(54) Title: TRANSACTION PROCESSING AND REMOTE ACTIVATION

Fig. 1

(57) Abstract: Embodiment of the invention extend to a device (which may be considered an asset which is purchased or which
provides a service which may be purchased) which can be controlled through the use of a mobile communications device such as a
cellular phone. The cellular phone is connected to a transaction processing system which allows the user to pay for the use of the
device. The transaction processing system communicates with the device to allow usage of the device only if the user has success-
fully paid for such use. A further embodiment of the invention relates to collecting usage information of the device and collating
this information at a location remote from the device.

TRANSACTION PROCESSING AND REMOTE ACTIVATION

FIELD OF EMBODIMENTS OF THE INVENTION

Embodiments of the invention relate to processing a transaction and activating a device in dependence on the processed transaction.

5   BACKGROUND

the vast majority of the human population earn very little money. With a low regular income it is difficult to amass a significant capital to purchase assets. A number of schemes have been developed to address this problem. Example, the system of "lay bys" whereby a person desiring to purchase an asset or a service pays a portion of the price in a number of

10   payments. When the price has been paid off, the buyer is provided with possession of the asset or the service is rendered.

As an alternative, a number of credit facilities have developed which include micro-finance hire purchase agreements etc.

These known arrangements suffer from the disadvantage that it may take significant

15   time for the purchaser to "lay by" the purchase price. Financing arrangements suffer from the disadvantage of being costly to implement and administer, and can be difficult to enforce, particularly in a rural environment. The purchaser will end up paying significantly more than the purchase price to cover the administration costs.

A further problem exists, particularly in developing economies, whereby once an

20   asset has been purchased, insufficient planning is made to ensure for the maintenance of that asset. Therefore, assets which might otherwise be easily repaired are neglected to such an extent that repair becomes more expensive.

SUMMARY

Aspects of the invention are set out in the accompanying claims.

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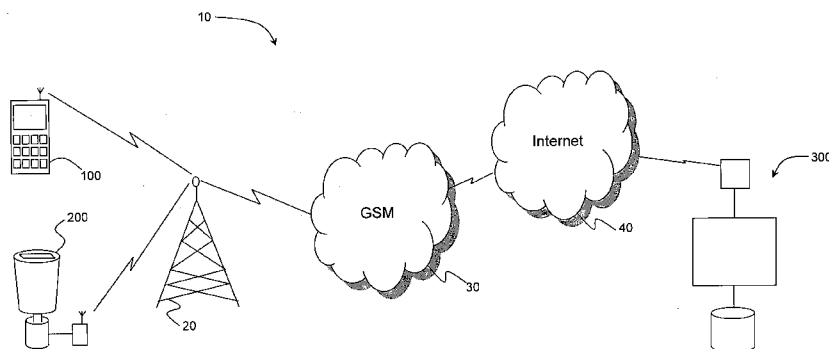
Embodiment of the invention extend to a device (which may be considered an asset which is purchased or which provides a service which may be purchased) which can be controlled through the use of a mobile communications device such as a cellular phone. The cellular phone is connected to a transaction processing system which allows the user to pay

5   for the use of the device. The transaction processing system communicates with the device to allow usage of the device only if the user has successfully paid for such use.

A further embodiment of the invention relates to collecting usage information of the device and collating this information at a location remote from the device.

BRIEF DESCRIPTION OF THE DRAWINGS

10   Example embodiments of the invention are hereinafter described with reference to the accompanying diagrams which are not to scale and where:

Figure 1 illustrates a communication system according to an embodiment of the invention;

Figure 2 illustrates a solar-powered lamp according to an embodiment of the

15   invention;

Figure 3 illustrates a portion of the solar-powered lamp of Figure 2;

Figure 4 illustrates a transaction processing system according to an embodiment of the invention;

Figure 5 illustrates a process of setting an operational state of the solar-powered lamp

20   of Figure 2 according to an embodiment of the invention; and

Figure 6 illustrates a further process according to an embodiment of the invention.

DESCRIPTION OF EXAMPLE EMBODIMENTS

The Figures are schematic in nature and not drawn to scale, and are intended for illustrative purposes.

