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A SYSTEM AND METHOD FOR CONTROLLING AND/OR RECORDING THE
USAGE OF A RESOURCE BY A USER

FIELD OF THE INVENTION

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The present invention relates to a system and method for controlling and/or recording usage of a resource by a user, and is of particular, but by no means exclusive application to automated meter reading.

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BACKGROUND OF THE INVENTION

The demand for resources such as electricity, gas or water can vary as a result of several external factors. One such factor is the weather. For example, when the weather is hot the demand for electricity can increase significantly due to people running air conditioners in order to keep cool. When the weather is hot the demand for water can also increase as a result of people watering their gardens more frequently.

Authorities responsible for supplying resources commonly monitor the demand for their resources to ensure that the maximum capacity is not exceeded. Exceeding the maximum capacity can have several undesirable effects, including damage to the equipment responsible for producing the resource, or degradation in the quality of the resource being supplied to consumers. The latter effect is a major concern for essential services such as hospitals who rely on a relatively constant quality of the resource.

The authorities also employ people (meter readers) who walk around the streets reading the meters. The meter readings are recorded on paper or are entered into some form of personal digital assistant. Once the meter reader has read all the relevant meters, he returns to the authority's office where the recorded meter readings

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are loaded into a computer. The computer uses the loaded information to produce various reports and/or billing information. The main problem with employing people to read meters is that it can be expensive and does not provide
5 real-time monitoring of the consumption of the resource.

SUMMARY OF THE INVENTION

According to a first aspect of the present
10 invention, there is provided a system for controlling usage of a resource by a user, the system comprising:

communication means;

measuring means operable to measure a consumption of the resource by the user and place information
15 representative of the consumption on the communication means;

processing means operable to process the information placed on the communication means in order to determine whether the consumption of the resource by the
20 user is at or above a threshold, the processing means also being operable to place control information on the communication means in response to determining that the consumption is at or above the threshold; and

a control means operable to control the
25 consumption of the resource based on the control information placed on the communication means, to thereby control the usage of the resource.

Thus, the present invention has the ability to
30 enable the authority responsible for supplying the resource to ensure the usage of the resource does not exceed a predefined maximum amount, which could be the maximum amount of the resource capable of being generated. Effectively, this is achieved by setting the threshold to
35 the amount which the authority does not want the consumption to exceed.

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Preferably, the communication means comprises a wire link, a wireless link and a data collection device, the wire link connecting the measuring means and the control means to the data collection device, whilst the wireless link connects the data collection device to the processing means, wherein the measuring means is operable to forward, via the wire link, the information to the data collection device, the data collection device being operable to store information received from the measuring means for a period of time, and forward stored information to the processing means, via the wireless link, upon receiving a request to do so from the processing means.

Alternatively, the communication means comprises all the same type of links. For example, rather than employing a wire link and wireless link the communication means could include only wire links or only wireless links.

Preferably, the data collection device is operable to compressing and/or authenticating information forwarded to the processing means.

Thus, compressing the bandwidth has the advantage of conserving bandwidth and lowering transmission time whilst authenticating the information ensures that it is valid data.

Preferably, the wire link comprises a power line which is capable of carrying a supply of electricity.

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Alternatively, the wire link comprises a more conventional wire link such as the Internet.

Preferably, the wireless link comprises a general packet radio service.

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Alternatively, the wireless link can be any other

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form of wireless link such as a microwave link.

Preferably, the measuring means comprises a meter and a formatting device connected to each other, wherein
5 the meter is operable to collect, over a period of time, data that represents the consumption of the resource by the user, and is also operable to forward the collected data to the formatting device at the end of the period of time, whereupon receiving the collected data the formatting
10 device formats the received data into a format which is suitable for transmission over the communication means.

Preferably, the period of time that the meter collects data is about 30 minutes.

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Preferably, the format conforms with LonTalk protocol.

Alternatively, other common formats such as an IP
20 protocol can be employed.

Preferably, the processing means comprises an interface for allowing the threshold to be entered into the system and/or changed.

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Preferably, the interface is a graphical user interface.

