data in a memory (214) of the RFID reader (102);

selecting, by the RFID reader (102), a data transferee port amongst a plurality of data transferee ports installed in the RFID reader (102), wherein the data transferee port is selected based on a priority assigned to each port; and

transmitting, by the RFID reader (102), the data via the data transferee port to at least one system for analysis.

2. The method of claim 1, wherein the plurality of data transferee ports includes a Universal Serial Bus (USB) port, a Bluetooth™ port, a Wi-Fi port, a Global System for Mobile (GSM) port, and a Power over Ethernet port.

3. The method of claim 1 further comprises transmitting a real-time location of the RFID reader, wherein the real-time location is obtained from a Global Positioning System (GPS) port.

4. The method of claim 1, wherein the data associated with the RFID tag comprises unique identification number, type of object having the RFID tag, date, and time.

5. A RFID reader (102) for transmitting data associated with a Radio Frequency Identification (RFID) tag, the RFID reader (102) comprising:

a processor (202); and

a memory (214) coupled to the processor (202), wherein the processor (202) is capable of executing a plurality of modules stored in the memory (214), and wherein the plurality of modules comprising:

a data capturing module (218) for capturing data associated with a RFID tag, wherein the data is captured by scanning the RFID tag;

a storage module (220) for storing the data in a memory;

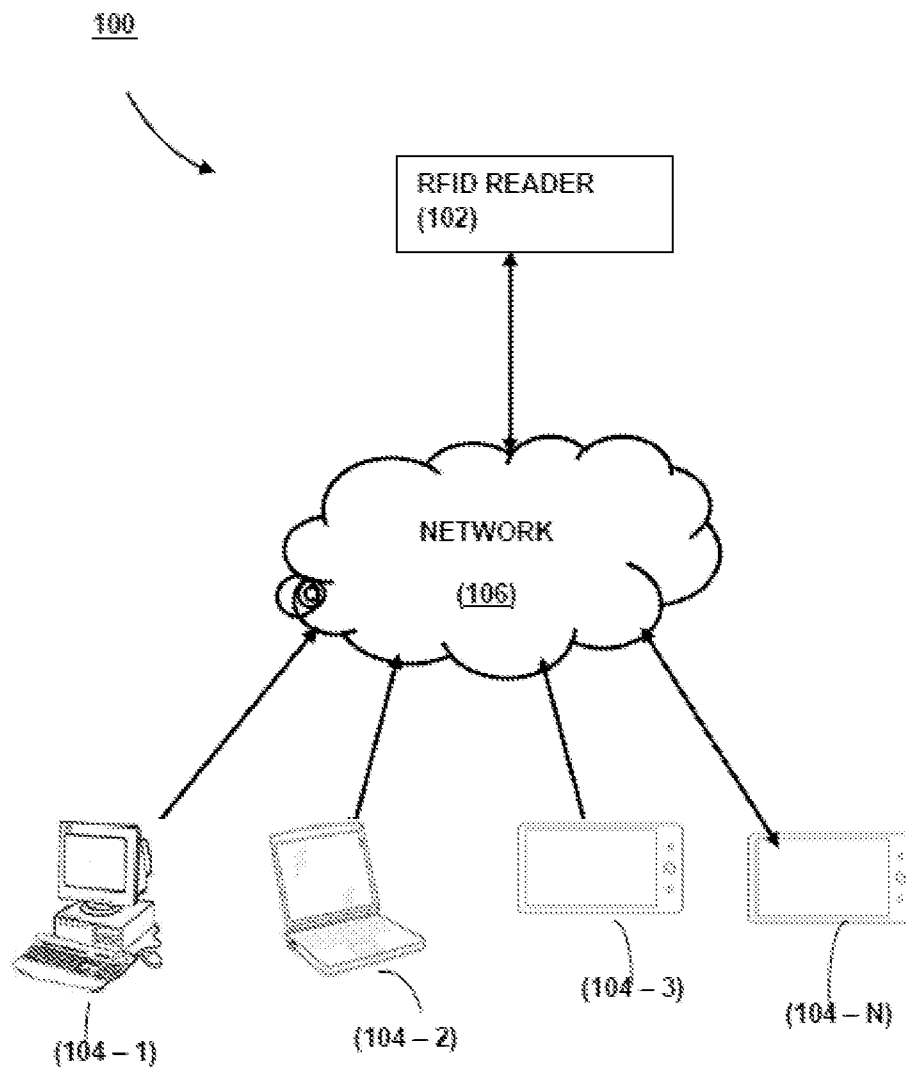
a selection module (222) for selecting a data transferee port amongst a plurality of data transferee ports, wherein the data transferee port is selected based on a priority assigned to each port; and