Figure 1 illustrates a communication system 10 according to an embodiment of the invention. The communication system 10 includes a user interface, in this embodiment a mobile communications device in the form of cellular phone 100, connected to a cellular phone mast 20. In the embodiment shown, the cellular phone mast 20 is further connected to

5   a solar-powered lamp 200. The cellular phone mast 20 is part of a GSM communications network, generally denoted by reference 30 in Figure 1. GSM communications network 30 is further connected to the Internet 40. A transaction processing system 300 is connected to the cellular phone 100 and the solar-powered lamp 200 via the Internet 40 and the GSM communications network 30.

10   In the embodiment illustrated in Figure 1 the cellular phone 100 and the solar-powered lamp 200 communicate with the same cellular phone mast, cellular phone mast 20. It is to be realised that, although it may often be the case that the device to which embodiments of the invention are applied (in this case the solar-powered lamp 200) and the user interface (in this case the cellular phone 100) which is used to operate the device

15   communicate via the same mast, embodiments of the invention are not limited in this respect. In further embodiments the user interface and the device communicate with distinct and separate masts or communicate via other communication hardware and protocols.

Referring back to Figure 1, the solar-powered lamp 200 communicates with the GSM communications network 30, as indicated. It is to be realised that the solar-powered lamp 200

20   is therefore provided with the necessary radio transmitters and receivers, as well as a Subscribers Identity Module (SIM) and the other necessary hardware and software to allow them to communicate via the GSM network, as described in greater detail below. The solar-powered lamp 200 interacts with the GSM communications network 30 in a similar manner to the way known cellular phones, such as cellular phone 100, operate. In this embodiment,

25   the cellular phone 100 and the solar-powered lamp 200 communicate   with the GSM

communications network 30 through the use of general packet radio service (GPRS). It is to be realised however that the manner in which this communication, or any other communication, occurs is not essential to the operation of embodiments of the invention. In further embodiments, other wireless or wired communications protocols may be used.

5   Figure 2 illustrates the solar-powered lamp 200 in greater detail. The solar-powered lamp 200 includes a lamp portion 202 which has an activation switch 204. The lamp portion 202 is connected to a control unit 208. The lamp portion 202 further comprises a photovoltaic cell 210. The photovoltaic cell 210 operates to charge a battery (see below) during exposure to sunlight so that the lamp 200 may operate when there is little or no ambient light. A user

10   uses the activation switch 204 to turn the solar-powered lamp 200 on and off. However, the lamp 200 will not activate (become functional) unless the control unit 208 allows this, in the manner described below.

The control unit 208 of the solar-powered lamp 200 is illustrated in greater detail in Figure 3. As illustrated, the control unit 208 comprises an antenna 206. The antenna 206 is

15   connected to a radio unit 210 which is, in turn, connected to a SIM 212. The antenna 206, radio unit 210 and SIM 212 operate together in a known manner so that the solar-powered lamp 200 (Figure 2) may communicate over the GSM communications network 30 (Figure 1). The radio unit 210 is further connected to a processor 214 having storage 216. The processor 214 is connected to a timer 218.

20   The control unit 208 is connected to the lamp portion 202 of the solar-powered lamp 200 (in this Figure indicated by dashed outline). The processor 214 is connected to a switch 220 which is in turn connected to a bulb 226. The activation switch 204 is connected to the processor 214 and to a battery 222. The battery 222 powers the lamp portion 202 and provides electrical power to the bulb 226 as well as the radio unit 210, processor 214, and the

25   other components of the solar-powered lamp 200 which require electrical power. The battery

222 is recharged by the photovoltaic cell 210. In embodiments of the invention the battery

222 is independent of the mains power supply and therefore the lamp 200 is portable and may

be used in areas which have no mains electricity supply or when the mains electricity supply

is intermittent or otherwise unavailable.

5   The lamp portion 202 further comprises an ammeter 224 which measures the current

drawn from, and delivered to, the battery 222. The processor 214 is connected to the

ammeter 224 and the readings made by the ammeter 224 are stored by the processor 214 in

storage 216.

           The bulb 226 of the lamp 200 will only operate if the user has activated switch 204 to

10   place this in the "on" position and the processor 214 has activated switch 220 to place this too

in the "on" position. In this way, the processor 214 determines whether or not the lamp is

operational even after a user has turned this on.

