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(54) **Title**: MULTIMEDIAL WRIST DEVICE OF INTERCONNECTION AND COMMUNICATION TO AN APPARATUS FOR THE SMARTPHONE TYPE MOBILE TELEPHONY AND RELATIVE INTERCONNECTION AND COMMUNICATION SYSTEM

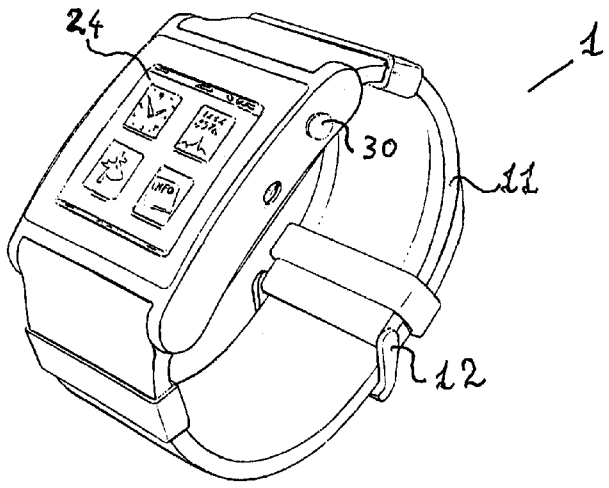


Fig. 2

(57) **Abstract**: multimedial wrist device of interconnection and communication to an apparatus for the smartphone type mobile telephony and relative interconnection and communication system able, following the activation and in *wireless* modality to interact functionally, also actively, with a mobile telephony apparatus (50) for receiving and making of the calls and management of data *files*, being provided with an hardware apparatus (20) comprising at least, reciprocally connected in a known way in order to allow its operation: a CPU (21); a RAM memory device (22); an eMMC memory device (23); a display (24) provided with a curved capacitive *touch*; a bluetooth™ module (25); a *stereo audio* Jack connector (26); a microphone (27); a loudspeaker (28);a feeding device (29); a push-button (30) whose activation allows turning on/turning/off of the wrist device (1), the standby and the restoring of the factory settings.

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MULTIMEDIAL WRIST DEVICE OF INTERCONNECTION AND COMMUNICATION TO AN APPARATUS FOR THE SMARTPHONE TYPE MOBILE TELEPHONY AND RELATIVE INTERCONNECTION AND COMMUNICATION SYSTEM

[0001] This invention relates to a multimedial wrist device of interconnection and communication to an apparatus for the smartphone type mobile telephony and relative interconnection and communication system.

[0002] The invention finds particular but not exclusive application in the sector of the industry of the production of telecommunication devices and in particular in the industry for the production of devices and accessories for the mobile telephony.

[0003] In the present technical panorama are diffused and known those mobile telephony devices prearranged in order to allow the communication between at least two users not staying at the same time in the same place. In particular those telephony devices allowing the possibility to carry out an easy transportation and maintenance of the transceiver device in proximity of the user for an immediate availability of the same device, in such a way to allow to maintain the possibility of communication also during the movements from a place to another in this way freeing the user from the need to move, for performing a remote communication, to a determined place not close to the place in which the same user stays are known. This concerns mobile telephony devices conventionally known as mobile telephones or cellular telephones. The present fast

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evolution of the mobile telephony fittings has made possible already since a long time to implement the functionalities of the mobile telephones allowing to widen their use also for the exchange of data in digital form with remote *servers*. At present the most evolved mobile communication devices are those commonly re-included under the name of *smartphone* which themselves combine in a single apparatus the functionalities of the cellular phone and of the data management devices also with multimedial content, furthermore allowing that the functionalities of said communication devices themselves may be widened through the prearrangement of specially developed applicative programs. The specific realization needs of said devices determine that their use by the user must occur by direct interaction. One among the problems found in the solutions of remote communication fittings of the portable type, the commonly known cellular phones, was that concerning the impossibility to detect the incoming calls in the case in which incidental needs would determine the suitability to keep the apparatus with silent ringtone, particularly in the case in which the apparatus itself was not in a condition visible to the user. The supposed solution to the detected disadvantage determined some companies of the sector to find solutions able to create through a remote device the possibility to be interconnected in communication with the mobile telephony apparatus (50), particularly in order to detect its calls, however remaining the present lack of known devices able to allow the receiving and the transmitting of the calls

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and to ensure an active interaction with interchange of data, also with multimedial content, between different devices.

Prior art

[0004] The known background art, of which at the moment available patent literature, involves some solutions of devices able to be interconnected in communication to a mobile telephony apparatus (50).

[0005] Between the solutions found, by way of example are cited the following ones:

D1: n. KR20000065799 (Park Sung Koo)

D2: n. KR20100130478 (LG ELECTRONICS INC.)

D3: n ITMI95001134A (FILIPPELLO).

[0006] In D1 synthetically a solution of *wireless* device is described preferably integrated in a watch support chain, which device itself is able to recognize the signals of the mobile phone when the latter receives a call, so that the user can receive an information signal of the same incoming call, providing that said signal may be of the vibration or bright type is described.

[0007] In D2 synthetically a solution of watch is described provided with a portable terminal and an operating method of the same in which the watch is made able to act as portable terminal in the case in which an event is generated in a mobile phone, being provided that the watch is arranged in a way to communicate in *wireless* way with the same mobile phone is described.

[0008] In D3 synthetically a watch is described with signal

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function of incoming call warning on cellular phone or wireless telephone, having the peculiarity to comprise receiving means intended to receive one carrier sent by the telephone exchange to said cellular phone due to an incoming call for said cellular phone, detecting and rectifying means able to detect and rectify the carrier received from the receiving means, amplification means, connected in cascade to the detecting and rectifying means and able to amplify the rectified carrier and to send it to operating means which are able to drive a motor. The motor in turn sets in rotation a weight connected to it so to create a vibration intended to make up a signalling of a waiting incoming call.

Drawbacks

[0009] All the known solutions of wrist watches able to be interconnected *wirelessly* to a mobile telephony apparatus (50) as in the known prior art have defects and/or limitations even at a different extent.

[0010] A first typical limitation of all the solutions of which at the explained known prior art, in the opinion of the applicant, consists of the detected circumstance that the devices that are its object are unable to monitor effectively the state of the of mobile telephony apparatus to which they are interconnected in communication, particularly neither resulting able to allow the user to answer directly to the calls by means of the interconnection and communication device which the wearable device or the watch is equipped with, nor allowing the making of a call performed directly

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by means of the wearable device or by the same watch.

[0011] A second typical limitation of all the solutions of which at the shown known prior art, in the opinion of the applicant, consists of the detected circumstance that these same are unable to interact actively with the apparatus of remote mobile telephony being provided for them only a receiving functionality.

[0012] Another typical limitation of all the solutions of which at the shown known prior art, in the opinion of the applicant, consists of the detected circumstance that the same ones are unable to manage, also only in a receiving modality, at least one relevant part of the advanced functionalities allowed by the current smart-phones.

[0013] An additional limitation, in the opinion of the applicant, characterizing the presently known solutions of which at the prior art consists of the impossibility of the same ones to manage multimedial *files* coming from the connected mobile telephony apparatus.

[0014] Another typical limitation of all the solutions of which at the shown known prior art, in the opinion of the applicant, consists of the detected circumstance that the same ones are unable to allow an interaction with the mobile telephony apparatus to which they are connected such as to allow the acquisition and management of services offered in remote way, as free of charge or paid, from companies of multimedial services.

[0015] Therefore there is a need from the companies of the

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sector to identify some optimal solutions to obtain the following prearranged aims.

Summary of the object of the invention

[0016] These and other aims are reached by the present invention according to the characteristics as in the included claims solving the exposed problems by a multimedial wrist device of interconnection and communication to an apparatus for the *smartphone* type mobile telephony and relative interconnection and communication system able, following the activation and in *wireless* modality to interact functionally, also actively, with a mobile telephony apparatus (50) for receiving and making of the calls and management of data *files*, being provided with an hardware apparatus (20) comprising at least, reciprocally connected in a known way in order to allow its operation: a CPU (21); a RAM memory device (22); an eMMC memory device (23); a display (24) provided with a curved capacitive *touch*; a bluetooth™ module (25); a *stereo audio* Jack connector (26); a microphone (27); a loudspeaker (28);a feeding device (29); a push-button (30) whose activation allows turning on/turning/off of the wrist device (1), the standby and the restoring of the factory settings.

Aims

[0017] By means of the considerable creative contribution whose effect constitutes an immediate technical progress aims and advantages are achieved.

[0018] A first advantageous aim is to obtain a multimedial

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wrist device of interconnection and communication to an apparatus for the *smart-phone* type mobile telephony and relative interconnection and communication system able to solve the drawbacks as in the known solutions being able to monitor effectively the state of the mobile telephony apparatus to which it is interconnected in communication, even when the same is in a non-visible or silent modality, particularly being able to allow the user to answer to the calls incoming from the mobile telephony apparatus directly by means of the wrist device without the need. to operate directly on the same mobile telephony apparatus.

[0019] A second advantageous aim is to obtain a multimedial wrist device of interconnection and communication to a *smartphone* type mobile telephony apparatus and relative interconnection and communication system able, as well as in receiving modality, to interact actively with the remote mobile telephony apparatus to which it is interconnected.

[0020] One more advantageous aim is to obtain a multimedial wrist device of interconnection and communication to a *smartphone* type mobile telephony apparatus and relative interconnection and communication system able to manage actively a lot of advanced functionalities of which at the current *smartphones*.

[0021] An additional advantageous aim consists in obtaining a multimedial wrist device of interconnection and communication to an apparatus for the *smartphone* type mobile telephony and relative interconnection and communication system able to manage

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multimedial *files* coming from the connected mobile telephony apparatus.

[0022] One more advantageous aim is to obtain a multimedial wrist device of interconnection and communication to a *smartphone* type mobile telephony apparatus and relative interconnection and communication system able to allow an interaction with the mobile telephony apparatus to which it is connected so as to allow the acquisition and management of services offered in remote, free of charge or paid, from of multimedial services supplier companies.

[0023] These, and other advantages will appear from the following detailed description of some preferred embodiments whose particulars of execution are not to be considered as limitative but only as illustrative.

Content of the drawings

Figure 1 is a view of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention in the schematizing of an interconnection to a mobile telephony apparatus (50);

Figure 2 is a view of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention in a total view;

Figure 3 is a view of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus,

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regarding the invention object of the present invention in side orthogonal projection;

Figure 4 is a view of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention in side orthogonal projection;

Figure 5 is a view of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention in top plan orthogonal projection;

Figure 6 is a view of the wrist device Jack connection of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention;

Figure 7 is a block diagram of the *hardware* apparatus of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention;

Figure 8 is a scheme of the *hardware* apparatus of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention;

Figure 9 is a scheme of the *hardware* apparatus of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the

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present invention;

Figure 10 is a scheme of the *gesture* of the wrist device of interconnection and communication to a *smartphone*, mobile telephony apparatus, regarding the invention object of the present invention;

Practical embodiment of the invention

[0024] Referring without limitation also to the figures, is being described a multimedial wrist device of interconnection and communication to a *smartphone* type mobile telephony apparatus and relative interconnection and communication system shown as an example in figure 1 in which the wrist device indicated overall with the reference number (1), includes a case (10), preferably made of metallic or plastic material, in particular aluminium, being said case (10) structured in order to result suitable to contain all the mechanical electrical and electronic devices and contrivances prearranged in order to make possible its functions of interconnection and communication to at least one mobile telephony data and voice transmitting and receiving device, usually known as *smartphone* or similar device. Conventionally, to the same case (10) is allowed the possibility to be worn by being fastened on the wrist of the user by using a watch-strap (11) of known type preferably made in silicon material and consisting of two halves conventionally engaged to the loops of the same case (10), each half of the watch-strap (11) being supplied with known closing arrangements (12) for the reciprocal hooking/release that are preferably made in steel or

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other metallic material considered as suitable in relation to the specific fitting-out of the model of wrist device (1)realized. Said case (10) of the wrist device (1), being described in the execution example, to be considered as the preferred solution, is of quadrangular type being slightly curved, the same case (10) being intended to contain an *hardware* apparatus (20), constituting the electronics of the same wrist device (1) and being, likewise the same case (10), furthermore supplied with suitable open seats, preferably positioned in correspondence of the sides, intended to allow the positioning, for the activation and the functionality, of the relative activation and function keys and/or push-buttons, of the connecting and sound reproduction devices. More in detail of the execution example described, the hardware apparatus (20) of which the wrist device (1) is provided for the operation includes, reciprocally connected in a known way in order to allow their operation, at least the following devices:

- a CPU (21), Central Processing Unit, consisting of a microprocessor of the ARM 9 freescale i.Mx233 type up to 454 MHz or higher, preferably and as an example a model ARM926EJ-S™ microprocessor;
- a RAM (22) memory device of the type with at least 64 MB *Mobile Low Power* DDR SDRAM at 166Mhz (LPDDR);
- an eMMC memory device (23) of at least 4 GB *drive*;
- a *display* (24) provided with curved capacitive *touch* preferably with high-resolution in which the bright intensity

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variation of the back-lighting is controlled through the CPU (21) being the same *display* preferably of the sizes of 1,54" with resolution of at least 240x240 *pixels*;

- a *bluetooth*™ module (25) of the V2.1 type provided with ceramic antenna and whose operative frequency is provided as being of at least 2,45 GHz;
- a *stereo audio Jack* connector (26) of 3,5 mm with 4 sections shared with USB gate;
- a piezo-electric microphone (27);
- an amplified loudspeaker (28) with maximum power of the amplifier equal to 1 Watt;
- a feeding device (29) made up of a battery of the lithium polymers type of at least 450 mAh being the sizes of the battery indicatively of 36mm length, of 20mm width and of 6mm thickness;
- a push-button (30) whose activation allows the turning on/turning-off of the wrist device (1), the *standby* and the reset of the factory settings.