Preferably, the control means comprises a switch
30 which is operable to turn on or off a device that consumes the resource, or turn on or off a supply of the resource.

Preferably, the switch comprises a relay.

35 Alternatively, the switch comprises a solid-state switch such as a transistor.

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Preferably, the system further comprises a storage means for storing the information processed by the processing means.

5 Preferably, the storage means comprises a database.

 Alternatively, the storage means comprises a less permanent storage means such as random access memory.

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 Preferably, the measuring means and control means are located at the user's premises.

 Preferably, the processing means is at a location
15 remote from the user's premises.

 Preferably, the threshold is a value representing a maximum rate at which the resource can be consumed.

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 Alternatively, the threshold is a value representing a maximum total amount of the resource which can be consumed.

 Preferably, the processing means comprises a
25 suitably programmed computer.

 Preferably, the resource comprises electricity, gas, or water.

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 According to a second aspect of the present invention, there is provided a method for controlling usage of a resource by a user, the method comprising the steps of:

 measuring a consumption of the resource by the
35 user;

 placing information that represents the consumption on a communication means;

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processing the information placed on the communication means in order to determine whether the consumption of the resource is at or above a threshold;

placing control information on the communication means in response to determining that the consumption is at or above the threshold; and

controlling the consumption of the resource based on the control information placed on the communication means, to thereby control the usage of the resource.

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Preferably, the step of placing information representative of the consumption on a communication means comprises forwarding, over a wire link, the information to a data collection device which stores the information for a period of time, and which forwards, over a wireless link, the stored information to a processing means upon receiving a request for the stored information from the processing means.

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Preferably, the method further comprises the step of compressing and/or authenticating, at the data collection device, the information forwarded to the processing means.

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Preferably, the wire link comprises a power line which is capable of carrying a supply of electricity.

Alternatively, the wire link comprises a more conventional wire link such as the Internet.

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Preferably, the wireless link comprises a general packet radio service.

Alternatively, the wireless link can be any other form of wireless link such as a microwave link.

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Preferably, the measuring step comprises

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collecting, over a period of time, data that represents the consumption of the resource, and formatting the collected data into a format which is suitable for transmission over the communication means.

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Preferably, the period of time that the data is collected is about 30 minutes.

Preferably, the format conforms with LonTalk
10 protocol.

Alternatively, other common formats such as an IP protocol can be employed.

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Preferably, the method further comprises the step of entering and/or changing the threshold value.

Preferably, the step of entering and/or changing the threshold value is performed using a graphical user
20 interface.

Preferably, the processing step comprises operating a switch to turn on or off a device which consumes the resource, or turn on or off a supply of the
25 resource.

Preferably, the switch comprises a relay.

Alternatively, the switch comprises a solid-state
30 switch such as a transistor.

Preferably, the method further comprises the step of storing, in a storage means, the information processed during the processing step.

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Preferably, the storage means comprises a database.

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Alternatively, the storage means comprises a less permanent storage means such as random access memory.

5 Preferably, the threshold is a value representing a maximum rate at which the resource can be consumed.

Alternatively, the threshold is a value representing a maximum total amount of the resource which
10 can be consumed.

Preferably, the resource comprises electricity, gas, or water.

15 According to a third aspect of the present invention, there is provided a system for recording usage of a resource by a user, the system comprising:

communication means;

measuring means operable to measure a consumption
20 of the resource by the user, and place information representative of the consumption on the communication means; and

processing means operable to place the information on the communication means in a storage means,
25 to thereby record the usage of the resource by the user.

Preferably, the communication means comprises a wire link, a wireless link and a data collection device, the wire link connecting the measuring means to the data
30 collection device, whilst the wireless link connects the data collection device to the processing means, wherein the measuring means is operable to forward, via the wire link, the information to the data collection device, the data collection device being operable to store information
35 received from the measuring means for a period of time, and forward stored information to the processing means, via the wireless link, upon receiving a request for the stored

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information from the processing means.

Alternatively, the communication means comprises all the same type of links. For example, rather than
5 employing a wire link and wireless link the communication means could include only wire links.

