partially dismantle the water control device in order to adjust the various operational parameters of the water control device so that they are set to the desired level.

[0007] Water control devices may be installed in bathroom facilities in various areas where excessive water usage is of concern and so its supply may be limited. To assist with this, low water usage type devices may be used. However, in situations where there is a desire to limit water usage further due to environmental conditions such as drought or a long period of hot weather, or due to water restrictions being put in place by local authorities, it may become necessary to manually reduce the water usage in each separate water control device.

[0008] In medium to large buildings, multiple bathroom facilities usually exist. Monitoring and control of the water used by the numerous water control devices in each of the bathroom facilities may be problematic and time consuming as it becomes necessary for individuals to move from facility to facility and device to device to assess any problems and monitor the water control devices. This problem is further exacerbated when a building manager is in charge of multiple buildings.

Summary

[0009]

[0010] Disclosed are arrangements which seek to address the above problems by controlling one or more operational parameters of one or more water control devices in a central manner, and also by changing a mode of operation of one or more water control devices in a central manner.

[0011] According to a first aspect of the present disclosure, there is provided a bathroom facility water management method of controlling at least one operational parameter of at least one water control device in a bathroom facility water management system comprising an embedded electronic device, at least one central gateway device, an administration level computing device and a management level computing device, wherein the operational parameter is associated with water used by the water control device, wherein the operational parameter is associated with water used by the water control device, the method comprising the steps of: sending, from an electronic controller of the water control device, operational data associated with the operational parameter to an embedded electronic device when the

embedded electronic device is in the vicinity of the electronic controller; receiving, at the embedded electronic device, the operational data, and developing control data based on the received operational data and sending the control data to the electronic controller when the embedded electronic device is in the vicinity of the electronic controller; and receiving, at the electronic controller, the control data and

controlling the operational parameter of the water control device based on the received control data; sending, from the electronic controller, the operational data to the central gateway device; controlling, at the administration level computing device, a plurality of water control devices in a single bathroom facility via the central gateway device based on the operational data; and controlling, at the management level computing device, a plurality of water control devices in a plurality of bathroom facilities via the central gateway device based on the operational data.

[0012] There is also disclosed a water management method for controlling at least one operational parameter associated with at least one water control device located in at least one area, wherein the operational parameter is associated with water used by the water control device, the method comprising the steps of: sending, from at least one electronic controller associated with the water control device, operational data associated with the operational parameter to at least one central gateway device; receiving, at the central gateway device, the operational data, and sending the operational data to a web server; retrieving the operational data from the web server using a computing device; developing, at the computing device, control data based on the retrieved operational data and sending the control data to the electronic controller via the web server and the central gateway device; and receiving, at the electronic controller, the control data and controlling the operational parameter of the water control device based on the received control data.

[0013] There is also disclosed a water management method for controlling at least one operational parameter of at least one water control device, wherein the operational parameter is associated with water used by the water control device, the method comprising the steps of: determining, using a computing device, a mode of operation for the water control device based on water supply, developing control data based on the determined mode of operation and the operational parameter, and sending the control data to the electronic controller of the water control device; and the electronic controller receiving the control data and controlling the operational parameter based on the received control data.

[0014] There is also disclosed a water management method for controlling at least one operational parameter of at least one water control device, wherein the operational parameter is associated with water used by the water control device, the method comprising the steps of: receiving, from an electronic controller of the water control device, operational data associated with the operational parameter; and developing control data based on the received operational data and sending the control data to the electronic controller for controlling the operational parameter of the water control device based on the received control data.

[0015] According to a second aspect of the present disclosure, there is provided a bathroom facility water management system for controlling at least one operational parameter of at least one water control device in a bathroom facility water management system, wherein the operational parameter is associated with water used by the water control device, the bathroom facility water management system further comprising an electronic controller of the water control device, an embedded electronic device, at least one central gateway device, an administration level computing device and a management level computing device, wherein: the electronic controller is arranged to send operational data associated with the operational parameter to the embedded electronic device when the embedded electronic device is in the vicinity of the electronic controller; the embedded electronic device is arranged to receive the operational data, develop control data based on the received operational data and send the control data to the electronic controller when the embedded electronic device is in the vicinity of the electronic controller; the electronic controller is further arranged to receive the control data and control the operational parameter of the water control device based on the received control data; the electronic controller is arranged to send the operational data to the central gateway device; the administration level computing device is arranged to control a plurality of water control devices in a single bathroom facility via the central gateway device based on the operational data; and the management level computing device is arranged to control a plurality of water control devices in a plurality of bathroom facilities via the central gateway device based on the operational data.

[0016] There is also disclosed a water management system for controlling at least one operational parameter associated with at least one water control device located in at least one area, wherein the operational parameter is associated with water used by the water control device, the system comprising at least one electronic controller associated with the water control device, at least one central gateway device, a server and a computing device, wherein: the electronic controller is arranged to send operational data associated with the operational parameter to the central gateway device; the central gateway device is arranged to receive the operational data, and send the operational data to the web server; the computing device is arranged to retrieve the operational data from the web server, develop control data based on the retrieved operational data and send the control data to the electronic controller via the web server and the central gateway device; and the electronic controller is further arranged to receive the control data and control the operational parameters of the water control device based on the received control data.

[0017] There is also disclosed a water management system for controlling at least one operational parameter of at least one water control device, wherein the operational parameter is associated with water used by the water control device, the system comprising a computing device and at least one electronic controller associated with the water control device, wherein: the computing device is arranged to determine a mode of operation for the water control device based on water supply, develop control data based on the determined mode of operation and the operational parameter, and send the control data to the an electronic controller of the water control device; and the electronic controller is arranged to receive the control data and control the operational parameter based on the received control data.

[0018] There is also disclosed a computing device for controlling at least one operational parameter of at least one water control device, wherein the operational parameter is associated with water used by the water control device, wherein: the computing device is arranged to receive operational data associated with at least one operational parameter from an electronic controller associated with a water control device, develop control data based on the received operational data and send the control data to the electronic controller for controlling the operational parameter of the water control device based on the received control data.

[0019] Other aspects of the present disclosure are also disclosed.

Brief Description of the Drawings

[0020] At least one embodiment of the present invention will now be described with reference to the drawings and appendices, in which:

[0021] Figs. 1A and 1B form a schematic block diagram of a general purpose computer system upon which arrangements described can be practiced;

[0022] Figs. 2A and 2B collectively form a schematic block diagram representation of an embedded electronic device upon which described arrangements can be practised;

[0023] Fig. 3 shows a water control device with an electronic controller according to the herein disclosure;

[0024] Fig. 4 shows a water management system according to the herein disclosure;

[0025] Fig. 5 shows a further water management system according to the herein disclosure;

[0026] Fig. 6 shows a water management process according to the herein disclosure;

[0027] Fig. 7 shows a further water management process according to the herein disclosure;

[0028] Fig. 8 shows a further water management process according to the herein disclosure;

[0029] Fig. 9 shows a further water management process according to the herein disclosure;