

## MANUAL FLUSHING DEVICE AND METHOD

### Technical Field

[0001] The present invention relates generally to a manual flushing device and method and, in particular, to a mobile electronic device for activating a flush system. The present invention also relates to a computer program product including a computer readable medium having recorded thereon a computer program for activating a flush system.

### Background

[0002] In non-private (e.g. public) bathrooms within office buildings, shopping malls etc., maintenance teams and cleaners are required to activate flush systems, e.g. by initiating a manual override, in toilets, cisterns and/or urinals during or after cleaning/maintenance of the toilets, cisterns and/or urinals.

[0003] In known systems, the activation of the flush system can only occur when the user (i.e. the maintenance or cleaning person) either travels between each unit (cistern or urinal) and activates the flush. For example, the flush may be activated by way of manually pressing a button affixed to each unit, pulling down a handle affixed to each unit or manually pressing a button in a flush unit connected to one or more urinals within the bathroom. Therefore, after maintaining several toilets, cisterns or urinals in one or more bathrooms, considerable time and effort is required to activate each flush system in the one or more bathrooms.

[0004] Further, it can become increasingly unpleasant for the maintenance or cleaning person to be required to enter each bathroom, each unit or attend each cistern or urinal, before being able to manually activate the flush system.

[0005] In locations where it is a requirement to have a manually operable button, e.g. a manual override or bypass feature, to activate a flush system, e.g. during maintenance or cleaning, having to retrofit a physical button to existing flush systems can result in costly upgrades and a degradation in the design of the physical units forming part of the flush system.

### Summary

[0006] It is an object of the present invention to substantially overcome, or at least ameliorate, one or more disadvantages of existing arrangements.

[0007] Disclosed are arrangements which seek to address the above problems by providing a mobile electronic device arranged to activate one or more flushing systems using a manually operable button by way of a manual override or bypass feature.

[0008] According to a first aspect of the present disclosure, there is provided a mobile electronic device comprising a processor arranged to: monitor activation of a manually operable button on the mobile electronic device, wherein the manually operable button is suitable for manually activating at least one flush system that does not have a physical button for activating the flush system, wherein the at least one flush system is located in at least one bathroom facility, wirelessly communicate with the at least one flush system, detect activation of the manually operable button, and subsequent to detecting activation of the manually operable button, transmit a flush activation signal to the at least one flush system for activating the at least one flush system.

[0009] The flush system may be at least part of a urinal, toilet or a cistern.

[0010] The processor may be arranged to transmit the flush activation signal to a plurality of flush systems located in a single bathroom facility.

[0011] The processor may be arranged to transmit the flush activation signal to a plurality of flush systems located in a plurality of bathroom facilities in a single building.

[0012] The processor may be arranged to display a graphical user interface that comprises the manually operable button.

[0013] The processor may be arranged to wirelessly communicate with the at least one flush system by confirming credentials associated with the at least one flush system.

[0014] The processor may be arranged to determine each unique identification of each flush system in wireless communication with the processor, display each determined unique identification on a display of the mobile electronic device, enable selection of one or more of the unique identifications, determine which of the unique identifications are selected, and generate a flush activation signal comprising one or more of the selected unique identifications, wherein the flush system may only be activated upon the flush system detecting its unique identification in the flush activation signal.

[0015] According to a second aspect of the present disclosure, there is provided a method of activating at least one flush system in a bathroom, the method comprising the steps of: monitoring

activation of a manually operable button on a mobile electronic device, wherein the manually operable button is suitable for manually activating at least one flush system that does not have a physical button for activating the flush system, wherein the at least one flush system is located in at least one bathroom facility, wirelessly communicating with the at least one flush system, detecting activation of the manually operable button, and subsequent to detecting activation of the manually operable button, transmitting a flush activation signal to the at least one flush system for activating the at least one flush system.

[0016] The flush system may be at least part of a urinal, toilet or a cistern.