Preferably, the data collection device is operable to compress and/or authenticate information
10 forwarded to the processing means.

Preferably, the wire link comprises a power line that transmits a supply of electricity.

15 Alternatively, the wire link comprises a more conventional wire link such as the Internet.

Preferably, the wireless link comprises a general packet radio service.
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Alternatively, the wireless link can be any other form of wireless link such as a microwave link.

Preferably, the measuring means comprises a meter
25 and a formatting device connected to each other, wherein the meter is operable to collect, over a period of time, data that represents the consumption of the resource by the user, and is also operable to forward the collected data to the formatting device at the end of the period of time,
30 whereupon receiving the collected data the formatting device formats the received data into a format which is suitable for transmission over the communication means.

Preferably, the period of time that the meter
35 collects data is about 30 minutes.

Preferably, the format conforms with LonTalk

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protocol.

Alternatively, other common formats such as an IP protocol can be employed.

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Preferably, the measuring means and the control means are located at the user's premises.

10 Preferably, the processing means is at a location remote from the user's premises.

15 Preferably, the processing means is operable to check the storage means for the information, and initiate a download of the information if it is not in the storage means.

Preferably, the processing means comprises a suitably programmed computer.

20 Preferably, the resource comprises electricity, gas, or water.

25 According to a fourth aspect of the present invention, there is provided a method for recording usage of a resource by a user, the method comprising the steps of:

measuring a consumption of the resource by the user;

30 placing information representative of the consumption on a communication means; and

placing the information on the communications means in a storage means, to thereby record the consumption of the resource by the user.

35 Preferably, the step of placing information representative of the consumption on a communication means comprises forwarding, over a wire link, the information to

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a data collection device which stores the information for a period of time and which forwards, over a wireless link, the stored information to a processing means upon receiving a request for the stored information from the processing
5 means.

Preferably, the method further comprises the step of compressing and/or encrypting, at the data collection device, the information.

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Preferably, the wire link comprises a power line which is capable of carrying a supply of electricity.

Alternatively, the wire link comprises a more
15 conventional wire link such as the Internet.

Preferably, the wireless link comprises a general packet radio service.

20 Alternatively, the wireless link can be any other form of wireless link such as a microwave link.

Preferably, the measuring step comprises collecting, over a period of time, data that represents the consumption of the resource by the user, and formatting the
25 collected data into a format which is suitable for transmission over the communication means.

Preferably, the period of time that data is
30 collected is about 30 minutes.

Preferably, the format conforms with LonTalk protocol.

35 Alternatively, other common formats such as an IP protocol can be employed.

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Preferably, the method further comprises the steps of checking the storage means for the information, and initiating a download of the information if it is not in the storage means.

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Preferably, the storage means comprises a database.

Alternatively, the storage means is a less permanent storage means such as random access memory.

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Preferably, the resource comprises electricity, gas, or water.

15 BRIEF DESCRIPTION OF THE DRAWINGS

Notwithstanding any other embodiments that may fall within the scope of the present invention, an embodiment of the present invention will now be described, by way of example only, with reference to the accompanying figures, in which:

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Figure 1 illustrates a system for controlling a consumption of a resource by a user; and

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Figure 2 illustrates a system for recording a consumption of a resource by a user.

AN EMBODIMENT OF THE PRESENT INVENTION

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As can be seen in figure 1, the system 1 for controlling the consumption of a resource by a user includes: a communication means 3; measuring means 5; processing means 7; and control means 9.

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The communication means 3 is such that it allows the measuring means 5, processing means 7 and control means

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9 to exchange information in the form of data packets with each other. The communication means 3 comprises a wire link 11, a wireless link 13 and a data collection device 15. The wire link 11 is in the form of an electricity power line that runs along streets and which supplies electricity to domestic and/or commercial consumers. The wire link 11 connects the measuring means 5 and control means 9 to the data collection device 15. The wireless link 13 is in the form of a general packet radio service provided by a cellular telephone network. The wireless link 13 also connects the data collection device 15 to the processing means 7.