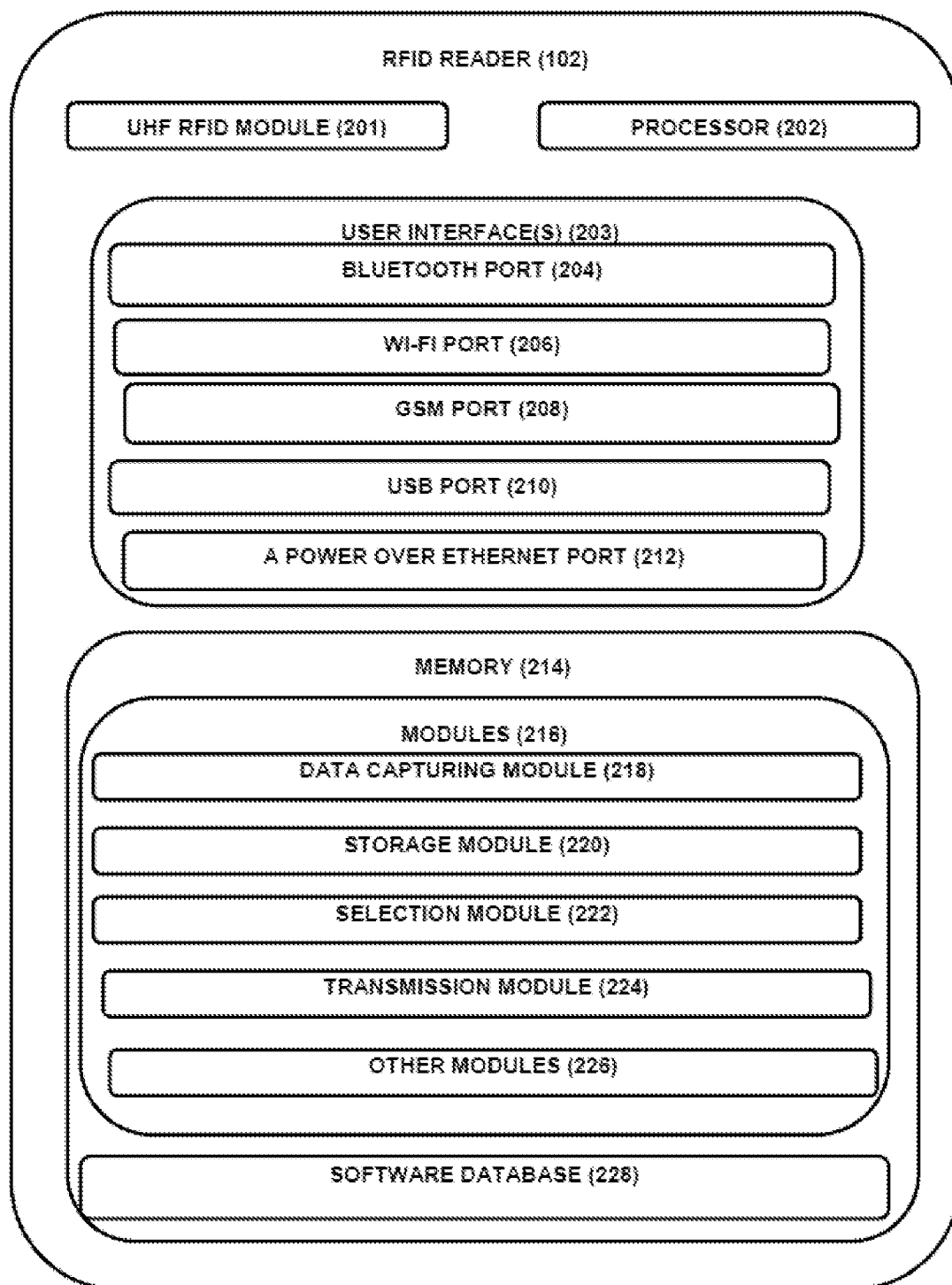
a transmission module (224) for transmitting the data via the data transferee port to at least one system for analysis.