           Furthermore, the processor 214 controls the radio unit 210 and thereby controls the

manner and content of the communications of the solar-powered lamp 200 over the GSM

15   communications network 30 (Figure 1). The processor 214 utilises storage 216 during its

operations in a known manner. In particular, the storage 216 stores an indication of the

amount of time that the solar-powered lamp may operate in the form of a credit. In the

manner disclosed below with reference to Figure 5, the user transfers credit from the

transaction processing system 300 to the lamp 200. The storage 216 keeps a record of the

20   available credit and the processor reduces this record as the lamp 200 is used. The timer 218

is utilised by the processor 214 to keep track of the usage of the lamp 200 and for ancillary

purposes such as for date and time stamping communications. This timing information,

together with the current information gleaned from the ammeter 224 is stored in the storage

216 and transferred as usage information to the transaction processing system 300 in the

25   manner described below.

Figure 4 illustrates a transaction processing system 300 according to an embodiment of the invention. The transaction processing system 300 comprises a IP connection unit 304 having a socket 302. The transaction processing system 300 communicates with the Internet 40 in a manner known in the art by utilising the socket 302 and IP connection unit 304. In

5   alternate embodiments, this connection is accomplished by communications protocols other than IP-related protocols, such as a GSM connection via a SIM card connected to the mobile network.

The transaction processing system 300 further comprises a processing unit 306 which controls the transaction processing system 300. The processing unit 306 is connected to

10   storage 308 which is used to store data in the form of a database and associated data storage. It is to be realised that the illustration of the transaction processing 300 in Figure 4 is a schematic and many alternative ways of implementing such a system are known in the art.

In the embodiment illustrated, the transaction processing system 300 allows users to retain credit in personal accounts and transfer money into and out of such accounts, as well as

15   between accounts within the transaction processing system, and accounts held elsewhere. As such, the transaction processing system is similar to known banking systems. The transaction processing system 300 furthermore allows users to operate their accounts (i.e. transfer amounts and purchase goods or services using money stored in their accounts) through the use of a cellular phone. Such transaction processing systems are known in the art; for

20   example, the system operated in Kenya by GSM mobile operator Safaricom Limited, under the trade name "M-PESA".

In certain embodiments of the invention, the transaction processing system may be arranged so that a user may optionally utilise funds stored on the transaction processing system to pay for use of the device. In an alternative embodiment, the transaction processing

25   system is primarily used by the operator of the GSM communications network to allow a user

to pay for the use of their cellular phone and in this embodiment credit used primarily to pay for use of the cellular phone may, in addition, be used to pay for usage of the device in a manner analogous to that described below with reference to Figure 5.

The transaction processing system 300, by communicating via the Internet 40 by means of the IP connection unit 304 is able to control certain operational aspects of the solar-powered lamp 200, which is also connected to the Internet 40 via GSM communications network 30. The manner in which this occurs is described in greater detail below with reference to Figure 5.

Figure 5 illustrates a process 400 according to an embodiment of the invention whereby the operational state of the solar-powered lamp 200 is controlled by the transaction processing system 300 on request by a user (not shown) interacting with the transaction processing system 300 by means of cellular phone 100.

At a preliminary step 402, the device (which, in this case, is the solar-powered lamp 200) is transferred to the user. In the embodiment illustrated, the preliminary step involves a user paying a deposit to a supplier who, in return, will supply the user with the device. Importantly for embodiments of the invention, the deposit is less (in many instances significantly less) than the capital cost of the device.

During this preliminary step 402, the user's possession of the lamp 200 will be registered. The registration involves establishing a link between the device (in this embodiment identified by an identification number) and the user. As the user uses their cellular phone 100 to operate the lamp 200, this registration process will involve establishing a link between the user's cellular telephone number and the identification number of the lamp 200.

In the following step, step 404, the user turns the solar-powered lamp 200 on by activating activation switch 204 (Figure 2). Steps 402 and 404 are linked by a dashed line

indicating that step 402 is a preliminary step in as much as step 402 will occur only once whereas step 404 may occur many times during the lifespan of a device such as the solar-powered lamp 200.