[0025] Furthermore in the detail of the execution example described, the *hardware* apparatus (20) of which it is provided for the operation of the wrist device (1) object of the present invention, as represented in the block diagram of figure 7, includes a CPU (21), Central Processing Unit, consisting of a microprocessor of the ARM 9 freescale type i.Mx233 up to 454 MHz or higher, preferably and as an example a model ARM926EJ-S™ microprocessor, whose CPU (21)

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is operatively connected for the interaction, the management, the control and the processing to a RAM memory device (22) of the type at least with 64 MB *Mobile Low Power* DDR SDRAM at 166Mhz ((LPDDR)) and to an eMMC memory device (23) of at least 4GB, being the *hardware* apparatus (20), by means of the CPU (21) fed by feeding devices (29) preferably made up of a battery of the lithium polymers type of at least 450 mAh, being the feeding devices (29) activable or deactivable by means of commutation devices opportunely controlled by the push-button (30) this latter being intended to allow the turning on/turning off of the wrist device (1), the operation in standby modality and being the push-button (30) further intended to allow the reset of the factory settings of the same wrist device (1). In detail it is provided that the exerting by the user of a single pressure exerted on the push-button (30) with which the wrist device (1) is provided should result suitable to generate the activation of the same wrist device (1) or to set it in *standby* modality according to the time of pressure exerted by the user on the same push-button (30), further being provided that the exerting on the push-button (30) of a pressure prolonged for a longer time than 15 seconds, exerted during the active state of the wrist device (1), may cause the start of the reset procedure of the factory settings arranging again the wrist device (1) parameters in order to reset the functional settings of the manufacturer annulling the settings executed by the user. Furthermore, it is provided that the CPU (21) interacts functionally respectively with at least one

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microphone (27) of the piezo-electric type and with at least one loudspeaker (28) of the amplified type; a V.2,1 type *bluetooth* module (25) provided with ceramic antenna whose operative frequency is of 2,45 GHz which is itself able to interact in a known way, for the communication aims, with external compatible devices, in the execution example described, able to interact with at least one mobile telephony apparatus (50) of the *smartphone* type or the like. Even more in detail, the CPU (21) interacts functionally with a MIPI control device (31) which interacts itself functionally with the *display* (24) which same *display* (24), in order to allow the interaction of the wrist device (1) with the end-user, is of the type with curved capacitive *touch*, said *display* (24) being provided as functionally interacting with the CPU (21) through the prearrangement of a *touch* control device (32). All the single devices which make up the *hardware* apparatus (20) are of known type being, according to prior art, reciprocally interconnected for the operation on the basis of the illustrative scheme of which at figure 7 and being for executing the operation integrated in a known way with operating and function accessory devices, themselves known and usually necessary in order to allow their operation as in the example illustration they result placed in the circuit scheme as in figures 8 and 9.

[0026] More in detail of the execution example described as a preferred solution, as represented in figure 6, it is provided that the *pinout* of the stereo audio Jack connector (26) is configured in such

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a way that the 5V and GND lines result dedicated, the HP R and HP L lines result commuted in automatic way on D+ and D- with the presence of 5V on the stereo audio Jack connector (26) this latter being also used in the reloading function of the same wrist device (1).

[0027] In order to allow its operation it is provided that the hardware apparatus (20) of the wrist device (1) is instructed through the processing of appropriate *software* made up of the group of the applicative programs necessary to the operation of the same wrist device (1). It is prescribed that the software comprises at least one appropriate operating system to which is assigned the function to manage the *hardware* and *software* resources of the same wrist device (1), at the same time ensuring to the user the possibility to interface with the resources of the *hardware* apparatus (20). In the execution example described it is provided that the operating system is preferably a *custom* version derived from Android® 1.6, which operating system itself is provided able to support at least the following peripheral devices:

- the CPU (21);
- the RAM memory device (22);
- *boot* from eMMC memory device (23);
- reading and writing management from eMMC memory device (23);
- USB OTG
- audio input/output from analogue type input/output devices such

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as the microphone (27), the loudspeaker (28), the earphones;

- the loading device of the feeding device (29) of the lithium polymers cells battery;

- bluetooth™ module *driver* (25) for obtaining a *tethering* connection bearing at least the HFP, PBAP and MAP sections and their evolutions;

- *display driver* (24);

- *touchscreen driver.*

[0028] With the aim of the activation, the operating system is provided as configured to start directly from the eMMC memory device (23) this same latter being provided, to optimize the operation, to be parted as follows:

a) first "bootloader" partition dedicated to the *bootloader* in reading only partition (*read only partition*);

b) second "*kernel*" partition dedicated to the *kernel* in reading only and in writing during the *upgrade* procedure in the reading only partition and in writing during the *upgrade* procedure (*Read only partition + Write during upgrade procedures*);

c) third *"rootfs"* partition dedicated to the *filesystem* in the reading only partition and in writing during the *upgrade* procedure (*Read only partition + Write during upgrade procedures*);

d) fourth "*kernelfd*" partition dedicated to the original *kernel* to be used as *factory default* in reading only partition (*read only partition*);

e) fifth *"rootfsfd"* partition dedicated to the original *filesystem* to be used as *factory default* in reading only partition (read only partition);

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f) sixth partition, "data" folder being the relative folder dedicated at least to the applications, to the *cache* and the settings;

g) seventh partition, *"hidden"* folder which is a hidden folder in which the music passages and photos are saved when unloaded by means of the system from an authorized service supplier company providing that this folder must not result visible for the export when the device operates in mass memory function (*mass storage device*), USB or Bluetooth™;

h) eighth *"imdata"* partition which is a folder dedicated to the data relative to the user's musical *files*, visible by means of the mass memory device (*mass storage device*).

[0029] Furthermore it is provided that the operating system is able to support and recognize, through the *bootloader*, the executing by the user of a prolonged pressure on the push-button (30) of the wrist device (1). In this way, it is provided that the recognition of the impulse generated from the execution by the user of a, in relation to predetermined parameters, prolonged pressure on the push-button (30) would determine the start of the execution of an automatic procedure inside the *bootloader* by means of which may be provided the programming of the *kernel* and *rootfs* partitions starting from the *kernelfd* and *rootfsfd* copies. Moreover, it is prescribed that the operating system, should be such as to support the "*charset*" and the translations at least in the following languages: Italian, British and American English, French, German, Dutch, Spanish, Russian, traditional and simplified Chinese,

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Japanese, Korean, Polish, Czech; with this aim providing that the configuration of language selection is practicable among the turning on parameters of the wrist device (1), however the same language setting parameters being able to result selectable on the basis of the choice carried out by the user according to the selection of the same language from the configuration menu of the settings of the same wrist device (1).

[0030] The wrist device (1) of which at the object of the present invention, is provided as endowed with an operating system able to allow the adjustment of the bright intensity of the back-lighting of the display (24) provided that the system brings the display (24) brightness again at the base value of 50% of the maximum bright intensity if the user exerts a prolonged pressure approximate to 2 seconds on the push-button (30) once the wrist device (1) has been activated and is not in standby.

[0031] As the active functional interaction of the user with the wrist device (1) with the aim as much of the selection as of the activation and execution of the applications allowed occurs both in consequence of the user's action on the push-button (30) and, predominantly, in consequence of the user's action on the display (24), this latter being provided to be a tactile screen, *touchscreen*, particularly of the multitouch type, *multi-touch,* preferably of the capacitive type, it is provided that the operating system that should be able to ensure the recognition and the management at least of a series of tactile movements, *gesture*, exerted by the user on the

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screen of the display (24) executed in coherent sequence and interpretable by the system as function controls. The wrist device (1) by means of the *display* (24), in a known way, by means of the aid of the capacitive digitizer of which it is provided and of the detecting capacity of the touch point of the fingertips of the user's fingers on the surface of the display (24), through the variation of the dielectric capacity that the touch on the glass of the *display* (24) surface generates, is provided as being able to recognize and translate into controls at least the under listed *gestures* as shown in figure 10:

- "*tap*": a touch executed with the fingertip on the surface of the *display* (24)in a short-time;
- *"double tap":* two touches executed with the fingertip on the surface of the *display* (24) in a short-time and in sequence;
- *"drag":* execution of a linear movement of the fingertip moving on the surface of the *display* (24) executed in a permanent contact condition of the fingertip with the surface of the display (24);
- *"flik":* fast linear dragging movement of the fingertip on the surface of the *display* (24);
- *"press":* a touch executed with the fingertip on the surface of the *display* (24) for a protracted time period;

[0032] Furthermore, it is provided that one possible variation of the invention may include the possibility that the wrist device (1) may be able to convert into controls also the following tactile movements of *gestures* executed by the user on the *display* (24):

- *"pinch":* execution of a touch on the surface of the display (24)

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executed with the fingertip of two spaced fingers and approaching movement of the same fingers without detaching the fingertips from the surface of the display (24);

- "*spread*": execution of a touch on the surface of the display (24) executed with the fingertip of two spaced fingers and approaching movement of the same fingers without detaching the fingertips from the surface of the display (24);

- *"press and tap"*: the combination of a touch executed with the fingertip of a first finger on the surface of the display (24) for a protracted time period and of a touch executed with the fingertip of a second finger on the surface of the display (24) for a short time period;

- *"press and drag"*: the combination of a touch executed with the fingertip of a first finger on the surface of the display (24) for a protracted time period and of the execution of a moving linear movement of the fingertip of a second finger on the surface of the display (24) executed in permanent contact condition of the fingertip of the same finger with the surface of the display (24);

- *"rotate"*: execution of a circular movement on the surface of the display (24) executed respectively according to three different modalities in which a first modality provides its execution with the fingertips of two fingers that trace different trajectories on the surface of the display (24); a second modality provides its execution with the fingertip of a first finger while the fingertip of a second finger exerts a punctual pressure and, finally, a third modality

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provides its execution with the fingertips of two fingers that execute the same movement.

[0033] The wrist device (1) regarding the object of the present invention is carried out with functional aims such to allow it the possibility of connection in communication and interaction with a mobile telephony apparatus of the *smartphone* type or the like, in such a way that between the wrist device (1) and the mobile telephony apparatus is possible to operate an exchange of information and data suitable to make the wrist device (1) able, by means of bluetooth™ connection to receive and make calls and by a *tethering* connection to visualize information of data and to visualize and/or reproduce multimedial *files* also by means of *cloud computing* technology such functions being able to be managed by the user by means of graphic interface controls activable by means of at least one tactile display (24). The wrist device (1) regarding the invention object of the present invention, is therefore provided as being able to monitor in remote the compatible functions of the mobile telephony apparatus (50), *smartphone* or the like, to which it is interconnected in communication and in interaction for the acquisition and/or the exchange of data in such a way as to be able to display the information coming from the same mobile telephony apparatus (50) that will reach the wrist device (1) expressed in form of notifications at least constituting warning messages of new available data as in allowed applications. The interaction between the wrist device (1) regarding the invention and the mobile

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telephony apparatus (50) is converted in the realization of an interconnection and communication system able to execute an exchange of data in receiving and/or sending modality in such a way to allow the surveillance and the management in remote of at least part of the functions of the mobile telephony apparatus (50) interconnected in communication, at least for the receiving and for the making of a call, and furthermore also through the possibility that the mobile telephony apparatus (50) is used as a means able to allow the access in *cloud computing* modality, in *tethering*, using programs and/or saving *files* in remote, to data, services and functions supplied by services third supplier companies in free modality or in payment. As much as it concerns particularly the notifications received from the wrist device (1) in consequence of the interaction with the mobile telephony apparatus (50) to which it is connected in *tethering*, it is provided that on receiving a notification, the same wrist device (1) emits an acoustic and/or visual signal further providing that said receiving is made known to the user also through the appearance of a special icon on the state bar which still remains up to when the user intervenes to visualize its content, in such a way that elapsed a certain lapse of time in the inertia of the user, the same wrist device (1) moves to a standby condition. The user, through the action on the state bar, for each notification service of which at the allowed applications, is able to visualize the number of arrived notifications and entering the related applications is able to visualize the notifications in their whole.