[0017] The method may further comprise the step of transmitting the flush activation signal to a plurality of flush systems located in a single bathroom facility.

[0018] The method may further comprise the step of transmitting the flush activation signal to a plurality of flush systems located in a plurality of bathroom facilities in a single building.

[0019] The method may further comprise the step of displaying a graphical user interface that comprises the manually operable button.

[0020] The method may further comprise the step of wirelessly communicating with the at least one flush system by confirming credentials associated with the at least one flush system.

[0021] The method may further comprise the steps of determining each unique identification of each flush system in wireless communication with the processor, displaying each determined unique identification on a display of the mobile electronic device, enable selection of one or more of the unique identifications, determining which of the unique identifications are selected, and generating a flush activation signal comprising one or more of the selected unique identifications, wherein the flush system may only be activated upon the flush system detecting its unique identification in the flush activation signal.

[0022] A computer program product including a computer readable medium having recorded thereon a computer program for performing the above method is also disclosed.

[0023] Other aspects are also disclosed.

### **Brief Description of the Drawings**

[0024] At least one embodiment of the present invention will now be described with reference to the drawings and appendices, in which:

[0025] Figs. 1A and 1B collectively form a schematic block diagram representation of an electronic device upon which described arrangements can be practised;

[0026] Fig 2 shows a flush system for use in accordance with an embodiment of the present disclosure;

[0027] Fig 3 shows a schematic of bathrooms with flush units and a mobile electronic device in accordance with an embodiment of the present disclosure;

[0028] Figs 4A and 4B show graphical user interfaces in accordance with embodiments of the present disclosure;

[0029] Fig 5 shows a flow diagram of a process in accordance with an embodiment of the present disclosure.

### **Detailed Description including Best Mode**

[0030] Where reference is made in any one or more of the accompanying drawings to steps and/or features, which have the same reference numerals, those steps and/or features have for the purposes of this description the same function(s) or operation(s), unless the contrary intention appears.

[0031] Figs. 1A and 1B collectively form a schematic block diagram of a mobile electronic device 1001 including embedded components, upon which one or more of the herein described processes are practiced by executing software under control of a processor. The mobile electronic device 1001 may be, for example, a mobile phone. It will also be understood that a portable and personal computing device such as a tablet or laptop may also be used to implement one or more of the herein described processes.

[0032] As seen in Fig. 1A, the mobile electronic device 1001 comprises an embedded controller 1002. Accordingly, the mobile electronic device 1001 may be referred to as an “embedded device.” In the present example, the controller 1002 has a processing unit (or processor) 1005 which is bi-directionally coupled to an internal storage module 1009. The storage module 1009 may be formed from non-volatile semiconductor read only memory

(ROM) 1060 and semiconductor random access memory (RAM) 1070, as seen in Fig. 1B. The RAM 1070 may be volatile, non-volatile or a combination of volatile and non-volatile memory.

[0033] The mobile electronic device 1001 includes a display controller 1007, which is connected to a video display 1014, such as a liquid crystal display (LCD) panel or the like. The display controller 1007 is configured for displaying graphical images on the video display 1014 in accordance with instructions received from the embedded controller 1002, to which the display controller 1007 is connected.

[0034] The mobile electronic device 1001 also includes user input devices 1013 which are typically formed by keys, a keypad or like controls. In some implementations, the user input devices 1013 may include a touch sensitive panel physically associated with the display 1014 to collectively form a touch-screen. Such a touch-screen may thus operate as one form of graphical user interface (GUI) as opposed to a prompt or menu driven GUI typically used with keypad-display combinations. Other forms of user input devices may also be used, such as a microphone (not illustrated) for voice commands or a joystick/thumb wheel (not illustrated) for ease of navigation about menus.