The measuring means 5 is designed to measure the consumption of a resource (for example, electricity, gas or water) by the user, and place information (in the form of packetized data) which is representative of the measured consumption on the communication means 3. The measuring means 3 is located at the consumer's premises in the same way that conventional meters used to measure electricity, gas or water are installed at a consumer's premises. It is noted that whilst figure 1 illustrates only a single measuring means 5, in practice there would be many measuring means 5, each being installed at a different consumer's premises. Each of the measuring means 5 would also be connected to the wire link 11a.

The measuring means 5 comprises a meter 17 which is similar to existing meters used to measure the consumption of a resource, except that the meter 17 is capable of periodically outputting electronic information which is representative of the measured consumption. In the present embodiment the meter 17 is either an Email Q4, A11 or P1 meters. The information output from the meter 17 is in a serial RS232 format. The meter 17 is also designed to store the information for a period of about 30 minutes. After the meter has stored the information for the 30

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minute period, it will proceed to output it. The meter 17 is such that the period over which the information is stored can be adjusted. For example, instead of collecting the information over a 30 minute period, the information
5 may be collected over a period of 15 minutes.

The measuring means 5 also comprises a formatting device 19 which is connected to the meter 17 such that the RS232 information output from the meter 17 is transferred
10 to the formatting device 19, which is adapted to process information in the RS232 format. The formatting device includes a microprocessor and software (or dedicated software) which operate to convert the RS232 information output from the meter 7 into a format which is suitable for
15 transmission over the wire link 11. In view of the fact that the wire link 11 is a power line, the formatting device places the information into data packets which conform with the LonTalk® protocol. In order to achieve this, the formatting means comprises an Echelon power line
20 transceiver. Further information on the LonTalk® protocol and the power line transceiver can be found at Echelon Corp's web page, which is located at www.echelon.com. Echelon Corp is the developer of the LonTalk® protocol.

25 The formatting device 19 is connected to the wire link 11a so that it can place the information received from the meter 17 onto the communication means 3. More specifically, this involves forwarding the information received from the meter 17 over the wire link 11a once it
30 has been placed into a data packet which conforms with the LonTalk® protocol. Given that the wire link 11a is connected between the formatting device 19 and the data collection device 15, the information sent over the wire link 11a is delivered directly to the data collection
35 device 15.

The data collection device 15 is in the form of

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computer hardware which executes software. In view of the fact that the formatting device 19 forwards data packets to the data collection device 15, the data collection device 15 is capable of interpreting and processing data packets which conform with the LonTalk® protocol. This is achieved by using an Echelon power line transceiver. Upon receiving LonTalk® data packets from the measuring means 5, the data collection device 15 processes the data packets in order to extract the information which was initially placed into the data packets by the formatting device 19; that is, the information which represents a user's consumption of a resource.

If the data collection device 15 does not have sufficient memory to store information received via the wire link 11a, the data collection device 15 will simply start overwriting the information which was previously placed into the memory. The data collection device 15 is configured to download the stored information to the processing means 7 when it receives a download request (which is in the form of a data packet) from the processing means 7. The download request from the processing means 7 and the information to be downloaded are transferred over the wireless link 13. The download request contains information which the data collection device 15 recognises as an instruction to download information stored in its memory to the processing means 7.

As mentioned previously, the wireless link 13 is a general packet radio service provided by a cellular telephone network. To enable the data collection device 15 to receive the download request and download the information over the wireless link 13, the data collection device 15 comprises a wireless modem which supports the general packet radio service. In this present embodiment, the wireless modem is the G18 modem from Motorola. When downloading the stored information to the processing means

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7, the data collection device 13 places the stored information into IP packets, which are in turn passed to the wireless modem for transfer over the wireless link 13.

5 The data collection device 15 is also configured to compress and/or authenticate the information that it sends over the wireless link 13; that is the information it sends to the processing means 7. The authentication process is carried out using the SHA-1 algorithm, whilst
10 compression can be performed using any common compression algorithm.