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[0034] In order to allow the obtainment of the interaction with the mobile telephony apparatus, *smartphone*, to which it is provided in functional connection for the explanation of the applications that form its object and, particularly, for allowing the operativeness in receiving notifications, the possibility is provided that the wrist device (1) is periodically automatically placed in operative receiving condition also if this same should be in attenuated operating modality, for example because it is in a *standby* condition. The entry of the wrist device (1) in *standby* modality, also in order to allow its optimal management of the energetic resources related to the feeding device (29), is provided as temporized, with periodic reawakening, with the provision of a limit time at the end of which the modality of standby takes over. However, it is provided that the execution by the user of a touch on the display (24) is useful to allow the restarting of the timing cycle and the consequent time protracting of full functionality of the same wrist device (1). In the same way for the same aim of optimization of the energetic resource supplied by the feeding device (29) different operating modalities schematically shown as examples are provided as in the following:

- first modality of full function: carried out when the feeding device (29) has a charge higher than 15% and, respectively, the activation push-button (30) is maintained pressed by the user for an established time, minor than two second, with wrist device (1) off; the activation push-button (30) is maintained pressed by the user for a determined time, minor than two seconds, with wrist device (1)

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in *standby-bluetooth*™ or periodic awakening modality. In the conditions of which at the first present modality, respectively, the *bluetooth*™ module (25) is turned-on; the access is allowed to all the applications; the *display* (24) is turned-on and the audio is turned-on if required by the applications.

- second modality with turned-off display (24): executed when the feeding device (29) has a charge greater than 15% and, respectively, the time provided for passage from the modality of full function is expired; if there is the need to activate a peripheral device due to need of application. In the conditions of which at the second present modality, respectively, the bluetooth™ module (25) is turned-on; the *display* (24) is turned-off and the audio is turned-on if required by the applications.

- third modality of *"standby bluetooth™"*, executed when the feeding device (29) has a charge greater than 15% and, respectively, the time provided for the passage from the modality of full function is expired or a pressure has been exerted on the push-button (30) with the modality of full function. In the conditions of which at the present third modality, respectively, the *bluetooth™* module (25) is turned-on; the *display* (24) is turned-off; the audio is turned-off and at least some applications are maintained in the RAM memory.

- fourth modality of *"watch"*, executed when the feeding device (29) has a charge minor than 15% or the push-button (30) is pressed for an established time, minor than two seconds, from the *standby*-no *bluetooth™* modality. In the conditions of which at the fourth

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present modality, respectively, the bluetooth™ module (25) is turned-off; the *display* (24) is turned-on; the audio is turned-off and only the watch is visible.

- fifth modality of "*standby*-no *bluetooth™*, executed when the feeding device (29) has a charge minor than 15% and the watch is not visible. In the conditions of which at the fifth present modality, respectively, the *bluetooth™* module (25) is turned-off; the *display* (24) is turned-off; the audio is turned-off and at least some applications are maintained in the RAM memory.

- sixth quiescing modality, turning-off, executed when the feeding device (29) has a charge minor than 5% or the push-button (30) is pressed for an established time, longer than six seconds, from the modality of *"watch"* or of full function. In the conditions of which at the sixth present modality the wrist device (1) is turned-off only remaining the time in *real time clock*.

[0035] The realization of the functions which are performed by the wrist device (1) executed according to the technical instruction described, for being executed needs appropriate *software* package that as much as it concerns specifically the settings should allow at least: the setting of date, time and time zone; the setting of the brightness level of the *display* (24); the setting of the connection via *tethering* to the mobile telephony apparatus, *smartphone*; the setting of the preferred applications, in the example provided in a number of three; the setting of the fetch of the operating system, corresponding to the language preferred

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for applications; the setting of the duration of the interval between two consecutive awakenings in order to verify the presence of new notifications; the setting of the time of entry in *standby*; the setting of the ringers (notifications, incoming calls etc.); the setting of the characteristic parameters of the applications.

[0036] Furthermore it is provided that the wrist device (1) which is the object of the present invention, can manage and perform some applicative *softwares* executed by means of the processing which can be done by the operating system and the hardware apparatus (20). The wrist device (1) regarding the object of the present invention due to and through the hardware apparatus (20) and to the *software* programs that are installed in it allows the explanation of a lot of functions, applications, which same may as much be activated by the user at his will as, if their presetting should result appropriate, also result in automatic execution. The action of the user on the push-button (30) through the action that this latter exerts on the feeding device (29), which same provides in a known way to feed the devices of the hardware apparatus (20), allows the activation of the different devices and of the functionalities of the wrist device (1). More in detail, the activation of the wrist device (1) allows to activate the interaction, in *wireless* modality, by means of bluetooth™ connection and *tethering*, of the same wrist device (1) with the mobile telephony apparatus (50), particularly smartphone or similar device, of the same user in such a way that in *wireless* modality, by means of the bluetooth module

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(25) the communication between the wrist device (1) and the mobile telephony apparatus (50), smartphone, allows the user the receiving and the making of the calls, while through the *tethering* connection, the interaction in remote with the mobile telephony apparatus (50) is provided in order to monitor its determined functions and to interact with this same, for executing the data exchange and multimedial functions, directly by means of the wrist device (1) without the need to operate on the mobile telephony apparatus (50) that can also be kept in hidden position and in silent modality or in *standby*, but not completely turned-off, by the user.

[0037] The user acts in selecting and activating the various functions available on the wrist device (1) both through the action on the push-button (30) and, mainly, through the exertion of a suitable pressure on the display (4) by the execution of the *gesture* controls, in such a way that the execution of said controls by the user allows the wrist device (1), by means of the hardware apparatus (20) and software which it is endowed with, the execution of the applications supported and executable by the same wrist device (1). In order to allow the interaction between the user and the wrist device (1) in control of the allowed functions and applications, it is provided that the display (24) is able to display alphanumeric information and icons, in particular, in the execution example being described, the main screen-shot provides the visualization preferably of at least the battery charge state; the time and/or the date; an icon indicating the weather conditions of a place predefined

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by the user, an icon indicating the receiving of messages, an icon indicating the index-book, an icon indicating the telephone call. Furthermore, it is provided that on the display (4) making visible all information as much of graphic interface as of communication of the data sent from the mobile telephony apparatus (50)is possible.

[0038] The wrist device (1) regarding the object of the present invention, once activated, allows the user to activate and execute at least the following base applications so as conventionally called:

- *"Watch":* analogic watch application;
- *"Calls":* application that manages the telephone calls allowing their receiving and execution by means of the interaction between the wrist device (1) and the mobile telephony apparatus (50);
- *"Address book":* application that allows to visualize the telephone index-book of the of mobile telephony apparatus (50) by *bluetooth™* protocol;
- *"Email":* application that allows to visualize the e-mails present on the mail server with imap protocol. Its operation is managed by means of notifications by *cloud*;
- *"Weather":* application that manages the weather forecasts. The operation is managed by means of notifications by the *cloud*;
- *"imarket":* application that manages the *download* and installation of the applications purchased from an authorized site. The operation is managed by means of notifications by the cloud;
- *"imusic":* application that manages the *download* and the reproduction of musical passages supplied for means of a site of an

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authorized services supplier;

- *"Facebook©"*: application that allows the vision of the Facebook© messages or alike *social networks*. Its operation is managed by means of notifications by the *cloud*;

- "Photo": application that allows the visualization of the images present in a suitable folder. The operation is managed by means of notifications by the *cloud*;

- "Appointments": application that allows to visualize the calendar present on *google calendar©* or the like. The operation is managed by means of notifications by the *cloud*;

- "Twitter": application that allows the vision of the *Twitter* messages or the like. The operation is managed by means of notifications by the *cloud*.

- "Stock market": application that allows to visualize the state of the stock market by the interaction of the wrist device (1) of which at the object of the present invention with the mobile telephony apparatus (50). The operation is managed by means of notifications by the *cloud*;

- "News": application that allows to visualize the *news* of *google*. The operation is managed by means of notifications by the *cloud*;

- "sms": allows to visualize directly on the wrist device (1) the SMS received from the connected mobile telephony apparatus (50).

[0039] The possibilities for the wrist device (1) of which at the present invention to convert into effective operativeness each of the single above listed applications is necessarily strictly dependent on

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the characteristics and functions of the smartphone type mobile telephony apparatus (50), with which it interacts, such as by way of example: the presence of Bluetooth™ HFP, PBAP and MAP sections; the typology of the SIM contract stipulated from the user and the possibility to have access to the services supplied by service third suppliers.

[0040] Furthermore, with the aim of the operation, in particular for ensuring the possibility to receive and make calls, the wrist device (1) functions as auricular bluetooth™, said function being permanent when the relative function is enabled by the software that allows it the same function being carried out by using the bluetooth™ Head Set Profile (HSP) and Hand Free Profile (HFP) profiles. With the same aim of making the calls, the synchronization of the index-book is executed by means of the PBAP profile, being the listening of the call and the sending of the voice allowed by means of monosampled signal at 8kHz resulting enabled the audio exit on loudspeaker (28) and microphone (27) also independently on presence of external earphone devices.

[0041] The multimedial functionalities which the wrist device (1) can perform and the interconnection and communication system that it carries out with the mobile telephony apparatus (50) with which it interacts, form the basis for the provided need that the same may allow the export of data to an outside computer to which it can be connected by means of USB fetch, in this way the same wrist device (1) acts as a mass memory device relatively to the

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dedicated data folder of which at the eighth partition of "imdata, being during said step, the mentioned eighth partition at exclusive use of the remote computer. The described mass memory device functionality also allows the explanation of the carrying out of the *software* updates.

[0042] The interconnection and communication system effected by means of the wrist device (1) regarding the object of the present invention, in order to make operatively utilizable its functions provides their preliminary activation through the exerting by the user of a pressure on the turn-on/turn-off push-button (30), exerted for a predetermined time in such a way to determine, in a known way, the feeding and activation of the *hardware* apparatus (20) allowing the user to proceed with the configuration of the same wrist device (1) and to its complete use entering the applicative functionalities. In the described execution example, different times of execution of the pressure on the turn-on/turn-off push-button (30) by the user allow the activation of the wrist device (1) in different modalities, or the deactivation of the same depending on the state in which the latter stays. In particular, it is provided that the exerting by the user of a pressure exerted up to two seconds on the push-button (30) with turned-off wrist device (1) would determine its full activation while in a condition of full activation the exerting of the user of a pressure on the push-button (30) exerted for a time until two seconds; between three and the five seconds and longer than five seconds, determines to put the wrist device (1)

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respectively in *stand-by* condition, in a condition of the display attenuated brightness (24) and, finally, in a turn-off condition. Furthermore, the exerting by the user of a pressure on the push-button (30) exerted for a time up to two seconds with the wrist device in *stand-by* condition determines its complete activation, providing that the exerting by the user of a pressure on the push-button (30) exerted for more than fifteen seconds with the wrist device (1) turned-off determines its reset to the factory settings.

[0043] During the first turning-on of the wrist device (1) it is provided that the user should proceed, as indicated previously, by exerting a pressure on the push-button (30) for a time of two seconds after which the same wrist device (1) is activated passing from the inactive modality, due to the device turning-off, to the active modality, of turning-on of the wrist device (1) in such a way that the same is made able to interact functionally with the user's controls. More in detail, the first turning-on of the wrist device (1) involves the need from the user of proceeding to its configuration. In particular, the activation of the wrist device (1), determining the possibility for the user to interact with the same wrist device (1) thanks to the execution of *gesture* controls exerted by the user on the *display* (24) in correspondence of the icons and of the different controls of which at the graphic interface, allows the same user to be able to execute the required setting consisting in selecting the preferred language among the available languages, providing that after the selection of the preferred language, the user will be asked

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to set respectively the time zone, the date and the time. More in detail of the execution example described, the screen-shots of the previously described settings respectively consist in: for setting the language of use from a series of icons representing the flags of the different states among which choosing the preferred language is possible, while for the setting of time zone, date and time the reference screen-shots are defined in such a way to comprise some control icons with the symbols "+" and "-" between which appears the indication respectively indicating: the time zone; the year in format "yyyy"; the month and the day in format "mm/dd"; the time in format "hh:mm", in such a way that the user can proceed to the relative adjustments by increasing or decreasing the value shown depending on the pressure exerted on the control icons "+" or "-". Following the execution of the setting of language, time zone, date and time, it is provided that the user, in order to allow the same wrist device (1) to make available and utilizable the applications which it owns, should be registered with an authorized service company in order to activate the applications in *cloud computing* modality, an operation that is provided to occur by insertion of an univocal authentication number assigned to each wrist device (1) and that is provided as being made visible to the user on his own display (24), once completed the previously described operations of setting of language, time zone, date and time.