[0035] As seen in Fig. 1A, the mobile electronic device 1001 also comprises a portable memory interface 1006, which is coupled to the processor 1005 via a connection 1019. The portable memory interface 1006 allows a complementary portable memory device 1025 to be coupled to the mobile electronic device 1001 to act as a source or destination of data or to supplement the internal storage module 1009. Examples of such interfaces permit coupling with portable memory devices such as Universal Serial Bus (USB) memory devices, Secure Digital (SD) cards, Personal Computer Memory Card International Association (PCMCIA) cards, optical disks and magnetic disks.

[0036] The mobile electronic device 1001 also has a communications interface 1008 to permit coupling of the device 1001 to a computer or communications network 1020 via a connection 1021. The connection 1021 may be wired or wireless. For example, the connection 1021 may be radio frequency or optical. An example of a wired connection includes Ethernet.

[0037] Examples of wireless connection includes Bluetooth™ type local interconnection, Wi-Fi (including protocols based on the standards of the IEEE 802.11 family) for connecting to a Wi-Fi router, and Infrared Data Association (IrDa) and the like. As will be described in more detail below, any of these wireless communications may be used to enable the processor of the

mobile electronic device to wirelessly communicate with a wireless interface on one or more flush systems.

[0038] Typically, the mobile electronic device 1001 is configured to perform some special function. The embedded controller 1002, possibly in conjunction with further special function components 1010, is provided to perform that special function. For example, where the device 1001 is a mobile telephone with a camera, the components 1010 may represent a lens, focus control and image sensor of the camera. The special function components 1010 is connected to the embedded controller 1002. Further, the components 1010 may represent those components required for communications in a cellular telephone environment. Where the device 1001 is a portable device, the special function components 1010 may represent a number of encoders and decoders of a type including Joint Photographic Experts Group (JPEG), (Moving Picture Experts Group) MPEG, MPEG-1 Audio Layer 3 (MP3), and the like.

[0039] The methods described hereinafter may be implemented using the embedded controller 1002, where the process of Fig 5 may be implemented as one or more software application programs 1033 executable within the embedded controller 1002. The mobile electronic device 1001 of Fig. 1A implements the described methods. In particular, with reference to Fig. 1B, the steps of the described methods are effected by instructions in the software 1033 that are carried out within the controller 1002. The software instructions may be formed as one or more code modules, each for performing one or more particular tasks. The software may also be divided into two separate parts, in which a first part and the corresponding code modules performs the described methods and a second part and the corresponding code modules manage a user interface between the first part and the user.

[0040] The software 1033 of the embedded controller 1002 is typically stored in the non-volatile ROM 1060 of the internal storage module 1009. The software 1033 stored in the ROM 1060 can be updated when required from a computer readable medium. The software 1033 can be loaded into and executed by the processor 1005. In some instances, the processor 1005 may execute software instructions that are located in RAM 1070. Software instructions may be loaded into the RAM 1070 by the processor 1005 initiating a copy of one or more code modules from ROM 1060 into RAM 1070. Alternatively, the software instructions of one or more code modules may be pre-installed in a non-volatile region of RAM 1070 by a manufacturer. After one or more code modules have been located in RAM 1070, the processor 1005 may execute software instructions of the one or more code modules.

[0041] The software application program 1033 may be downloaded from a suitable "App Store" by a user to the mobile electronic device 1001 for use by the user to implement the processes described herein. In another alternative, the software application program 1033 may be read by the processor 1005 from the network 1020, or loaded into the controller 1002 or the portable storage medium 1025 from other computer readable media. Computer readable storage media refers to any non-transitory tangible storage medium that participates in providing instructions and/or data to the controller 1002 for execution and/or processing. Examples of such storage media include CD-ROM, a hard disk drive, a ROM or integrated circuit, USB memory, a magneto-optical disk, flash memory, or a computer readable card such as a PCMCIA card and the like, whether or not such devices are internal or external of the device 1001. Examples of transitory or non-tangible computer readable transmission media that may also participate in the provision of software, application programs, instructions and/or data to the device 1001 include radio or infra-red transmission channels as well as a network connection to another computer or networked device, and the Internet or Intranets including e-mail transmissions and information recorded on Websites and the like. A computer readable medium having such software or computer program recorded on it is a computer program product.