At step 406 the processor 214 of the lamp 200 detects operation of switch 204 and checks the credit available for running the device by querying the record of that credit stored on the storage 216 (Figure 3). The process will then proceed to step 408 where a determination is made whether the credit stored on the storage 216 is sufficient to operate the device.

If the available credit is not sufficient, the process will proceed to step 410 where the lamp will communicate with the transaction processing system 300 with a message in the manner discussed above. The message sent by the lamp 200 to the transaction processing system 300 will include an identification number by which the transaction processing system 300 will be able to identify the lamp 200 as well as a request to process a payment for use of the lamp 200 for a predetermined time. In this embodiment, the predetermined time is 8 hours.

At the following step, step 412, the transaction processing system 300 consults the account information held for the user who is determined, with reference to the identification number of lamp 200, to be the possessor of lamp 200. The transaction processing system 300 will thereby determine the amount of funds which the user has available to pay for use of the lamp 200.

At step 414, a determination is made whether the user has sufficient funds. If the user does not have sufficient funds, the process will move to step 416 where a message is sent to the user's cellular phone 100 informing them that they have insufficient funds, and reminding them to transfer additional funds. The process will then end at step 418. If the user

subsequently transfers funds into his or her account they will be to restart the process by activating the switch 204, in which case the process will begin again at step 404.

If, on the other hand, at step 414 it is determined that the user has sufficient funds for the lamp to operate, the process will move on to step 420 where the transaction processing system 300 processes the payment for the device. This will involve debiting the user's account. Such transaction processing is known in the art and will not be further described herein. In a further embodiment referred to above, this step may involve debiting credit which would ordinarily be used by the user to pay for use of the cellular phone 100.

At the following step, step 422, the transaction processing system 300, by means of IP connection unit 304 and socket 302, will send a message to the lamp 200. This message will contain the identification number for the lamp together with an encrypted command to update the credit stored on the lamp 200.

At the following step, step 424, the lamp 200 receives the message sent by the transaction processing system 300. The processing unit 214 of lamp 200 will verify that the message was sent by the transaction processing system 300. In this embodiment this is done by verifying an encryption key, but in further embodiments this may occur in any one of known ways for verifying the sender of a message. Once the processing unit 214 of lamp 200 has verified that the message does, in fact, originate from processing system 300 it will perform the command specified in the message by updating the credit record stored on storage 316. In the embodiment illustrated the only command issued by the transaction processing system 300 is to update the credit stored on the lamp 200. In a further embodiment however, the transaction processing system 300 issues other commands relating to the operational state of the device being controlled. For example, the transaction processing system 300 may communicate with the user by causing the lamp to flash on and off indicating that there is insufficient credit in their account. Alternatively, where the device is a

device other than a lamp, the command issued by the transaction processing system may relate to the operation of the device. Once the credit on the lamp has been updated, the process will go on to step 426 where the lamp (the device in this embodiment) is activated (i.e. turned on) through the activation of switch 220. Therefore, once switch 220 is activated,

5   both switch 204 and switch 220 will have been activated, allowing the lamp to operate.

Referring back to step 408, if it is determined that there are sufficient funds stored on the device at this step, the process too will proceed to step 426 where the lamp is activated.

Once the lamp has been turned on in step 426, the process will move to step 428 where the time which has elapsed since the lamp 200 was turned on is monitored. Therefore,

10 the process will continuously proceed from step 428 to decision step 430 to compare the elapsed time against the predetermined time. If the elapsed time is less than the predetermined time, the process will return to step 428. However, if the elapsed time is equal to, or greater than, the predetermined time, the process will then proceed to step 432.

In this embodiment, the predetermined time is the time which has been stored in the

15 storage 216 associated with processing unit 214 of the solar-powered lamp 200 (as described above with reference to Figure 3). Each time that the lamp 200 is activated, it is done for the predetermined time' unless the user turns the lamp off through again activating switch 204 during this time, in which case the process will begin again at step 404. In a further embodiment, the time for the activation may form part of the message sent by the transaction

20 processing system 300 in step 416. Alternatively, the user may determine the predetermined time period and specify this as a parameter when communicating with the transaction processing systems 300 with the cellular phone 100.