[0044] More in detail, in order to be able to proceed with the required registering, it is provided that a screen-shot appears on the

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display (24) indicating the activation alphanumeric code, the screen-shot further including the active icon representing the "*continue*" control whose activation by the user by exerting at least one pressure on the same, at least the "TAP" or "PRESS" *gesture*, determines the registering at the internet site of the authorized service company and the following visualization of the screen-shot "home". Executed the registering step the wrist device (1) for the complete functional activation needs that also the *Bluetooth™* connecting settings are configured, for the connection to the apparatus of the smartphone type mobile telephony (50). Since the time in which also this latter operation will be executed the wrist device (1) is placed in the condition to be connected in *cloud computing* modality, in *tethering*, with the network of services prearranged by the authorized service company, from that time the available applications becoming fully utilizable by the user, being the same wrist device (1) enabled to execute the synchronization of the data contained in the mobile telephony apparatus (50) with which it is connected. Following the registering step, the user has access to the "home" screen-shot in such a way to be able to activate the *Bluetooth™* connection and to have access to the setting menu. The access to the screen-shot of the setting menu is executed by the user, starting from the "home" screen-shot by *gesture* movement in order to have the fingers slide on the *display* (24) from right to left. Through the setting menu it is provided that the user is enabled at least to: 1) manage *Bluetooth™* devices; 2)

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execute changes of the background; 3) manage the notification centre; 4) personalize the fast applications; 5) personalize the preferred applications; 6) manage the ringers; 7) modify the time and the date; 8) set the brightness of the display (24); 9) visualize the information of the wrist device (1). Further it is provided that in the case in which the user proceeds with the execution of a "TAP" or "PRESS" *gesture* movement by exerting a pressure on the icon of an application that requires the *Bluetooth™* configuration and the *cloud computing* modality, are activated on the display (24) of the wrist device (1) the following screen-shots in sequence: a) screen-shot of Bluetooth™ setting; b) correct setting confirming screen-shot; c) registering to the site of the authorized service company; d) validation of executed registering screen-shot; e) executed registering confirming screen-shot; f) "home" screen-shot. The "home" screen-shot allows the user to be able to execute the following operations: 1) visualization of the notifications panel; 2) visualization of the user's preferred applications; 3) visualization of the e-mails; 4) visualization of the index-book; 5) making of the calls; 6) visualization of the pages of the settings.

[0045] More in detail, in the execution example described, through the *"home"* application the wrist device (1) allows the visualization of the present time and date in digital format, providing that the related information, in the example, is shown in correspondence of the central area of the display (24), immediately over which area the *"home"* application allows the visualization of

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the temperature and, if the data is available in *cloud computing* modality, the weather forecasts in brief for the present town. Furthermore, it is provided that the *"home"* application includes the visualization of the state bar which makes visible to the user the necessary information to monitor the operating state of the wrist device (1), among which at least the indication of the battery charge state, of the Bluetooth™ modality, of the receiving power, providing that the state bar is visualized without the time option. Furthermore, it is provided that the user by a "DRAG" *gesture*, executing a right to left movement, starting from the point in which the digital watch is shown, is enabled to have access to the screen-shots of the preferred applications, which in the example, are in a number of four each containing the active icons of four applications. Always through the "home" screen-shot, by carrying out a "DRAG" *gesture* movement carried out from left to right starting from the point in which the digital watch is shown, the user is allowed to have access to the configuration applications of the wrist device (1). A "FLICK" *gesture* movement executed by the user transversally from the bottom angle on-the-left to the top angle on-the-right of the *display* (24) allows the return to the "home" screen-shot.

[0046] The different applications that characterize the functionalities of the wrist device (1) regarding the object of the invention include in the first place the permanently available applications, of default, among which is included the application that allows to show the time in such a way that on the display (24)

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results visible the display of a watch in analogue format with date and time the display of the seconds not being provided. Furthermore it is provided that the update of the watch is carried out in automatic each minute. In order to allow the information visualization it is provided that the *display* (24) provides two areas of different size of which a first one reserved to the state bar, in the example having size of 240x30 pixel below which the remaining area of the *display* (24) is provided of size 240x210 pixel in this area being provided the visualization of all the further information that is not contained in the state bar. In order to allow the user to have access to the notifications coming from the mobile telephony apparatus (50), *smartphone*, to which the wrist device (1) is connected in *tethering* modality, it is provided that the wrist device (1) is able to understand a "DRAG" *gesture* downward movement exerted by the user on the state bar as a control for opening the notification panel, after which opening appears a screen-shot on which the list of the notifications received by the same wrist device (1) is visualized. The selection executed by the user of a notification-element, by means of at least one "TAP" *gesture,* determines the start of the application that detected the notification. The state bar, in the example described, contains at least one of the icons indicating the battery charge state, the bluetooth™ connection state and the notifications folder with indication of the number of notifications received.

[0047] In order to allow its reading independently on the

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existing light conditions, in the execution example described, it is provided that the background on which the time appears is in a black colour being the time indication in a white colour considering that the time indication may be as much in analogic format with the reproduction of a dial and of the hands, as in digital being numerically expressed.

[0048] The wrist device(1) of which at the present invention is provided to be possibly configured in such a way that the main *"home"* screen-shot iconizes at least three applications selected by the user as the preferred ones, which same icons, in the example, are provided as positioned below the space intended to visualize the watch. In this way, occurs the activation of the applications iconized in the main "home" screen-shot, that are immediately utilizable by the user by executing the conventional "TAP" gesture on the *display* (24). The selection of the preferred applications and of fast activation iconized in the "home" screen-shot is allowed to the user by resorting to the setting menu. Operatively, the access of the user to the preferred applications is allowed through the operation of *gesture* "DRAG" consisting in the sliding action of the user's fingers on the display (24) with a movement from right to left and likewise to allow the passage to the following screen-shot, providing an inverse movement for returning to the previous screen-shot. In this section, it is provided that may be visualized and activated further applications that might be supplied by a third services supplier company enabling them by acceding to the setting menu. For the

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start of the applications it is provided that the user should execute at least one movement of "TAP" *gesture*, with the fingers on the icon indicating the chosen application, providing that when exiting from the application is sufficient that the user makes a "FLICK" *gesture* movement sliding swiftly the fingers on the display (24) from the bottom angle on-the-left to the bottom angle on-the-right, in this way it is possible also the return to the main "home" screen-shot.

[0049] The user, by means of the application of the calls management, "CALLS", is enabled to manage the incoming and outgoing calls practicable by the same wrist device (1). More in detail, the application "CALLS" is provided to be maintained permanently active during the operation of the wrist device (1) in order to allow the receiving of the incoming calls. As much specifically concerns the outgoing telephone calls they are accessible by means of the dialling menu which includes a screen-shot ideally reproducing the dialling keyboard of a conventional mobile phone.

Pushing the different numbers it is possible to dial a number at will. The number 0 is overloaded also of the symbols "+", "*" and "#" accessible by means of the carrying out of a "PRESS" *gesture* control actuating the maintenance for a certain time of the exerting of a pressure on the relative control icon. Furthermore there is provided the possibility that the user is in the condition to proceed to the carrying out of the call also directly from the index-book. In such a case, following the prolonged pressure (**PRESS**) on an object of the

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index-book the call is started in automatic. To the same aim of the carrying out of a call it is provided that a double pressure (**DOUBLE TAP) on the** dialling bar opens the index-book. It is therefore selectable the number to dial among the contacts contained in the index-book of the mobile telephony apparatus, smartphone, to which the wrist device (1) is connected. In the latter event, due to a gesture "PRESS" of prolonged pressure exerted on an object of the index-book it is possible the automatic start of the call. Further modality of execution of the call allowed by the wrist device object of the present invention is that allowed to the user to dial manually the desired number in such a way that the execution of the call can follow the gesture "PRESS" executed on the icon of the "CALL" key. A movement of "TAP" *gesture* on the icon reproducing the key "*Cancel*" removes the last character from the dialling bar, while the execution of a "PRESS" *gesture* movement on the icon reproducing the key "*Cancel*" removes the whole content of the bar. Just as a call is started the synthetic screen-shot is shown wherein are reported the following data:

· Name correspondence in index-book if present;

· Called/calling telephone number if not present in index-book;

· Conversation length mm:ss updated every second;

· End key for closing the call.

[0050] In the case in which the call is ended for any of at least the following reasons: pressure of icon reproducing the key "end",

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interruption due to *timeout* of the call, called ended from the other user or occupied called number, it is provided that on the *display* (24) of the wrist device (1) appears the page preceding the call. Furthermore, it is provided that during any call the system does not search new notifications. In summary it is provided that if the user wants to have access to the calling functions he should select the icon representing the "telephone" present in the screen-shot "*home*", in this way the user being put in the condition to be able to call a number selected from the index-book or to dial directly the number to be called. In case, instead of an incoming call, it is provided that on the display (24) of the wrist device (1) the screen-shot that allows to answer by using the speaker-phone modality will open automatically. In order to execute a call or for a mere consultation the user is enabled, by the wrist device (1) regarding the invention, to have access to the index-book present on the mobile telephony apparatus (50), smartphone, of the same user, by means of bluetooth™ connection and PBAP profile, because it is provided that the index-book is not permanently loaded on the wrist device (1) but it can be consulted when necessary.

[0051] In order to allow the user to execute the volume adjustment of the calls, it is provided that the same occurs by means of a suitable icon activable by acting with a *gesture* movement on the state bar in such a way to allow the appearance on the display (24) of an icon showing a "*seekbar*" intended to allow the setting of the single volumes depending on the use application. The

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application that allows to adjust the volume is configured with a *timeout* of few seconds from the last pressure for the exit, providing that during the exit the volume value is saved, furthermore being provided that the adjustment of the volumes will be recallable from the multimedial and call player applications.

[0052] The application that allows the wrist device to show photos on the *display* (24) provides the possibility to zoom the photo, being provided that the images are loaded by means of *download* from the *cloud* and that they are of appropriate dimension, such that their loading would not prevent or limit heavily the use of the different applications.

[0053] The wrist device (1) provides an application able to visualize weather forecasts by means of *cloud*. More in detail to have access to the "weather" application the user is required to select the "weather" icon present in the preferred applications screen-shot. To know the weather of other towns is necessary that the user executes a "DRAG" *gesture* with a movement that provides the sliding of the fingers on the *display* (24) from right to left, while to go back to the starting weather forecasts it is necessary to execute a movement of "DRAG" *gesture* that provides the sliding of the user's fingers on the display (24) from left rightward. The notification of the weather forecasts is provided to be based on the selection, in *cloud* modality, operated by the user, of four preferred towns. In the example described, every hour or its multiple according to the parameter set on the server, there is provided the sending of a notification

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comprising at least the following information:

· preferred towns name;

· symbol representing the main weather condition according to the most frequent weather conditions;

· indication of the current temperature;

· 3 days *forecast* with symbol only.

[0054] The wrist device (1) provides an application able to show news, "news", by means of *cloud*. More in detail to have access to the news is sufficient to select the icon "news" present in the screen-shot of the preferred applications. Such application allows to visualize the list of the news. If the user executes at least a "TAP" *gesture* movement on the notification of the news title, he will be enabled to read its whole text. Even more in detail, the notification system of the *"news"* is represented by means of a list consisting of the time and of the message content with maximum limit of characters.

[0055] The wrist device (1) provides an application able to visualize some news on the stock market trend, "stock market", by means of *cloud*. More in detail to have access to the stock market news selecting the icon "stock market" present on the screen-shot of the preferred applications is sufficient. This application allows to visualize the list of the stock market news. If the user executes at least a "TAP" *gesture* movement on the notification of the title of the stock market news, he will be enabled to read the whole text. Even more in detail, the notification system of the stock market news is

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represented by means of a list consisting of the time and of the message content with a maximum limit of characters.

[0056] The wrist device (1) provides an application able to visualize some *e-mails* by means of *cloud*. The notification system of the mails is based on the mails received on an e-mail *account* with IMAP protocol. To have access to the notifications of the e-mails it is necessary to select the "*email*" icon present in the "home" screen-shot, in this way the user is allowed to visualize the sender and the object of the email. More in detail it is provided that the correct formatting of the data package that is received by means of notification occurs by means of the *cloud*, being the receiving of the mail notifications made up of at least the information containing the sender's name, the sending date and time and the mail object.

[0057] The wrist device (1) provides an application able to visualize some Facebook© notifications by means of *cloud*. To have access to the Facebook© notifications it is sufficient to select the Facebook© icon present in the screen-shot of the preferred applications. This application allows to visualize all the Facebook© notifications as requests of friendship or messages. Even more in detail, it is provided that the correct formatting of the data package that is received by means of notification occurs by means of the *cloud*, being the receiving of the Facebook© notifications subdivided at least in the categories of message, requests of friendship, poke and notice-board notifications.