[0042] The second part of the software application program 1033 and the corresponding code modules mentioned above may be executed to implement one or more graphical user interfaces (GUIs) to be rendered or otherwise represented upon the display 1014 of Fig. 1A. Through manipulation of the user input device 1013 (e.g., the keypad), a user of the device 1001 and the software application program 1033 may manipulate the interface in a functionally adaptable manner to provide controlling commands and/or input to the applications associated with the GUI(s).

[0043] According to one example of an embodiment described herein, the GUI displays a manually operable button to enable a user to activate one or more flush systems by causing the processor to generate and transmit a flush activation signal wirelessly to the one or more flush systems, where the flush systems do not have a physical button for activating the flush system, upon detection of the displayed button being activated (i.e. by the user touching the GUI). The manually operable button may be displayed on the screen to represent a physical button, for example, in a pseudo three-dimensional format or a two-dimensional format. The manually operable button acts as a manual over-ride or bypass feature that allows manual activation of the flush system. For example, the manual over-ride may be used in the event of a malfunction or breakdown of a flushing sensor. Also, the manual over-ride may be used in conjunction with a flushing sensor to stop the flushing sensor from activating a further flush when the

maintenance person or cleaner leaves the area being sensed by the flushing sensor. Further, the manual over-ride usage may be limited to control how much, i.e. limiting the amount of, the volume of water that is discharged per flush.

[0044] According to another example of an embodiment described herein, the manually operable button may be one of the physical buttons that exist on the mobile electronic device, where the software application program 1033 allocates a function to that physical button to enable the processor to generate and transmit a flush activation signal wirelessly to the one or more flush systems upon detection of the physical button being activated or pressed.

[0045] Further, optionally, the GUI may display various options to the user to carry out the processes described herein. According to one example, the GUI may display a list of detected unique identifications for flush systems where the wireless interfaces of the flush systems are in the vicinity of the wireless interface of the mobile electronic device, as described in more detail below. The GUI may enable the user to select one or more of these unique identifications to cause the processor of the mobile electronic device to incorporate the selected unique identifications into a flush activation signal.

[0046] Other forms of functionally adaptable user interfaces may also be implemented, such as an audio interface utilizing speech prompts output via loudspeakers (not illustrated) and user voice commands input via the microphone (not illustrated).

[0047] Fig. 1B illustrates in detail the embedded controller 1002 having the processor 1005 for executing the application programs 1033 and the internal storage 1009. The internal storage 1009 comprises read only memory (ROM) 1060 and random access memory (RAM) 1070. The processor 1005 is able to execute the application programs 1033 stored in one or both of the connected memories 1060 and 1070. When the mobile electronic device 1001 is initially powered up, a system program resident in the ROM 1060 is executed. The application program 1033 permanently stored in the ROM 1060 is sometimes referred to as "firmware". Execution of the firmware by the processor 1005 may fulfil various functions, including processor management, memory management, device management, storage management and user interface.

[0048] The processor 1005 typically includes a number of functional modules including a control unit (CU) 1051, an arithmetic logic unit (ALU) 1052, a digital signal processor (DSP) 1053 and a local or internal memory comprising a set of registers 1054 which typically contain atomic data elements 1056, 1057, along with internal buffer or cache memory 1055. One or

more internal buses 1059 interconnect these functional modules. The processor 1005 typically also has one or more interfaces 1058 for communicating with external devices via system bus 1081, using a connection 1061.

[0049] The application program 1033 includes a sequence of instructions 1062 though 1063 that may include conditional branch and loop instructions. The program 1033 may also include data, which is used in execution of the program 1033. This data may be stored as part of the instruction or in a separate location 1064 within the ROM 1060 or RAM 1070.