 The processing means 7 is in the form of computer equipment running software, and is operated/controlled by
15 or on behalf of the authority responsible for the resource (for example, electricity, gas or water.) The processing means 7 also has access to a wireless modem similar to the wireless modem used by the data collection device 15, which in the present embodiment is the G18 modem from Motorola.
20 The wireless modem of the processing means 7 allows the processing means 7 to send information (such as a download request) and receive information from the data collection device 15. As with the wireless modem of the data collection device 15, the wireless modem of the processing
25 means 7 supports the general packet radio service.

 The processing means 7 is configured to send, over the wireless link 13, a download request to the data collection device 15 for the information stored therein
30 (that is, the information regarding the consumption of the resource by the user). As mentioned previously, the download request is in the form of a data packet which contains control information indicating that the information needs to be downloaded. The download request
35 can be automatically sent on a periodic basis by the processing means 7 or can be initiated manually by a user of the processing means 7. When sending a download

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request, the processing means 7 places the download request into an IP packet. The IP packet is then sent over the wireless link 13 to the data collection device 15.

5 Upon receiving the information from the data collection device 15 (which as indicated earlier is in the form of IP packets), the processing means 7 proceeds to extract the information, which represents the consumption of the resource, from the IP packets. Once the information
10 has been extracted from the IP packets, the processing means 7 proceeds to compare the information with a threshold value in order to determine whether the user's consumption of the resource is at or above the threshold value. The threshold value is set by a user of the
15 processing means 7 (that is, the authority responsible for the resource), and is a value which represents an amount of the resource which can be consumed. For example, where the resource is electricity the threshold value would represent a certain amount of kW per hour.

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 To enable the user of the processing means 7 to enter and/or change the threshold value, the processing means 7 comprises a graphical user interface that is arranged to allow a person to enter or change the threshold
25 value.

 If as a result of the previously mentioned comparison the processing means 7 determines that the user's consumption of the resource is at or above the
30 threshold value, the processing means 7 creates a control packet that is used by the control means 9 in order to turn on/off resource consuming devices, and thereby control the user's consumption of the resource. The control packet contains information which identifies one or more of the
35 switches 21 that are to be turned on or off. Each of the switches 21 are associated with either a supply of the resource to a device which consumes the resource, e.g., an

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air conditioning unit. Where the switches are associated with the supply of the resource, they are typically operated to either turn on or turn off the supply of the resource. For instance, if the resource is electricity, the switches 21 would be arranged to open or close an electricity supply circuit. Alternatively, if the resource were water, then the switches 21 would be used to open or close a valve located in the water pipe.

10 In order to send the control packet to the control means 9, the processing means 7 places the control packet into an IP packet, which in turn is forwarded over the wireless link 13. The control packet sent over the wireless link 13 is received by the data collection device 15. Upon receiving the IP packet, the data collection device 15 proceeds to extract the control packet therefrom, and places the extracted control packet into a LonTalk® compatible packet. Placing the control packet in a LonTalk® packet allows the control information to be exchanged over 20 the wire link 11b, which as indicated previously is a power line.

Once the control packet has been placed into a LonTalk® packet, the data collection device 15 forwards the control packet to the control means 9 via the wire link 11b.

The processing means 7 is connected to a storage means 20 in the form of a computer database such as a database available from Oracle. The processing means 7 uses the storage means 20 to store the information received from the data collection device 15; that is, the information that represents the user's consumption of the resource. The processing means 7 is arranged to examine the storage means 20 to determine whether it contains the information (representing the consumption of the resource) that should have been sent by the data collection device 15. The

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information may be missing from the storage means 20 because, for example, the wireless link 13 was not operating. If the processing means 7 determines that the information is missing from the storage means 20, it sends
5 a download request to the data collection device 15. The download request specifies the information that is missing from the storage means 20, and effects a download of the requested information.

10 The processing means 7 is configured to allow a remote user to access the information stored in the storage means 20, thereby allowing the remote user to monitor the consumption of the resource. In order to permit remote access to the information stored in the storage means 20,
15 the processing means 7 includes a web server which has access to the information in the storage means 20. In order to function as a web server, the processing means 7 operates web server software from Apache. By using a web browser, such as Microsoft's Internet Explorer, a user can
20 view the information in the storage means 20 by logging on to the web server. The information in the storage means 20 could also be used for other purposes such as billing.