[0058] The wrist device (1) provides an application able to

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visualize some *Twitter©* notifications by means of *cloud*. To have access to the *Twitter©* notifications selecting the "*Twitter©*" icon present in the screen-shot of the preferred applications in such a way to allow the visualization of the sender and the "*tweet*" is necessary. Even more in detail, it is provided that the correct formatting of the data package that is received by means of notification occurs by means of the *cloud*, the receiving of the *Twitter©* notifications including at least the information containing the name of the sender, the sending date and time and the text of the notification with a maximum limit of characters.

[0059] The wrist device (1) provides a "music" application, able to reproduce musical passages being the relative application an mp3 reader that also controls the *download* function of the wanted passages. The user, in order to select the musical passages to be reproduced needs to execute the connection, in *cloud*, with the service authorized company entering with his own registering account the relative company section. Following the selection of the preferred musical passages, they will be sent as notification to the wrist device (1) so as to allow their reproduction. Furthermore, the wrist device (1), being able to be connected to a computer allows to transfer its same musical passages. Specifically, the "music" application that allows the reproduction of musical passages, is provided consisting of two modules of which a first module includes a *software* specifically dedicated to the passage *download* starting from a URL and a second module comprising a software specifically

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dedicated to the reproduction of an audio content.

It is provided that the selection of the preferred musical passages occurs at a level of *Web* page of the *cloud*, by means of connection to the site of an authorized service company. Following the purchase of one or more musical passages there is provided that a notification is sent to the wrist device (1). Following the receiving of a notification with the data of the musical *file*, the system is provided to send the same to the *download* managing company to download the audio file in the "HIDDEN\MUSIC" folder. Once completed the *download* of the musical *file* this is added to the *playlist* in automatic.

[0060] Furthermore, the wrist device (1) object of the present invention provides an application able to proceed to the acquisition of further applications that should be specially developed successively to the present prior art about the invention consisting of the present description. With such an aim, it is provided that the application, conventionally called "market", that allows the user to make utilizable further applications with respect to the current ones supplied with the wrist device (1) regarding the invention, can be activated by the user by the access through his own registering account executed at the site of the authorized services company. Once executed the connection to the site of the authorized services company, the user is provided to be enabled to choose the preferred application to be installed on the wrist device (1) and following such a choice, the user is provided to be able to use it by means of the

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execution of the installation operations that will reach the same wrist device (1) by means of notifications. Specifically, the "market" application is provided as consisting of two modules of which a first module includes a *software* specifically dedicated to the *download* of the applicative and a second module comprising a *software* specifically dedicated to the installation of an application. Furthermore it is provided that an analogue application that is present on the mobile telephony apparatus (50), *smartphone*, to which the wrist device (1) is connected in communication, cannot execute functions of authorization, profiling or payments.

[0061] Further application feasible by means of the wrist device (1) object of the present invention is that of, "appointments", able to allow the user to fix and manage appointments the access to this application being allowed to the user by means of the selection of the "appointments" icon that appears as contained in the screen-shot of the preferred applications. Through the appointments application the user is allowed to visualize a list of activity chronologically ordered. In order to allow the user the setting of the appointments, ordered by day, week or month, there the need is provided to have access to the menu of the settings. The operation that leads the user to visualize the periods successive to the starting one is executed by means of a "FLICK" gesture making a sliding movement of the fingers on the surface of the display (24) from right towards the left, while to go back to the visualization of the period preceding that visualized at present by the user it is provided

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that the direction of the movement to execute is from left rightward. More in detail, it is provided that the application of the appointments finds its origin in a source external to the wrist device (1), in the example being based the on the calendar application of Google™. Further it is provided that the visualization of the "appointments" application is configurable with setting modalities comprising the daily, weekly, and monthly modality. In order to optimize the system resources, the appointments are quantitatively limited, in the example up to a maximum of twenty, providing that the same appointments are maintained in memory for a limited period of time, in the example said period of time being, from the current day, limited to three months. Furthermore it is provided that the visualization of the appointments is comprised in a list comprising at least information regarding the date, an indication of the initial and final time, being the message text that is possible to memorize in correspondence of the appointment with a limited number of characters. In order to make the events visible "scroll" actions vertically and horizontally effected by *gesture* movements executed on the display (24) are allowed.

[0062] One possible variation of the invention provides the possibility that the wrist device (1) is enabled to support an application for the visualization of the incoming *sms* on the compatible mobile telephony apparatus, smartphone. With the aforesaid aim, it is provided that the compatible mobile telephony apparatus (50), smartphone, supports the MAP Bluetooth™ profile.

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[0063] Another possible variation of the invention is conceived in such a way that, in order to allow the rationalisation of the management of the applications, by means of the operating system, by means of the attributing of a *voting* system to the applications depending on the use frequency that has been done of it, is allowed the closure in automatic of the applications used with less frequency, remaining, however, the possibility of reset.

REFERENCE

(1) wrist device

(10) case

(11) watch-strap

(12) closing device

(20) hardware apparatus

(21) CPU

(22) RAM memory device

(23) sMMC memory device

(24) display

(25) bluetooth™ module

(26) stereo audio Jack connector

(27) microphone

(28) loudspeaker

(29) feeding device

(30) push-button

(31) MIPI control device

(32) touch control device

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(50) mobile telephony apparatus

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CLAIMS

1. Multimedial wrist device (1) of interconnection and communication to a smartphone type mobile telephony apparatus and relative interconnection and communication system of the type able to allow a *wireless* connection to a mobile telephony apparatus and to receive the incoming call warnings **characterised in that** the wrist device (1) allows the connection in communication and interaction with a smartphone type or the like mobile telephony apparatus, in such a way that between the wrist device (1) and the mobile telephony apparatus to operate an exchange of information and data enabling the wrist device (1) to monitor in remote the compatible functions of the mobile telephony apparatus (50) to which it is connected is possible, allowing by means of bluetooth™ connection at least to receive and execute calls and by means of *tethering* connection at least to visualize data information and to visualize and reproduce *files* also multimedial and also by means of *cloud computing* technology; such functions being able to be managed by the user on the wrist device (1) by means of graphic interface controls activable by means of at least one tactile display (24).

2. Wrist device (1) according to claim 1 **characterised in that** the information coming from the mobile telephony apparatus is received by the wrist device (1) in the form of notifications and that the receiving of a notification is made known to the user at least through the appearance of an icon on the display (24).

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3. Wrist device (1) according to at least any of the preceding claims **characterised in that** the wrist device (1) is provided with an *hardware* apparatus (20) comprising, reciprocally interconnected for the operation, at least the following devices:

- CPU (21);
- MMC memory device (23);
- *display* (24) with curved capacitive *touch*;
- *bluetooth*™ module (25);
- *audio Jack* connector (26) shared with USB gate;
- microphone (27);
- loudspeaker (28);
- feeding device (29);
- push-button (30) whose activation allows at least the turning-on/turning-off of the wrist device (1).

4. Wrist device (1) according to the previous claim **characterised in that**:

- the CPU (21) consists of a microprocessor of the type ARM 9 freescale i.Mx233 up to 454 MHz or higher;
- the RAM memory device (22) is of the type at least with 64 MB Mobile Low Power DDR SDRAM at 166Mhz (LPDDR);
- the eMMC memory device (23) is of at least 4 GB *drive*;
- the display (24) is provided with high-resolution curved capacitive touch in which the bright intensity variation of the back-lighting is controlled through the CPU (21) being the resolution of the same *display* (24) of at least 240x240

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pixels;

- the *bluetooth*™ module (25) is V2.1 type provided with ceramic antenna whose operative frequency is provided to be of at least 2,45 GHz;
- the stereo audio Jack connector (26) is of 3,5 mm with 4 sections shared with USB gate;
- the microphone (27) is of the piezo-electric type;
- the loudspeaker (28) is of the type amplified with amplifier maximum power equal to 1 Watt;
- the feeding device (29) consists of a battery of the lithium polymers type of at least 450 mAh;
- the push-button (30) also allows the *standby* and the resetting of the factory settings.

5. Wrist device (1) according to at least any of the preceding claims **characterised in that** the CPU (21) interacts functionally with at least one MIPI control device (31) which itself interacts functionally with the *display* (24), said *display* (24) being provided to be functionally interacting with the CPU (21) through the prearrangement of at least one *touch* control device (32).

6. Wrist device (1) according to at least any of the preceding claims **characterised in that** the *pinout* of the audio *Jack* connector (26) is configured in such a way that the 5V and GND lines result dedicated, the HP R and HP L lines result commuted in automatic way on D+ and D- with the presence of the 5V on the audio *Jack* connector (26) and that the latter itself is also used in the reloading of the wrist

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device (1).

7. Wrist device (1) according to at least any of the preceding claims **characterised in that** to allow the receiving of the notifications the wrist device (1) periodically is automatically put in a condition of receiving *operativeness* also in case it should be in attenuated operating modality for *standby*.

8. Wrist device (1) according to at least any of the preceding claims **characterised in that** the entry of the wrist device (1) in *standby* modality is temporized, with periodic awakening, with the provision of a limit time at the expiry of which the standby modality takes-over and furthermore, the executing by the user of a touch on the *display* (24) is worth to allow the restarting of the timing cycle.

9. Wrist device (1) according to at least any of the preceding claims **characterised in that** at least the following operating modalities are allowed:

- first full function modality: executed when the feeding device (29) has a charge higher than 15% and, respectively, the activation push-button (30) is maintained pressed by the user for an established time, minor than two seconds, with turned-off wrist device (1); the activation push-button (30) is maintained pressed by the user for a determined time, minor than two seconds, with wrist device (1) in *standby-bluetooth*™ modality or periodic awakening and in which in such conditions of which at the present first modality, respectively, a) the bluetooth™ module (25) is turned-on; b) the access is allowed to all the applications; c) the *display* (24) is turned-on and the audio

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results turned-on if required by the applications.

- second modality with turned-off display (24): executed when the feeding device (29) has a charge higher than 15% and, respectively, the time provided for the passage from the full function modality is expired; there is the need to activate a peripheral device due to need of application, in which in the conditions of which at the present second modality, respectively, a) the bluetooth™ module (25) is turned-on; b) the *display* (24) results turned-off and the audio results turned-on if required by the applications.

- *"standby bluetooth"* third modality, executed when the feeding device (29) has a charge higher than 15% and, respectively, the time provided for passage from the full function modality is expired or a pressure on the push-button (30) has been exerted from the full function modality in which in the conditions of the present third modality, respectively, a) the *bluetooth™* module (25) results turned-on; b) the *display* (24) results turned-off; c) the audio results turned-off and at least some applications are kept in the RAM memory.

- fourth modality of *"watch"*, executed when the feeding device (29) has a charge minor than 15% or the push-button (30) is pressed for an established time, minor than two seconds, from the *standby*-no *bluetooth™* modality in which in the conditions of the present fourth modality, respectively, a) the bluetooth™ module (25) is turned-off; b) the *display* (24) is turned-on; c) the audio results turned-off and the watch only is visible.

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- fifth modality of "*standby*-no *bluetooth*™, executed when the feeding device (29) has a charge minor than 15% and the watch is not visible, in which in the conditions of the present fifth modality, respectively, a) the *bluetooth*™ module (25) results turned-off; b) the *display* (24) results turned-off; c) the audio results turned-off and at least some applications are kept in the RAM memory.

- sixth quiescing, turn-off modality, executed when the feeding device (29) has a charge minor than the 5% or the push-button (30) is pressed for an established time, greater than six seconds, from the "watch" or full function modality, in which in the conditions of the present sixth modality the wrist device (1) results turned-off only remaining the time maintenance in *real time clock*.

10. Wrist device (1) according to any of the preceding claims **characterised in that** the wrist device (1), once activated, allows the user to activate and execute at least one of the following applications:

- "Watch": analogic watch application;

- *"Calls":* application that manages the telephone calls allowing their receiving and the executing by means of the interaction between the wrist device (1) and the mobile telephony apparatus (50);

- *"Address book":* application that allows to visualize the telephonic index-book of the mobile telephony apparatus (50) by *bluetooth*™ protocol;

- "*Email":* application that allows to visualize the e-mails present on the mail server with IMAP protocol whose operation is managed by

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means of notifications from the *cloud*;

- *"Weather":* application that manages the weather forecasts whose operation is managed by means of notifications from the cloud;

- "imarket": application that manages the *download* and the installation of the applications purchased by means of an authorized company's site whose operation is managed by means of notifications from the *cloud*;

- *"imusic":* application that manages the *download* and the reproduction of musical passages supplied by means of an authorized company's service site;

- "*Facebook*©": application that allows the vision of the Facebook© messages or analogous *social networks*, whose operation is managed by means of notifications from the *cloud*;

- "Photo": application that allows the visualization of the images present in an appropriate folder, whose operation is managed by means of notifications from the cloud;

- "Appointments": application that allows to visualize the calendar present on *google calendar*© or the like, whose operation is managed by means of notifications from the cloud;

- "Twitter": application that allows the vision of the *Twitter* messages or the like whose operation is managed by means of notifications from the cloud.