Once it is determined at step 422 that the predetermined time has elapsed, the process will proceed to step 432 where usage information for the lamp 200 is sent to the transaction

25 processing system 300. In this embodiment, the usage information will be sent to the

transaction processing system 300 once every 8 hours as the predetermined time period of

step 422 has been set to 8 hours. The process will then proceed back to step 406 where a

determination is made of the available credit stored on storage 216. In this manner, the lamp

will keep track of the continued use of the lamp and ensure that sufficient credit remains for

5   this use. When the lamp then runs our of credit, the process will proceed to step 410 to

obtain credit from the transaction processing system 300 in the manner described. At any

point during the process defined by steps 406, 408, 426, 428, 430 and 432 the user may

operate switch 204 which pauses the process. When the user reactivates switch 204 the

process will continue from the same point where it was paused.

10   In a further embodiment, not illustrated in the accompanying Figures, the operational

state of the lamp 200 is changed from on to off by having the transaction processing system

send a further command to the lamp 200 by message. In this embodiment, the transaction

processing system 300 keeps track of the predetermined time period and, once this time

period has elapsed, will send the message to turn the lamp 200 off.

15   Advantageously, with embodiments of the invention, the user is given possession of

an asset, such as the solar-powered lamp 200, on payment of a deposit which is less than the

cost of the device. The user will then pay for the use of the device for a predetermined time

period and a portion of this cost will be attributed to the capital cost of the device. It will be

realised that as the user continues to use the device, more and more of the capital cost will be

20   repaid until all of the capital cost has been paid back. At this time, the ownership in the asset

may be transferred to the user.

Figure 6 illustrates a process 500 whereby the transaction processing system 300

determines whether a user has paid off the capital cost of the device (in this embodiment, the

solar-powered lamp 200). At the initial step 502 of process 500, the transaction processing

system 300 receives a request from the user to activate the lamp 200 in the manner described above with reference to the process of Figure 5.

When this initial request is received, the process will continue on to step 504 wherein a determination is made of the funds which the user has available and, if those funds are

5   sufficient, the operational state of the lamp 200 will be changed from off to on (also in the manner described above).

In the following step, step 506, the capital amount owing in respect of the lamp 200 by the user will be calculated. If in the previous step, step 504, it was determined that the user has sufficient funds to allow the use of the lamp 200, the capital amount owing will be

10   reduced in step 506 by the portion of the amount charged to the user for the use of the lamp 200 which has been apportioned to paying back the capital amount.

At the next step, step 508, a determination is made of the capital amount still owing by the user. If this has reduced to 0, the process will continue to step 512 where ownership in the lamp 200 will be transferred to the user. In this embodiment, transfer of ownership will

15   involve allowing the user to use the lamp 200 without charging therefor. In order to facilitate this, the transaction processing system 300 will send a message to the lamp 200 which will thereafter allow use of the lamp 200 without requiring payment.

In an alternative embodiment, ownership of the lamp 200 will entitle the user to a reduced cost for the use of the lamp 200. In this embodiment, the usage costs may be

20   processed as payments in respect of an insurance or maintenance policy covering repair of the lamp 200. The user will then be entitled to have the lamp 200 repaired, or be provided with a new lamp, should the lamp stop functioning.

Referring back to Figure 6, if at step 508 it is determined that a portion of the capital amount is still outstanding, the process will proceed to step 510. At step 510 the transaction

25   processing system will await the next credit transfer from the user. When the credit transfer is

received, the transaction processing system 300 will return to step 504 and verify that the user has sufficient funds to allow usage of the lamp 200.

The usage information collected by the lamp and transferred to the transaction processing system 300 in step 432 of Figure 5 may be used to keep track of how a user uses

5   the lamp 200 or any other device in which embodiments of the invention have been implemented. Furthermore, this data may be used, in particular when the device relies on "renewable energy" such as solar or wind power, to calculate carbon offsets and apply them for that user or for an organisation affiliated with that user.

In this manner, the transaction processing system 300 will continuously monitor and

10   charge for usage of the lamp 200 until such time as the user has paid back the cost of the lamp.