The control means 9 comprises computer hardware
25 running software. The control means 9 also comprises a number of switches 21, in the form of electro-mechanical relays, which can be operated by the computer hardware/software. Given that the data collection device 15 sends information over the wire link 11b in the packets
30 which conform with the LonTalk® protocol, the hardware/software of the control means 9 is such that it can process information which conforms with the LonTalk® protocol. This is achieved by using an Echelon power line transceiver. Once the information is received from the data
35 collection device 15, the control means 9 processes the information (which conforms with the LonTalk® protocol) in order to extract the control information originally

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generated by the processing means 7. The processing means 7 then processes the control information in order to identify which of the switches 21 are to be turned on or off. Once the relevant switches 21 have been identified, the
5 hardware/software proceeds to turn the relevant switches on or off.

As illustrated in figure 2, the embodiment of the present invention comprises a system 23 for recording the
10 consumption of a resource by a user. The system 23 comprises a communication means 25; measuring means 27; storage means 29; and processing means 31.

The communication means 25, measuring means 27
15 and storage means 29 are the same as the previously described communication means 3, measuring means 5 and storage means 20, respectively. The measuring means 27 comprises a meter 33 and a formation, device 35. The communication means 25 comprises a wire link 37, a data
20 collection device 39, and a wireless link 41.

The processing means 31 is similar to the previously described processing means 7, except that the processing means 31 does not compare the information
25 received from the data collection device 39 to a threshold value. Nor does the processing means 31 create control information. Upon receiving information (which is representative of the user's consumption of the resource) from the data collection device 39, the processing means 31
30 places the received information in the storage means 29. As with the processing means 7, the processing means 31 also allows a remote user to view the information stored in the storage means 29. The processing means 31 provides access to the information in the storage means 29 in the same
35 manner as the processing means 7; that is, via a web browser and a web server.

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Those skilled in the art will appreciate that the invention described herein is susceptible to variations and modifications other than those specifically described. It should be understood that the invention includes all such
5 variations and modifications which fall within the spirit and scope of the invention.

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CLAIMS:

1. A system for controlling usage of a resource by a user, the system comprising:

5 communication means;

measuring means operable to measure a consumption of the resource by the user and place information representative of the consumption on the communication means;

10 processing means operable to process the information on the communication means in order to determine whether the consumption of the resource is at or above a threshold, the processing means also being operable to place control information on the communication means in response to determining that the consumption is at or above the threshold; and

15 a control means operable to control the consumption of the resource based on the control information placed on the communication means, to thereby control the usage of the resource.

2. The system as claimed in claim 1, wherein the communication means comprises a wire link, a wireless link and a data collection device, the wire link connecting the measuring means and the control means to the data collection device, whilst the wireless link connects the data collection device to the processing means, wherein the measuring means is operable to forward, via the wire link, the information to the data collection device, the data collection device being operable to store information received from the measuring means for a period of time, and forward stored information to the processing means, via a wireless link, upon receiving a request for the stored information from the processing means.

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3. The system as claimed in claim 2, wherein the data collection device is operable to compressing and/or

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authenticating information forwarded to the processing means.

4. The system as claimed in claims 2 or 3,
5 wherein the wire link comprises a power line which is capable of carrying a supply of electricity.

5. The system as claimed in any one of claims 2 to 4, wherein the wireless link comprises a general packet
10 radio service.

6. The system as claimed in any one of the preceding claims, wherein the measuring means comprises a meter and a formatting device connected to each other,
15 wherein the meter is operable to collect, over a period of time, data that represents the consumption of the resource by the user, and is also operable to forward the collected data to the formatting device at the end of the period of time, whereupon receiving the collected data the formatting
20 device formats the received data into a format which is suitable for transmission over the communication means.