- "Stock market": application that allows to visualize the state of the stock market, whose operation is managed by means of notifications from the cloud;

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- "News": application that allows to visualize the *news* of *google*, whose operation is managed by means of notifications from the cloud;

- "sms": allows to visualize directly on the wrist device (1) the SMS received from the connected mobile telephony apparatus (50).

11. Wrist device (1) according to any of the preceding claims **characterised in that** the wrist device (1), executes the function of auricular bluetooth™, being said function permanent when the relative function is enabled by the software that allows it and being the same function executed by using the bluetooth™ profiles Head Set profiles (HSP) and Hand Free Profiles (HFP), being the synchronization of the index-book executed by means of PBAP profile and being the audio exit enabled on the loudspeaker (28) and microphone (27) also independently on the presence of external auricolar devices.

12. Wrist device (1) according to any of the preceding claims **characterised in that** the wrist device (1) allows the data export to an outside computer to which it can be connected by means of USB gate acting as a mass memory device.

13. Wrist device (1) according to any of the preceding claims **characterised in that** the wrist device (1) is able to understand at least the following gesture movements exerted on the *display* (24):

- "*tap*": a touch executed with the fingertip of the finger for short-time on the surface of the display (24);

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- "*double tap*": two touches executed with the fingertip of the finger for a short-time and in sequence on the surface of the *display* (24);

- "drag": execution of a linear movement of the fingertip moving on the surface of the *display* (24) in permanent contact condition of the fingertip with the surface of the *display* (24);

- "*flik*": fast linear sliding movement of the fingertip on the display (24) surface;

- "*press*": a touch executed with the fingertip on the display (24) surface for a protracted time period.

14. Wrist device (1) according to at least any of the preceding claims **characterised in that** the wrist device (1) allows the adjustment of the bright intensity of the back-lighting of the display (24), where in consequence of the exerting of a pressure on the push-button (30) for a time of at least 2 seconds, with activated wrist device (1), the brightness values of the display (24) are brought back to the base value of at least 50% of the maximum bright intensity.

15. Wrist device (1) according to at least any of the preceding claims **characterised in that** the hardware apparatus (20) of the wrist device (1) is instructed by means of an operating system able to support at least the following peripheral:

- CPU (21);

- RAM memory device (22);

- *boot* from eMMC memory device (23);

- reading and writing management from eMMC memory device (23);

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- USB OTG

-audio *input/output* from analogic type input/output devices such as microphone (27), loudspeaker (28), earphones;

- feeding device (29) charge device;

- bluetooth™ module (25) *driver* aiming at a *tethering* connection supporting at least the HFP, PBAP and MAP profiles and their evolutions;

- *display* (24) *driver*;

- *driver touchscreen*.

16. Wrist device (1) according to at least any of the preceding claims **characterised in that** the operating system is configured to start directly from the eMMC memory device (23) which is itself provided parted as follows:

a) first partition dedicated to the *bootloader* in partition reading only (read only partition);

b) second partition dedicated to the *kernel* in reading only and in writing during the *upgrade* procedure in reading only of the partition and in writing during the *upgrade* procedure (*Read only partition + Write during upgrade procedures*);

c) third partition dedicated to the *filesystem* in only reading partition and in writing during the *upgrade* procedure *(Read only partition + Write during upgrade procedures)*;

d) fourth partition dedicated to the original *kernel* to be used as *factory default* in reading only partition (read only partition);

e) fifth partition dedicated to the original *filesystem* to be used as

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factory default in reading only (read only partition);

f) sixth partition comprising a folder at least dedicated to the applications, to the *cache* and to the settings;

g) seventh partition comprising a hidden folder in which are saved the musical passages and photo discharged by means of the wrist device (1) by a authorized service company providing that such folder should not to result visible for the export when the device operates in mass memory function (*mass storage device*), USB or Bluetooth™;

h) eighth partition comprising a folder dedicated to the data relative to the user's musical files, visible by means of mass memory device (*mass storage device*).

17. Wrist device (1) according to at least any of the preceding claims **characterized in that** a pressure exerted up to two seconds on the push-button (30) with wrist device (1) turned-off determines its full activation while in condition of full activation the exerting of a pressure on the push-button (30) exerted for a time up to two seconds; between three and five seconds and longer than five seconds, determines to put the wrist device (1) respectively in *stand-by* condition, in condition of attenuated brightness of the *display* (24) and, finally, in turn-off condition, while the exerting of a pressure on the push-button (30) exerted for a time up to two seconds with the wrist device in *standby* condition determines its complete activation, furthermore a pressure on the push-button (30) exerted for more than fifteen seconds with the wrist device (1)

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turned-off determines its reset to the factory settings.

18. Wrist device (1) according to at least any of the preceding claims **characterised in that** the wrist device (1) includes a curved case (10) containing the *hardware* apparatus (20) being said case (10), by means of at least one strap (11), wearable on the wrist and being in correspondence of at least one side provided with at least one seat for the push-button (30), of at least one seat for the audio *jack* (26) and at least one seat to allow the connection of an external auricular device.

19. Interconnection and communication system executed by means of the wrist device (1) **characterized in that** it includes a wrist device (1) able to connect, by means of bluetooth™, *tethering*, and in *cloud computing* connection, for the interacting, the communication and the wireless data exchange to a smartphone type mobile telephony apparatus carrying out its synchronization to the same, in such a way that between the wrist device (1) and the mobile telephony apparatus is possible to operate an exchange of information and data intended to make the wrist device (1) able to monitor in remote the compatible functions of the mobile telephony apparatus (50) to which it is connected, allowing at least to receive and execute calls; at least to visualize data information and to visualize and reproduce also multimedial *files* and also offered by third services operators, such functions being able to be managed by the user on the wrist device (1) by means of graphic interface controls activable by means of at least one tactile display (24).

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20. Interconnection and communication system executed by means of the wrist device (1) according to claim 19, **characterised in that** it provides at least three icons of *default* functions, as watch, "*Weather*" and "*calls*".

21. Interconnection and communication system executed by means of the wrist device (1) according to claim 19, **characterised in that** during the first turning-on of the wrist device (1) the user exerts a pressure on the push-button (30) for a determined time in such way activating the wrist device (1) that is made able to interact functionally to the user's controls, furthermore the user proceeding to the configuration of the system by means of *gesture* controls executed on the *display* (24) in correspondence of icons and graphic interface controls where the user in sequence: a) selects the preferred language among the available languages, b) sets the time zone, the date and the time and, successively, the user proceeds with the registering with an authorized service company in order to make activable the applications in *cloud computing* modality, operation that is provided to occur by means of insertion of an univocal authentication number assigned to each wrist device (1) and that is provided to be made visible to the user on the display (24) once the previously described setting operations of language, time zone, date and time are completed, where further the user by configuring the Bluetooth™ connecting settings since that moment the available applications becoming fully utilizable by the user.

22. Interconnection and communication system executed by means

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of the wrist device (1) according to claims 19, 20, 21 **characterised in that** the wrist device includes a state bar that makes visible to the user the information necessary to monitor the operating state of the wrist device (1), among which at least the indication of the battery charge state, of the Bluetooth™ modality and of notifications receiving, the wrist device (1) also including a setting menu that allows at least: 1) to manage *Bluetooth™* devices; 2) to execute background changes; 3) to manage the notifications centre; 4) to personalize the fast applications; 5) to personalize the preferred applications; 6) to manage the ringers; 7) to modify the time and the date; 8) to set the brightness of the display (24); 9) to visualize the information of the wrist device (1).

23. Interconnection and communication system executed by means of the wrist device (1) according to the claims 19, 21, 22 **characterised in that** the execution of a "TAP" or "PRESS" *gesture* movement on the icon of an application that requires the configuration of the *Bluetooth™* and *cloud computing* modality, activates on the display (24) of the wrist device (1) the following screen-shots in sequence: a) *Bluetooth™* setting screen-shot; b) correct setting confirmation screen-shot; c) screen-shot of registering with the site of the authorized services supplier company; d) screen-shot of validation of the executed registering; e) confirmation screen-shot of the executed registering; f) "home" screen-shot; the *"home"* screen-shot allowing the user to be able to execute the following operations: 1) visualization of the notifications

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panel; 2) visualization of the applications preferred by the user; 3) visualization of the e-mails; 4) visualization of the index-book; 5) executing of the calls; 6) visualization of the setting pages.

24. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 24 **characterised in that** through the screen-shot "home" for the executing of a *gesture* movement: a) "DRAG", from right leftward, starting from the point in which the digital watch is visualized, it is allowed the access to the screen-shots of the preferred applications, containing the applications active icons, b) "DRAG", by means of the execution of a movement from left rightward starting from the point in which the digital watch is visualized, the user is allowed to have access to the configuration applications of the wrist device (1); c) "FLICK" executed by the user in diagonal from the left bottom angle to the right top angle of the *display* (24) it is possible the return to the *"home"* screen-shot.

25. Interconnection and communication system executed by means of the wrist device (1) according to the claims according to claims 19 to 24 **characterised in that** it includes a *default* function, that allows to visualize the time in such a way that on the *display* (24) the display of a watch in analogic format with date and time results visible not being provided the indication of the seconds and with the watch updating executed in automatic allowing the visualization of information with *display* (24) that has two areas of different sizes in which a first one reserved to the state bar, and a second one being

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provided the visualization of all the further information that is not contained in said state bar.

26. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 25 **characterised in that** a downward "DRAG" *gesture* movement exerted by the user on the state bar as control for opening the notifications panel, following whose opening appears a screen-shot on which the list of the notifications received by the same wrist device (1) is visualized in such a way as to execute the selection of an element-notification, by means of at least one "TAP" *gesture*, starting the application that has detected the notification.

27. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 26 **characterised in that** the main *"home"* screen-shot iconizes at least three applications selected by the user as preferred these same icons, in the example, are provided placed below of the space intended to visualize the watch.

28. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 27 **characterised in that** the user, by means of the "CALLS", application of the calls management, is made able to manage the incoming and outgoing calls practicable by the same wrist device (1) and in which the "CALLS" application is permanently maintained active during the operation of the wrist device (1) in order to allow the receiving of the incoming calls, while the outgoing telephone calls are accessible by

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means of the dialling menu which includes a screen-shot ideally displaying the dialling keyboard of a conventional mobile phone.

29. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 28 **characterised in that** the weather forecasts are visualized by means of *cloud* selecting the icon "weather" present in the screen-shot of the preferred applications, executing a "DRAG" *gesture* with a movement that provides the sliding of the fingers on the *display* (24) from right leftwards and vice-versa and in which the notification of the weather forecasts is provided as based on the selection, in *cloud* modality, operated by the user, of four preferred towns, comprising at least the following information:

· name of preferred towns;

· symbol showing the main weather condition according to the most frequent weather conditions;

· indication of the current temperature;

· 3 days *forecast* with symbol only.

30. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 29 **characterised in that** it has an application able to visualize some news, "news", by means of *cloud* in the screen-shot of the preferred applications, executing at least a "TAP" *gesture* movement on the notification of the news title, in such a way as to read its whole text, said notification system of the "news" being shown by means of a list made up of the message time and content with a maximum limit of

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characters.

31. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 30 **characterised in that** has an application able to visualize news on the trend of the stock market, "stock market", by means of *cloud* present in the screen-shot of the preferred applications selectable with at least a "TAP" *gesture* movement on the notification of the stock market news title, in such a way as to read the whole text and in which the notification system of the stock market news is shown by means of a list made of the time and of the message content with a maximum limit of characters.

32. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 31 **characterised in that** it includes an application able to visualize some e-mails by means of *cloud* with notification system of the mails that is based on the mails received on an e-mail account with IMAP protocol and in which to have access to the notifications of the e-mails it is necessary to select the *"email"* icon present in the "home" screen-shot, allowing the user to visualize the e-mail sender and the object in which the correct formatting of the data package that is received by means of notification occurs by means of the *cloud*, being the receiving of the mail notifications made up of at least the information containing the sender's name, the date and the sending time and the mail object.

33. Interconnection and communication system executed by means

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of the wrist device (1) according to the claims according to claims 19 to 32 **characterised in that** the wrist device (1) provides an application able to visualize some *Facebook©* notifications by means of *cloud* selecting the *Facebook©* icon present in the screen-shot of the preferred applications, visualizing all the Facebook© notifications, the receiving of the *Facebook©* notifications sub-divided at least in the categories of message, requests of friendship, *poke* and show-case notifications.

34. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 33 **characterised in that** it provides an application able to visualize some *Twitter©* notifications by means of *cloud*, selecting the *"Twitter©"* icon present in the screen-shot of the preferred applications in such a way to allow the visualization of the sender and the "*tweet*" the correct formatting of the data package that is received by means of notification occurring by means of the *cloud*, the receiving of the *Twitter©* notifications including at least the information containing the sender's name, the date and the sending time and the notification text with a maximum limit of characters.

35. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 34 **characterised in that** it provides an application, *"music"*, able to reproduce musical passages that also controls the *download* function of the wished passages, in such a way as to select the musical passages to reproduce by executing the connection, in *cloud*, with the

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authorized service supplier company entering with his own registering account the supplier's company relative section, and in which once selected the preferred musical passages, they will be sent as notification to the wrist device (1) so as to allow their reproduction, also connected to a computer.

36. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 35 **characterised in that** it allows the acquisition of further applications by means of the "market" application, that allows the user to make utilizable further applications with respect to the current ones supplied with the wrist device (1) regarding the invention, being activated by the user by means of the access by means of his registering *account* executed at the site of the authorized services supplier company and in which the analogue application that there is on the of mobile telephony apparatus (50), *smartphone*, to which the wrist device (1) is connected in communication, does not perform functions of authorization, profiling or payments.

37. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 36 **characterised in that** has a function of "appointments", able to allow the user to fix and manage appointments, the access to which application is allowed to the user by selecting of the "appointments" icon that appears contained in the screen-shot of the preferred applications, allowing the user the visualization of a list of chronologically ordered activities, and by means of the settings menu the setting of

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the day, week or month.

38. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 37 **characterised in that** it has an application for the visualization of the incoming *sms* on the mobile telephony apparatus, smartphone.

39. Interconnection and communication system executed by means of the wrist device (1) according to claims 19 to 38 **characterised in that** it includes a *voting* system of the applications depending on the frequency with which it has been used, with automatic closure of the less frequently used applications.

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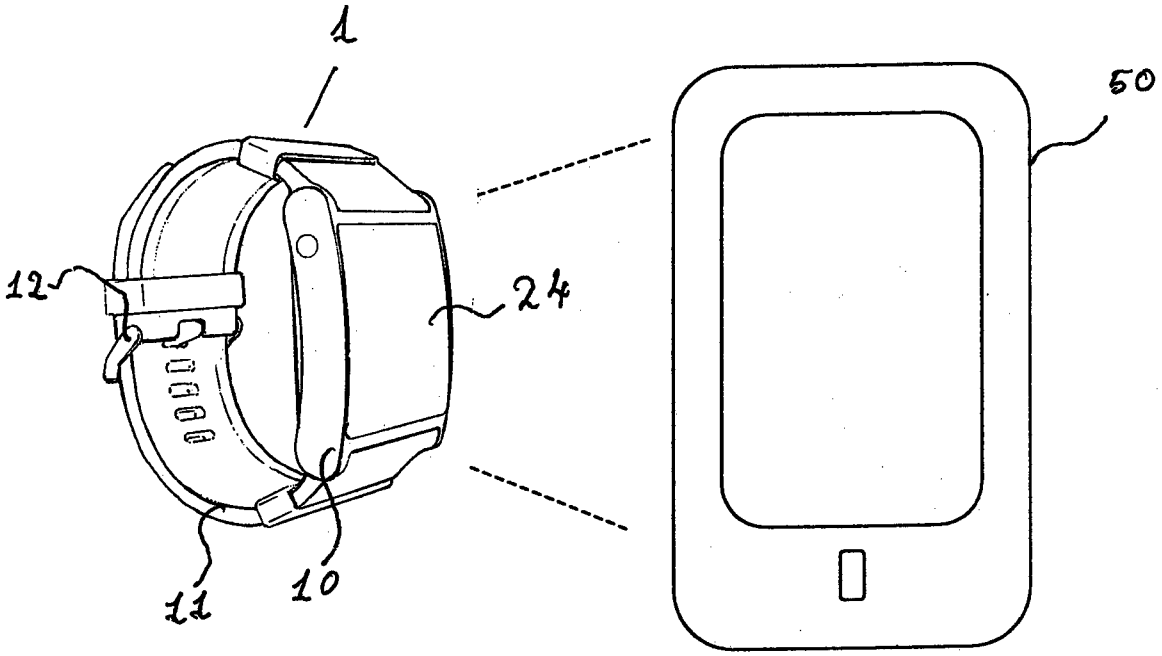