In the embodiment illustrated and described above, the transaction processing system 300 interacts with the solar-powered lamp 200 to allow activation of the solar-powered lamp 200. In further embodiments, the control unit of the solar-powered lamp operates to collect

15   information regarding the usage and state of the solar-powered lamp and communicate this information to the transaction processing system or to a further remote location where this information is stored and collated. In such embodiments, the solar-powered lamp will include the necessary sensors and storage medium to allow collection of the data.

In the embodiments illustrated and described above, the remotely-operated device is a

20   solar-powered lamp. However, embodiments of the invention are not limited in this respect. It is to be realised that other devices may be substituted for the solar-powered lamp. For example, more substantial equipment such as an electrical generator, an automobile, a radio etc may be used.

CLAIMS

1. A device having an operational state connected to a remote transaction processing system, the remote transaction processing system being adapted to process transactions involving a mobile communications device, wherein the operational state of the device is set

5   according to an outcome of a processed transaction.

2. The device according to claim 1 wherein the operational state is one of functional or non-functional.

10   3. The device according to claim 2 wherein the device is configured so that it operates only when in the functional state.

4. The device according to any preceding claim wherein the operational state is set in dependence on the processing of a transaction.

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5. The device according to claim 4 wherein the transaction involves an attempted payment and the operational state is set for a predetermined time only on the successful processing of the payment, and wherein said predetermined time is determined by a timer included in said device or remote from said device.

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6. The device according to any preceding claim further comprising an activation switch wherein processing of a transaction by the transaction processing system is initiated by the activation of the activation switch.

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7. The device according to any preceding claim further comprising a dedicated power supply independent of a mains power supply.

8. The device according to claim 7 wherein the dedicated power supply comprises a

5   solar collector and/or an electro-voltaic cell.

9. The device according to any preceding claim wherein the device is wirelessly connected to the transaction processing system.

10   10. The device according to claim 9 wherein the device is connected to the transaction processing system by a cellular telephone system.

11. The device according to claim 9 wherein the device is connected to the transaction processing system by radio.

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12. The device according to any preceding claim wherein the transaction may be initiated by a user in the vicinity of the device, but remote from portions of the transaction processing system.

20   13. The device according to claim 12 wherein the user initiates the transaction by means of a wireless communication device.

14. The device according to claim 13 wherein the wireless communication device is a cellular phone.

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15. The device according to any preceding claim further comprising a monitor and a memory wherein the memory records usage information which is then stored in the memory.

16. The device according to claim 15 configured to transmit the usage information to

5   a memory store remote from the device.

17. The device according to any preceding claim further comprising a timer.

18. The device according claim 16 wherein the device is configured to use the timer

10 to record a time and/or duration of use of the device.

19. The device according to any preceding claim wherein the transaction processing system processes payments.

15   20.   The device according to claim 19 wherein the transaction processing system allows for payment for the use of the device with credit which may additionally be used to pay for use of a mobile communications device.

21.   A method of setting an operational state of a device, the device being connected

20 to a remote transaction processing system, the method comprising processing a transaction through use of a mobile communications device in the remote transaction processing system, wherein the operational state of the device is set according to an outcome of the processing of the transaction.

22. The method according to claim 21 wherein the operational state is one of functional or non-functional.

23. The method according to claim 22 wherein the device is configured so that it may be turned on only when the method is in the functional state.

24. The method according to any of claims 21 to 23 wherein the operational state is set in dependence on the successful processing of a transaction.

25. The method according to claim 24 wherein the operational state is set for a predetermined time on the successful processing of the transaction.

26. The method according to any of claims 21 to 25 wherein the device further comprises an activation switch wherein processing of a transaction by the transaction processing system is initiated by the activation of the activation switch.

27. The method according to any of claims 21 to 26 wherein the device further comprises a dedicated power supply independent of a mains power supply.

28. The method according to claim 27 wherein the dedicated power supply comprises a solar collector and/or an electro-voltaic cell.

29. The method according to any of claims 21 to 28 wherein the device is wirelessly connected to the transaction processing system, the method comprising the step of connecting the device wirelessly to the transaction processing system.

30.   The method according to claim 29 wherein the device is connected to the transaction processing system by a cellular telephone system.