[0050] In general, the processor 1005 is given a set of instructions, which are executed therein. This set of instructions may be organised into blocks, which perform specific tasks or handle specific events that occur in the mobile electronic device 1001. Typically, the application program 1033 waits for events and subsequently executes the block of code associated with that event. Events may be triggered in response to input from a user, via the user input devices 1013 of Fig. 1A, as detected by the processor 1005. Events may also be triggered in response to other sensors and interfaces in the mobile electronic device 1001.

[0051] The execution of a set of the instructions may require numeric variables to be read and modified. Such numeric variables are stored in the RAM 1070. The disclosed method uses input variables 1071 that are stored in known locations 1072, 1073 in the memory 1070. The input variables 1071 are processed to produce output variables 1077 that are stored in known locations 1078, 1079 in the memory 1070. Intermediate variables 1074 may be stored in additional memory locations in locations 1075, 1076 of the memory 1070. Alternatively, some intermediate variables may only exist in the registers 1054 of the processor 1005.

[0052] The execution of a sequence of instructions is achieved in the processor 1005 by repeated application of a fetch-execute cycle. The control unit 1051 of the processor 1005 maintains a register called the program counter, which contains the address in ROM 1060 or RAM 1070 of the next instruction to be executed. At the start of the fetch execute cycle, the contents of the memory address indexed by the program counter is loaded into the control unit 1051. The instruction thus loaded controls the subsequent operation of the processor 1005, causing for example, data to be loaded from ROM memory 1060 into processor registers 1054, the contents of a register to be arithmetically combined with the contents of another register, the contents of a register to be written to the location stored in another register and so on. At the end of the fetch execute cycle the program counter is updated to point to the next instruction in the system program code. Depending on the instruction just executed this

may involve incrementing the address contained in the program counter or loading the program counter with a new address in order to achieve a branch operation.

[0053] Each step or sub-process in the processes of the methods described below is associated with one or more segments of the application program 1033, and is performed by repeated execution of a fetch-execute cycle in the processor 1005 or similar programmatic operation of other independent processor blocks in the mobile electronic device 1001.

[0054] Referring to Fig 2 a flush system 201 is shown for use in accordance with an embodiment of the present disclosure. The flush system 201 has a controller or microprocessor 203 that operates in accordance with software instructions stored in a memory store 205. The processor 203 outputs and receives communication signals via a wireless communications interface 207 using any suitable wireless communication protocol, such as Bluetooth, Infrared Data Association (IrDa) and Wi-Fi (via a router).

[0055] The wireless communications interface is designed to communicate with other wireless devices, such as the mobile electronic device 1001 (see Fig 1A) that are in the wireless communicable vicinity. That is, the communications interface 207 is arranged to communicate wirelessly with any suitable mobile electronic device 1001 that is in range using the particular communication protocols being used.

[0056] Further, stored in the memory store 205, and used by the processor 203 to control how communications are sent and received via the communications interface 207, is a unique identification that is associated with and used to identify the particular flush system 201. For example, the flush system may have a unique ID of XYZ123, or the like.

[0057] It will be understood that the unique identification (ID) may be unique to a particular bathroom facility, to a particular building facility, to a particular geographical area, to a particular product etc.

[0058] Also, stored in the memory store 205, and used by the processor 203 to control how communications are sent and received via the communications interface 207, are one or more credentials that are used to authorise a device of a user to ensure that signals received from authorised sources are processed. For example, the credential may be a simple 4 or 6-digit Personal Identification Number (PIN) which is required to enable the communication interface 207 of the flush system 201 to set up a communication channel with a mobile electronic device 1001. Alternatively, the credential may be an alphanumeric password.

[0059] For example, where the communication protocol being used is Bluetooth, pairing of the communication interface 207 with the mobile electronic device 1001 can only occur if the correct PIN is entered on the mobile electronic device 1001 by the user. In this scenario, the user may have previously received the correct PIN by word of mouth, an electronic communication or by any other means from an authorised person enabling the user to gain control of the flush system via the authorised device.