7. The system as claimed in claim 6, wherein the period of time that the meter collects data is about 30
25 minutes.

8. The system as claimed in claims 6 or 7, the format conforms with LonTalk protocol.

30 9. The system as claimed in any one of the preceding claims, wherein the processing means comprises an interface for allowing the threshold to be entered into the system and/or changed.

35 10. The system as claimed in claim 9, wherein the interface comprises a graphical user interface.

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11. The system as claimed in any one of the preceding claims, wherein the control means comprises a switch that is operable to turn on or off a device which consumes the resource, or turn on or off a supply of the resource.

12. The system as claimed in claim 11, wherein the switch comprises a relay.

13. The system as claimed in any one of the preceding claims, wherein the system further comprises a storage means for storing the information processed by the processing means.

14. The system as claimed in claim 13, wherein the storage means comprises a database.

15. The system as claimed in any one of the preceding claims, wherein the measuring means and control means are located at the user's premises.

16. The system as claimed in any one of the preceding claims, wherein the processing means is at a location remote from the user's premises.

17. The system as claimed in any one of the preceding claims, wherein the threshold is a value representing a maximum rate at which the resource can be consumed.

18. The system as claimed in any one of the preceding claims, wherein the processing means comprises a suitably programmed computer.

19. The system as claimed in any one of the preceding claims, wherein the resource comprises electricity, gas or water.

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20. A method for controlling usage of a resource by a user, the method comprising the steps of:

5 measuring a consumption of the resource by the user;

 placing information representative of the consumption on a communication means;

 processing the information placed on the communication means in order to determine whether the
10 consumption of the resource by the user is at or above a threshold;

 placing control information on the communication means in response to determining that the consumption is at or above the threshold; and

15 controlling the consumption of the resource based on the control information placed on the communication means, to thereby controlling the usage of the resource.

21. The method as claimed in claim 20, wherein
20 the step of placing information representative of the consumption of the resource on a communication means comprises forwarding, over a wire link, the information to a data collection device which stores the information received from the measuring means for a period of time and
25 which forwards, over a wireless link, the stored information to a processing means upon receiving a request for stored information from the processing means.

22. The method as claimed in claim 21,
30 further comprising the step of compressing and/or authenticating, at the data collection device, the information forwarded to the processing means.

23. The method as claimed in claim 21 or 22,
35 wherein the wire link comprises a power line which is capable of carrying a supply of electricity.

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24. The method as claimed in any one of claims 21 to 23, wherein the wireless link comprises a general packet radio service.

5 25. The method as claimed in any one of claims 20 to 24, wherein the measuring step comprises collecting, over a period of time, data that represents the consumption of the resource, and formatting the collected data into a format which is suitable for transmission over the
10 communication means.

26. The method as claimed in claim 25, wherein the period of time that the data is collected is about 30 minutes.

15 27. The method as claimed in claims 25 or 26, the format conforms with LonTalk protocol.

28. The method as claimed in any one of claims
20 20 to 27, further comprising the step of entering and/or changing the threshold value.

29. The method as claimed in claim 28, wherein the step of entering and/or changing the threshold value is
25 performed using a graphical user interface.

30. The method as claimed in any one of claims 20 to 29, wherein the processing step comprises operating a switch to turn on or off a device which consumes the
30 resource, or turn on or off a supply of the resource.

31. The method as claimed in claim 30, wherein the switch comprises a relay.

35 32. The method as claimed in any one of claims 20 to 31, where the method further comprises the step of storing, in a storage means, the information processed

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during the processing step.

33. The method as claimed in claim 32, wherein the storage means comprises a database.

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34. The method as claimed in anyone of claims 20 to 33, wherein the threshold is a value representing a maximum rate at which the resource can be consumed.

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35. A system for recording usage of a resource by a user, the system comprising:

communication means;

measuring means operable to measure a consumption of the resource by the user and placing information representative thereof on the communication means; and

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processing means operable to place information on the communication means in a storage means, to thereby record the usage of the resource by the user.