Fig. 1

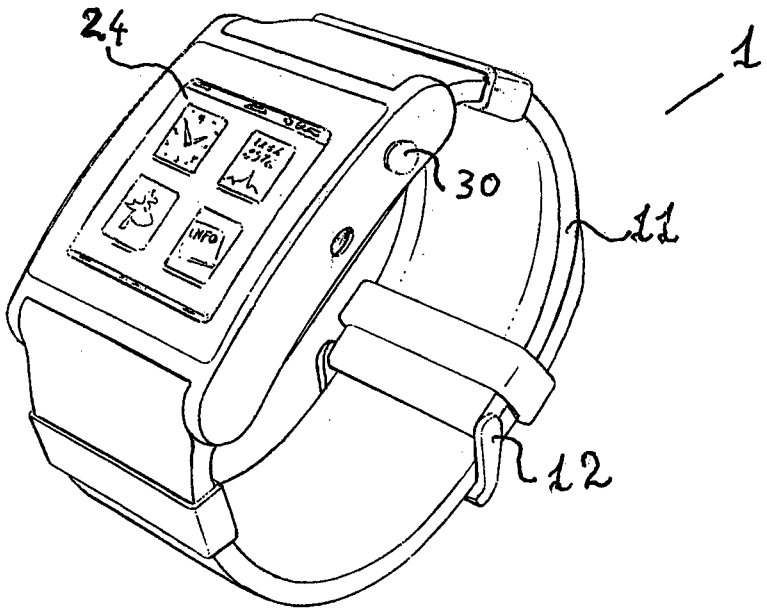


Fig. 2

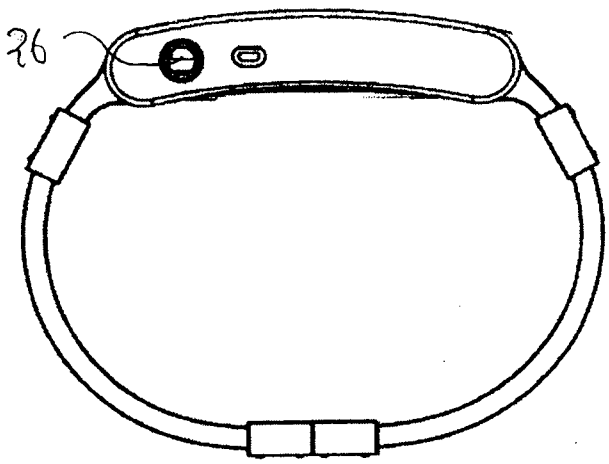


Fig. 3

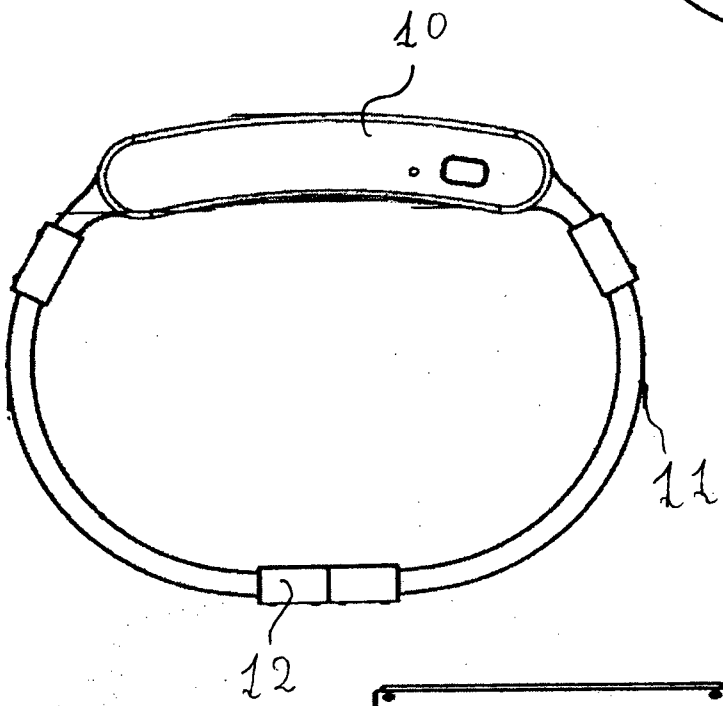


Fig. 4

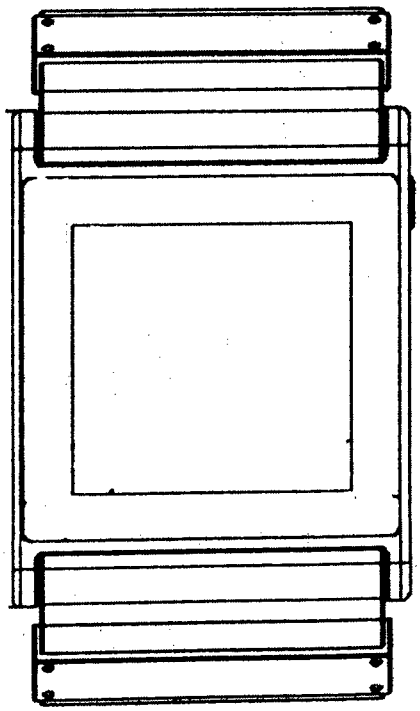


Fig. 5

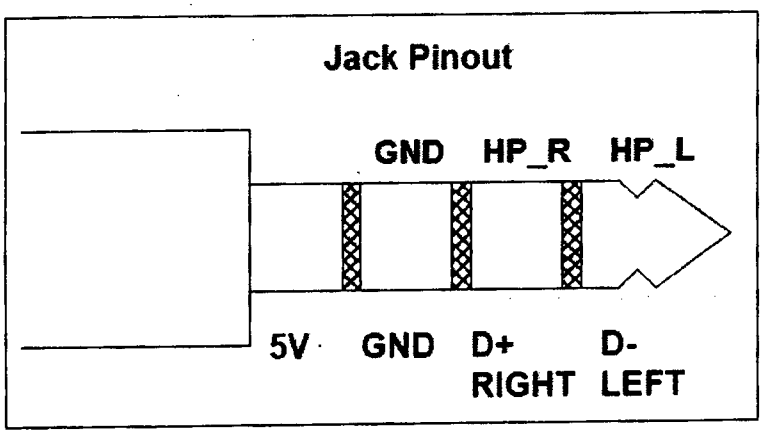


Fig. 6

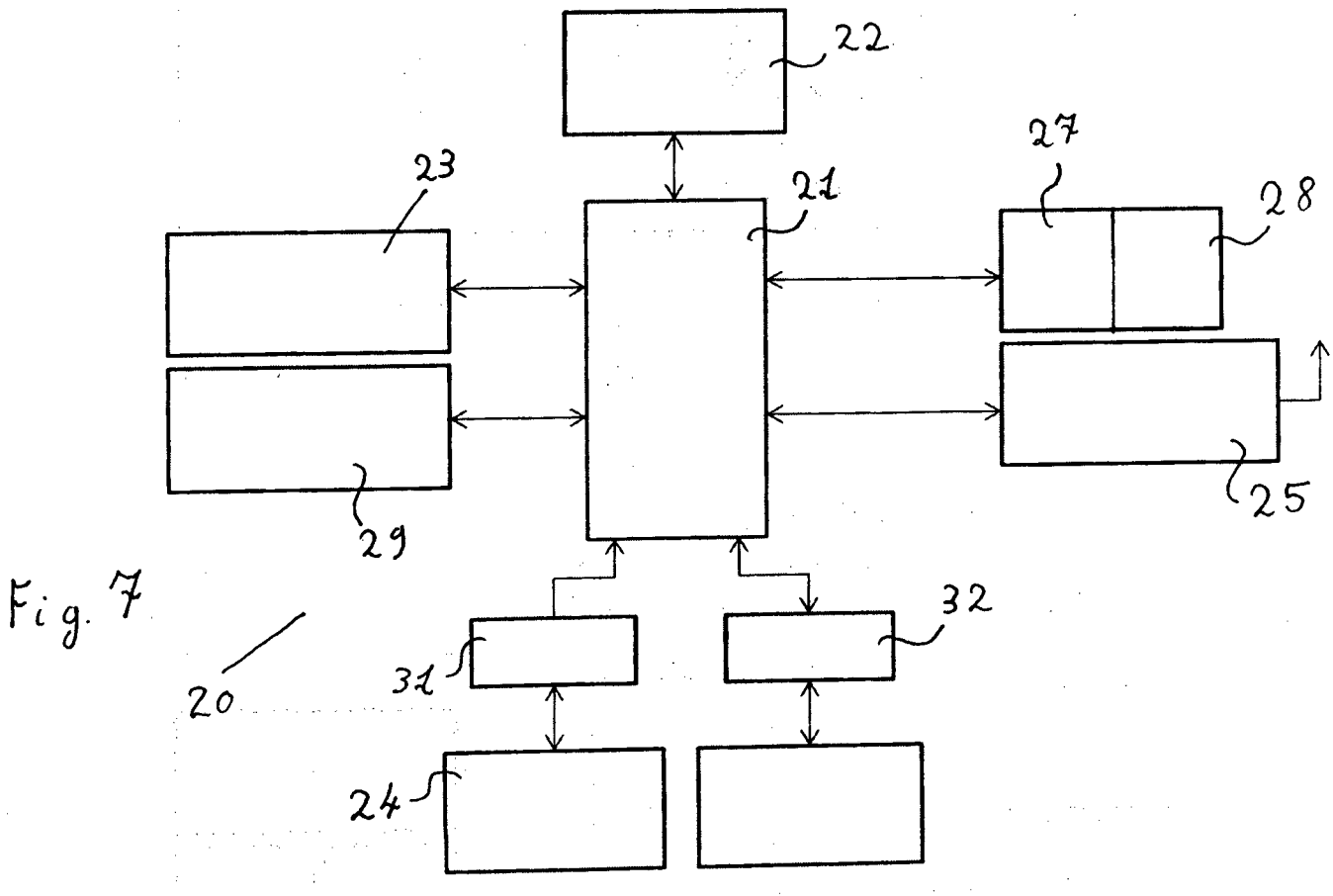


Fig. 7

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Fig. 8

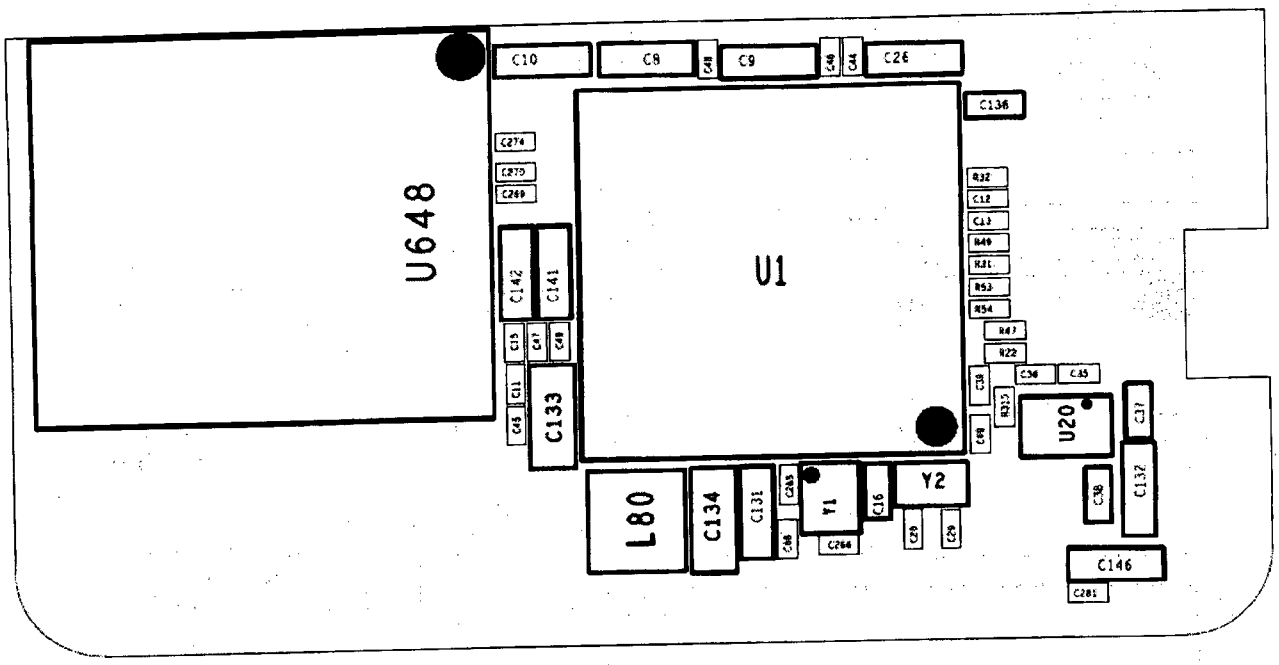
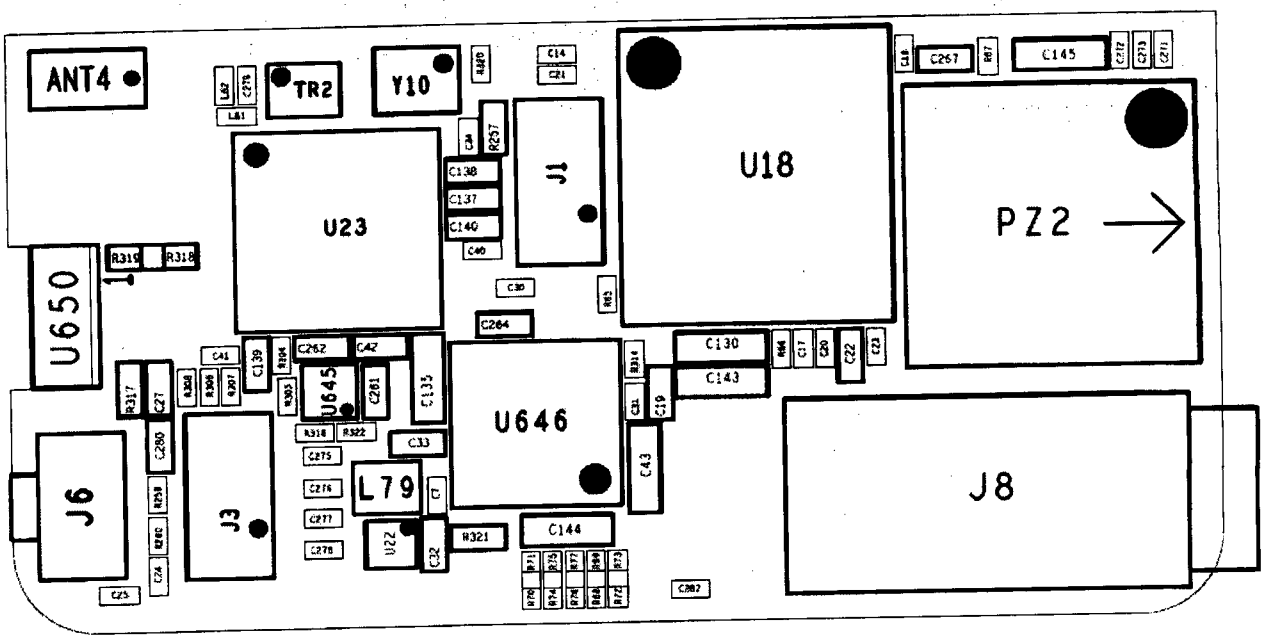

U648
U1
C10
C8
C9
C26
C136
C142
C141
C133
L80
C134
C131
Y1
Y2
U20
C132
C146

Fig. 9


ANT4
TR2
Y10
U23
J1
U18
PZ2
U650
U646
J6
J3
L79
J8
C145
C130
C143
C144

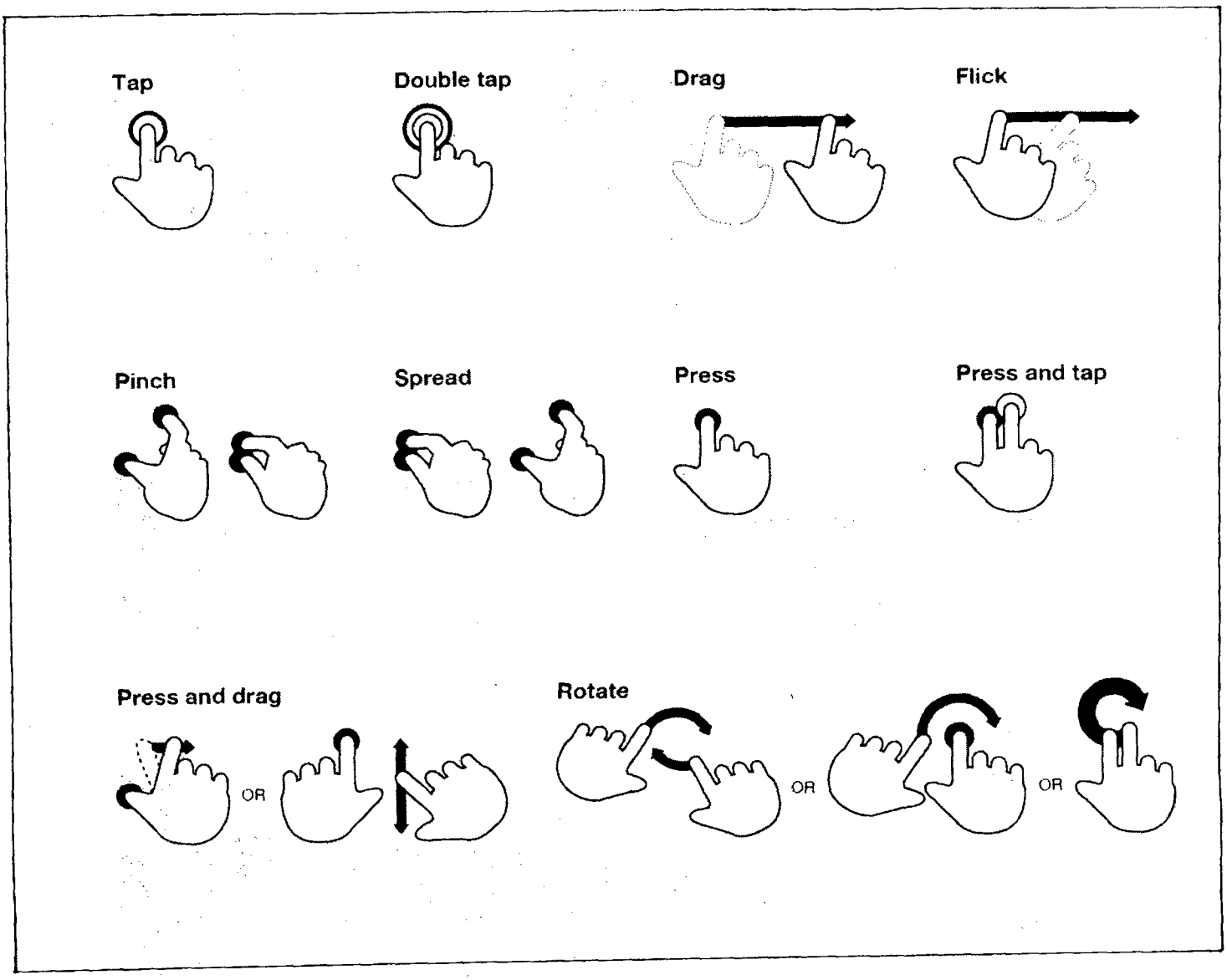

Tap
Double tap
Drag
Flick
Pinch
Spread
Press
Press and tap
Press and drag
OR
Rotate
OR
OR

Fig. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/001260

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04M1/725 H04B1/38
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04M H04B

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2011/059769 A1 (BRUNOLLI MICHAEL J [US]) 10 March 2011 (2011-03-10) abstract paragraph [0020]; figure 1 paragraphs [0029] - [0031] paragraph [0045] paragraph [0049]; figure 2 paragraphs [0056] - [0057]; figure 3 paragraph [0093] - paragraph [0101]; figure 6	1-39
Y	CN 101 557 551 A (CHENGDU HUAWEI SUNTENGDA SCI [CN]) 14 October 2009 (2009-10-14) the whole document	1-39

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 December 2012	02/01/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Ayala Perriello, M

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/001260

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2007/142703 A1 (CONVERSATIONAL COMPUTING CORP [US]; RONDEL STEPHEN A [US]) 13 December 2007 (2007-12-13) abstract page 1, line 10 - line 24 page 3, line 22 - page 4, line 3 page 11, line 13 - line 21; figure 1 page 13, line 18 page 15, line 5 - line 15 page 17, line 1 - line 15 claim 1 -----	1-39
A	FR 2 938 147 A1 (SCHNEIDER ELECTRIC IND SAS [FR]) 7 May 2010 (2010-05-07) abstract -----	1-39

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2012/001260

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		TW 201119339 A	01-06-2011
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		WO 2011029098 A2	10-03-2011
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WO 2007142703 A1	13-12-2007	AU 2007257435 A1	13-12-2007
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FR 2938147 A1	07-05-2010	NONE	

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