[0060] The flush system 201 also has a power supply system 208 that provides power to each of the electrical/electronic components in the flush system. The power supply system regulates and provides power from a power source such as a battery source or mains power, for example.

[0061] A flush valve 209 operates in accordance with a flush activation signal received from the processor 203. The flush valve 209 has a water inlet 211 and a water outlet 213. The water inlet may come from the main water supply for the bathroom. The water outlet 213 goes to either a cistern, toilet or urinal to flush the cistern, toilet or urinal. The flush activation signal may activate the flush valve 209 for a set period of time, such as 5 seconds, for example.

[0062] Optionally, a timer 215 is provided to provide a timing signal to the processor 203, so that the processor can send a periodic flush activation signal to the flush valve 209. For example, the timer 215 may generate a timing signal every 30 minutes.

[0063] Also, not shown, may be a sensor that detects whether a user of the toilet, urinal or cistern is in the vicinity of the toilet, urinal or cistern and sends a signal to the processor to generate a flush activation signal upon detecting the user moving away from the toilet, urinal or cistern.

[0064] The flush systems in these examples do not have an external (i.e. visible) physical button to cause the toilet, urinal or cistern to flush.

[0065] In Fig 3 a schematic of two bathrooms (301A and 301B) with multiple flush systems (201, 201B-E) therein is shown. That is, in this example, a first bathroom 301A includes three flush systems (201, 201B and 201C). For example, the first flush system 201 may be a urinal and the other two flush systems (201B, 201C) may be toilets. A second bathroom 301B includes two flush systems (201D, 201E) where these two flush systems are both urinals.

[0066] A mobile electronic device 1001 is shown in the communicable vicinity of each of the flush systems. That is, the communication interface of the mobile electronic device 1001 is able

to wirelessly communicate with each communication interface 207 in each of the flush systems (201, 201B-E), subject to setting up the communication channel by the user entering the correct credentials on the mobile electronic device 1001.

[0067] In this particular example, each of the flush systems (201, 201B-E) has a unique identification. As mentioned previously the unique identification may be, for example, XYZ123, XYZ125 etc. and enables the user to determine which flush system the mobile electronic device is communicating with.

[0068] It will be understood that the unique identification may be unique to a particular bathroom facility, to a particular building facility, to a particular geographical area, to a particular product etc.

[0069] Referring to Figs 4A and 4B, examples of a graphical user interface are shown. In Fig 4A, the GUI 401A is an example of a GUI of a mobile electronic device 1001 that has successfully paired, by Bluetooth for example, with a flush system 201 that has a unique identification of XYZ123. The flush system 201 transmits via its communication interface 207 the "name" of the flush system, which in this case is "Urinal 6" to assist the user with identifying which flush system has been connected.

[0070] On the GUI (401A) a manually operable button 403 is displayed with instructions "Press button to activate flush". The processor in the mobile electronic device under operation of the software application program, detects activation of the manually operable button. For example, the software detects a finger touch (or press) on a touch sensitive screen in the area of the displayed manually operable button. Subsequent to the processor in the mobile electronic device detecting activation of the manually operable button, the processor generates a flush activation signal and wirelessly transmits or communicates the flush activation signal to the flush system XYZ123.

[0071] The communication interface 207 of the flush system 210 with ID XYZ123 receives the flush activation signal and the processor processes the received flush activation signal to determine whether the ID within the flush activation signal is the same as (or associated with) the ID associated with the flush system. Upon determining that the ID in the received flush activation signal is the same as (or associated with) the ID associated with the flush system, the processor in the flush system generates a flush activation signal to operate the flush valve. This flush activation signal therefore provides a manual override of any standard flush control (such as the timer or sensor control). Further, this flush activation signal is generated by wireless

operation of a local mobile electronic device that is in the wireless communicable vicinity of the communications interface of the flush system.