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36. The system as claimed in claim 35, wherein the communication means comprises a wire link, a wireless link and a data collection device, the wire link connecting the measuring means to the data collection device, whilst the wireless link connects the data collection device to the processing means, wherein the measuring means is operable to forward, via the wire link, the information to the data collection device, the data collection device being operable to store information received from the measuring means for a period of time, and forward stored information to the processing means, via the wire less link, upon receiving a request for stored information from the processing means.

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37. The system as claimed in claim 36, wherein the data collection device is operable to compress and/or authenticate information forwarded to the processing means.

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38. The system as claimed in claim 36 or 37, wherein the wire link comprises a power line that transmits a supply of electricity.

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39. The system as claimed in any one of claims 36 to 38, wherein the wireless link comprises a general packet radio service.

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40. The system as claimed in any one of claims 35 to 39, wherein the measuring means comprises a meter and a formatting device connected to each other, wherein the meter is operable to collect, over a period of time, data that represents the consumption of the resource by the user, and is also operable to forward the collected data to the formatting device at the end of the period of time, whereupon receiving the collected data the formatting device formats the received data into a format which is suitable for transmission over the communication means.

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41. The system as claimed in claim 40, wherein the period of time that the meter collects data is about 30 minutes.

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42. The system as claimed in claim 40 or 41, wherein the format conforms with LonTalk protocol.

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43. The system as claimed in any of claims 35 to 42, wherein the measuring means is located at the user's premises.

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44. The system as claimed in any one of claims 35 to 43, wherein the processing means is operable to check the storage means for the information, and initiate a download of the information if it is not in the storage means.

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45. The system as claimed in any of claims 35 to 44, wherein the processing means is at a location remote from the user's premises.

5 46. The system as claimed in any of claims 35 to 45, wherein the processing means comprises a suitably programmed computer.

10 47. The system as claimed in any of claims 35 to 46, wherein the resource comprises electricity, gas, or water.

15 48. A method for recording usage of a resource by a user, the method comprising the steps of:
measuring a consumption of the resource by the user;

placing information representative of the consumption on a communication means; and

20 placing information on the communication means in a storage means, to thereby record the usage of the resource by the user.

25 49. The method as claimed in claim 48, wherein the step of placing information representative of the consumption on a communication means comprises forwarding, over a wire link, the information to a data collection device which stores the information for a period of time and which forwards, over a wireless link, the stored information to a processing means upon receiving a request
30 for stored information from the processing means.

35 50. The method as claimed in claim 49, further comprising the step of compressing and/or encrypting, at the data collection device, the information.

51. The method as claimed in claim 49 or 50, wherein the wire link comprises a power line which is

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capable of carrying a supply of electricity.

52. The method as claimed in any one of claims
49 to 51, wherein the wireless link comprises a general
5 packet radio service.

53. The method as claimed in any one claims 48
to 52, wherein the measuring step comprises collecting,
over a period of time, data that represents the consumption
10 of the resource by the user, and formatting the collected
data into a format which is suitable for transmission over
the communication means.

54. The method as claimed in claim 53, wherein
15 the period of time that data is collected is about 30
minutes.

55. The method as claimed in claim 53 or 54,
wherein the format conforms with LonTalk protocol.
20

56. The method as claimed in any one of claims
48 to 55, further comprises the steps of checking the
storage means for the information, and initiating a
download of the information if it is not in the storage
25 means.

57. The method as claimed in any one of claims
48 to 56, wherein the storage means includes a database.

58. The method as claimed in any one of claims
30 48 to 57, wherein the resource comprises electricity, gas,
or water.

59. Software comprising instructions that enable
35 a computing device to carry out the method as claimed in
any one of claims 20 to 34 and claims 48 to 58.

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60. A computer readable medium comprising the software as claimed in claim 59.

5 61. A system for controlling usage of a resource by a user, substantially as herein described with reference to the accompanying figures.

10 62. A method for controlling usage of a resource by a user, substantially as herein described with reference to the accompanying figures.

15 63. A system for recording usage of a resource by a user, substantially as herein described with reference to the accompanying figures.

64. A method for recording usage of a resource by a user, substantially as herein described with reference to the accompanying figures.