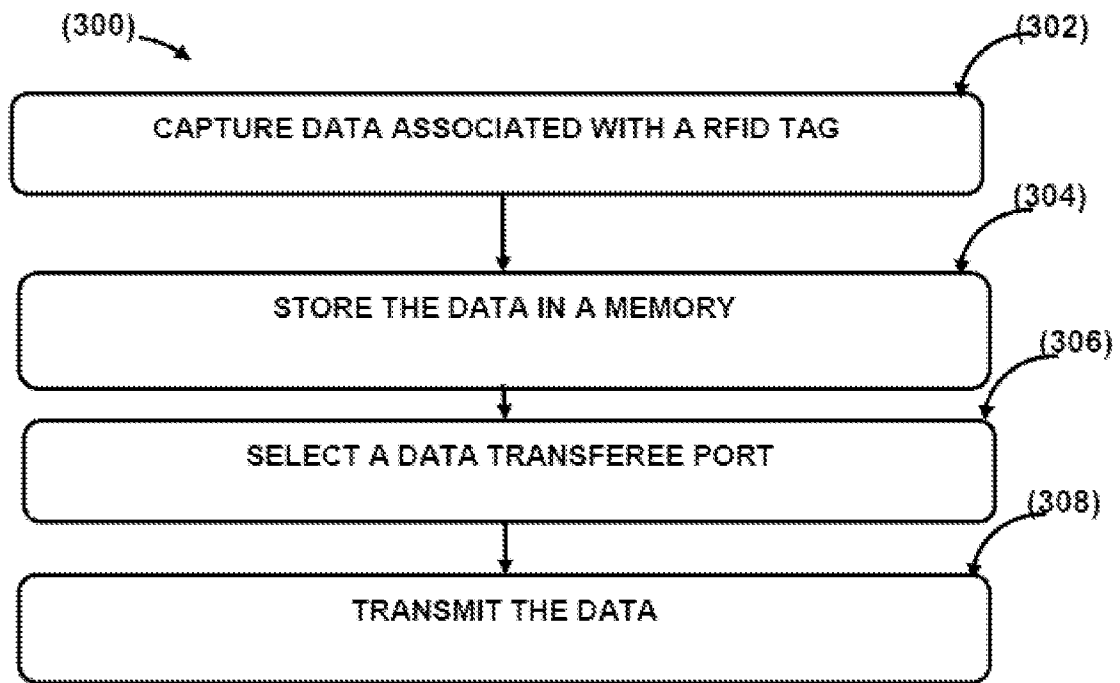
6. The RFID reader (102) of claim 5, wherein the plurality of data transferee ports includes a Bluetooth™ port (204), a Wi-Fi port (206), a Global System for Mobile port (208), a Universal Serial Bus (USB) port (210), and a Power over Ethernet port (212).

7. The RFID reader (102) of claim 5 further comprises transmitting a real-time location of the RFID reader (102), wherein the real-time location is obtained from a Global Positioning System (GPS) port.

8. The RFID reader (102) of claim 5, wherein the data associated with the RFID tag comprises unique identification number, type of object having the RFID tag, date, and time.

**Figure 1**

**Figure 2**

**Figure 3**

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2017/052596

A. CLASSIFICATION OF SUBJECT MATTER
G06F17/00, G06K19/00, G06F19/00, G06Q10/00 Version=2017.01

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F, G06K, G06Q

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

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

Databases: Patseer, IPO Internal

Search terms: RFID, interrogator, scan, transmit

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7,683,774 B2 (UNITED PARCEL SERVICE OF AMERICA, INC.) 23 March 2010 (23-03-2010) See Abstract; column 2, lines 25-30, 60-65; column 4, lines 10-18; column 5, lines 20-25, 50-55; column 7, lines 25-55; column 8, lines 25-40; column 11, lines 5-10; fig. 2	1-8
X	US 8,087,577 B2 (DATA ACQUISITIONS LIMITED) 3 January 2012 (03-01-2012) Abstract; column 2, lines 10-20; column 3, lines 45-50; column 4, lines 1-10; figs 2, 3	1-8

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

20-06-2017

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IB2017/052596

Citation	Pub.Date	Family	Pub.Date
US 7,683,774 B2	23-03-2010	WO 2005069203 A2	28-07-2005
US 8,087,577 B2	03-01-2012	WO 2007136279 A1	29-11-2007