[0072] As shown in Fig 4B, a further example of a GUI (401B) is provided. In this example, the mobile electronic device detects all flush systems that are within the wireless communicable vicinity. The processor of the mobile electronic device may detect the unique identifications of each flush system that has a communications interface that is within the wireless communicable vicinity of the mobile electronic device. Further, the processor may also detect, determine or subsequently request, the “name” of the flush system.

[0073] The processor of the mobile electronic device may generate a display for displaying on the GUI (401B), where the display lists each of the detected flush systems along with their unique identification and their name. For example, a list may be provided showing:

- XYZ123 (Urinal 6)
- XYZ124 (Cistern 1)
- XYZ125 (Urinal 7)
- XYZ126 (Cistern 2)
- XYZ127 (Urinal 8)
- XYZ128 (Cistern 3)

[0074] Next to each of the displayed ID and name combinations, an option may be provided to the user to select on the GUI which of the listed flush systems 201 the user wishes to activate.

[0075] On the GUI (401B) a manually operable button 405 is displayed with instructions “Press button to activate flush”. The processor in the mobile electronic device under operation of the software application program, detects activation of the manually operable button. For example, the software detects a finger touch (or press) on a touch sensitive screen in the area of the displayed manually operable button. Subsequent to the processor in the mobile electronic device detecting activation of the manually operable button, the processor generates one or more flush activation signals and wirelessly transmits or communicates the flush activation signals to the flush systems. For example, a single flush activation signal may be

generated for transmission to all of the flush systems that were selected, where the unique identification of the selected flush systems is incorporated into the flush activation signal. As another example, multiple flush activation signals may be generated for transmission to each of the flush systems, where each signal generated is associated with only one flush system and has that flush system's unique identification incorporated into the flush activation signal.

[0076] In this example, the flush system may only be activated upon the flush system detecting its unique identification in the flush activation signal.

[0077] As an alternative, it will be understood that the GUI on the mobile electronic device may display a manually operable button, without any indication of the flush system ID. Upon the user activating the flush by touching or pressing the manually operable button, the processor of the mobile electronic device generates a generic flush activation signal that is then transmitted to all flush systems with the communicable wireless vicinity. In this scenario, all flush systems that have had their credentials previously approved on the mobile electronic device and which are in the communicable wireless vicinity (and so are able to receive the generic flush activation signal) subsequently activate their respective flush valve.

[0078] As an alternative, it will be understood that the GUI may provide instructions to press a physical button on the mobile electronic device to enable the processor to generate and transmit the one or more flush activation signals. For example, the GUI may display a description of the physical button to press, e.g. "Press the Volume Up button" or "Press the Home button". As a further example, the GUI may display an arrow "→", flashing or static, that points to the physical button to be pressed along with a displayed instruction, such as, for example, "Press the button indicated".

[0079] As an alternative, the user may be asked to approve credentials on each flush system that is in the communicable wireless vicinity after touching or pressing the manually operable button. That is, for example, the processor of the mobile electronic device may attempt to set up a communication channel (e.g. pair) with the flush systems subsequent to the operation of the manually operable button by displaying a request to the user on the GUI for the correct credentials for a specific named flush system.

[0080] Fig 5 shows a flow diagram of a process in accordance with an embodiment of the present disclosure.

[0081] The method has the steps of monitoring (S501) activation of a manually operable button on a mobile electronic device. The manually operable button is suitable for manually activating at least one flush system that does not have a physical button for activating the flush system. The at least one flush system is located in at least one bathroom facility.

[0082] Wirelessly communicating (S503) with the at least one flush system.

[0083] Detecting (S505) activation of the manually operable button.

[0084] Subsequent to detecting activation of the manually operable button, transmitting (S507) a flush activation signal to the at least one flush system for activating the at least one flush system.

### **Industrial Applicability**

[0085] The arrangements described are applicable to the bathroom facility industries.

[0086] The foregoing describes only some embodiments of the present invention, and modifications and/or changes can be made thereto without departing from the scope and spirit of the invention, the embodiments being illustrative and not restrictive.

[0087] In the context of this specification, the word "comprising" means "including principally but not necessarily solely" or "having" or "including", and not "consisting only of". Variations of the word "comprising", such as "comprise" and "comprises" have correspondingly varied meanings.

**CLAIMS:**

1. A mobile electronic device comprising a processor arranged to:
  - monitor activation of a manually operable button on the mobile electronic device,
  - wherein the manually operable button is suitable for manually activating at least one flush system that does not have a physical button for activating the flush system,
  - wherein the at least one flush system is located in at least one bathroom facility,
  - wirelessly communicate with the at least one flush system,
  - detect activation of the manually operable button, and
  - subsequent to detecting activation of the manually operable button, transmit a flush activation signal to the at least one flush system for activating the at least one flush system.
2. The mobile electronic device of claim 1, wherein the flush system is at least part of a urinal, toilet or a cistern.
3. The mobile electronic device of claim 1 or 2, wherein the processor is arranged to transmit the flush activation signal to a plurality of flush systems located in a single bathroom facility.
4. The mobile electronic device of claim 1 or 2, wherein the processor is arranged to generate a plurality of flush activation signals and transmit each of the plurality of flush activation signals to each of a plurality of flush systems.
5. The mobile electronic device of any one of claims 1 or 2, wherein the processor is arranged to transmit the flush activation signal to a plurality of flush systems located in a plurality of bathroom facilities in a single building.
6. The mobile electronic device of any one of the preceding claims, wherein the processor is arranged to display a graphical user interface that comprises the manually operable button.
7. The mobile electronic device of any one of the preceding claims, wherein the processor is arranged to wirelessly communicate with the at least one flush system by confirming credentials associated with the at least one flush system.

8. The mobile electronic device of any one of the preceding claims, wherein the processor is arranged to determine each unique identification of each flush system in wireless communication with the processor, display each determined unique identification on a display of the mobile electronic device, enable selection of one or more of the unique identifications, determine which of the unique identifications are selected, and generate a flush activation signal comprising one or more of the selected unique identifications, wherein the flush system is only activated upon the flush system detecting its unique identification in the flush activation signal.
9. A method of activating at least one flush system in a bathroom, the method comprising the steps of:
- monitoring activation of a manually operable button on a mobile electronic device, wherein the manually operable button is suitable for manually activating at least one flush system that does not have a physical button for activating the flush system, wherein the at least one flush system is located in at least one bathroom facility, wirelessly communicating with the at least one flush system,
  - detecting activation of the manually operable button, and
  - subsequent to detecting activation of the manually operable button, transmitting a flush activation signal to the at least one flush system for activating the at least one flush system.
10. The method of claim 9, wherein the flush system is at least part of a urinal, toilet or a cistern.
11. The method of claim 9 or 10 further comprising the step of transmitting the flush activation signal to a plurality of flush systems located in a single bathroom facility.
12. The method of claim 9 or 10, further comprising the step of generating a plurality of flush activation signals and transmitting each of the plurality of flush activation signals to each of a plurality of flush systems.
13. The method of claim 9 or 10 further comprising the step of transmitting the flush activation signal to a plurality of flush systems located in a plurality of bathroom facilities in a single building.
14. The method of any one of claims 9 to 13 further comprising the step of displaying a graphical user interface that comprises the manually operable button.

15. The method of any one of claims 9 to 14 further comprising the step of wirelessly communicating with the at least one flush system by confirming credentials associated with the at least one flush system.

16. The method of any one of claims 9 to 15, further comprising the steps of determining each unique identification of each flush system in wireless communication with the processor, displaying each determined unique identification on a display of the mobile electronic device, enable selection of one or more of the unique identifications, determining which of the unique identifications are selected, and generating a flush activation signal comprising one or more of the selected unique identifications, wherein the flush system is only activated upon the flush system detecting its unique identification in the flush activation signal.

17. A computer program product including a computer readable medium having recorded thereon a computer program for performing the method of any one of claims 9 to 16.