5   31.   The method according to claim 29 wherein the device is connected to the transaction processing system by radio.

32.   The method according to any of claims 21 to 31 wherein the transaction may be initiated by a user in the vicinity of the device, but remote from portions of the transaction

10   processing system.

33.   The method according to claim 32 wherein the user initiates the transaction by means of a wireless communication method.

15   34.   The method according to claim 33 wherein the wireless communication device is a cellular phone.

35.   The method according to any of claims 21 to 34 wherein the device further comprises a monitor and a memory wherein the method further comprises recording usage

20   information generated by the monitor in the memory.

36.   The method according to claim 35 further comprising transmitting the usage information to a memory store remote from the device.

37.   The method according to any of claims 21 to 36 wherein the device further

comprises a timer.

38.   The method according claim 36 wherein the device is configured to use the timer

5   to record a time and/or duration of use of the device.

39.   The method according to any of claims wherein the transaction processing system

processes payments and wherein the outcome of the processing of the transaction comprises

successfully processing payment for use of the device.

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40.   The method according to claim 39 wherein the transaction processing system

allows for payment for the use of the device with credit which may additionally be used to

pay for use of a mobile communications device.

15   41.   A transaction system for processing a payment for the use of a device, the system

allowing a user to establish an account and trade with that account, the system comprising a

payment clearance system for:

            (i) receiving, from a user, an indication of payment for the use of the device,

the indication of payment including a monetary amount;

20   (ii) determining whether the user's account has sufficient cleared funds to

cover the monetary amount;

            (iii) if the user does have sufficient funds, activating the device;

            (iv) reducing the user's credit by an amount corresponding to the monetary

amount; wherein

the user interacts with the transaction system by means of a mobile communications device and the transaction system interacts with the device wirelessly.

5   42 The transaction system according to claim 41 wherein the mobile communications device is a cellular phone.

43.   The transaction system according to claim 41 or 42 wherein the transaction system interacts with the device by means of a cellular phone network.

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44.   The transaction system according to claim 43 wherein the cellular phone network is a GSM-based network and wherein the device includes a subscriber identity module (SIM).

45.   A method of arranging payment for an asset, the method comprising:

15   (i) charging a deposit to a user for the asset, the deposit being less that the retail cost of the device;

            (ii) on payment of the deposit, providing the user with possession of the asset;

            (iii) charging the user for the use of the device for a predetermined period, wherein the amount charged for the use includes a portion allocated to the retail cost

20   of the device ;

            (iv) arranging the device so that it is only usable for the predetermined period on successful processing of payment by the user for the amount charged.

46.   The method according to claim 45 wherein the user pays the payment by use of a

25   mobile communication device.

47. The method according to claim 46 wherein the mobile communication device is a mobile phone.

5   48. The method according to any of claims 45 to 47 wherein said payment is processed by a transaction system wherein said transaction system is remote from the user and the user interacts with the transaction through use of a mobile communication device.

49. The method according to claim 49 wherein the transaction system is remote from

10   the asset and wherein the transaction interacts with the asset by means of wireless communication.

50. The method according to claim 50 wherein the wireless communication is a cellular phone network.

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51. The method according to any of claims 45b to 50 wherein the amount charged for the use of the asset further comprises an amount levied against a capital cost of the asset.

52. The method according to claim 51 further comprising repeatedly charging the

20   user for the use of the device, each charge comprising a portion levied against the capital cost of the asset until the user has paid off the capital cost of the asset.

53. The method according to claim 52 further comprising, once the user has paid off the capital cost of the asset, allowing the user to use the asset without further charge.

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54. The method according to claim 52 further comprising, once the user has paid off the capital cost of the asset, allowing the user to use the asset for an amount less than the amount charged in step (iii) for use of the asset for the predetermined period.

5   55. A communication system comprising a device, a user operated interface for operating the device and a transaction processing system wherein the device, the user operated interface and the transaction processing system communicate wirelessly with one another and wherein said transaction processing system processes transactions, the outcome of which determine whether the device is operational or not, wherein the transactions are

10   initiated by the user operated interface wherein said device has a primary function other than facilitating communication.

56. The system according to claim 55 further comprising means for collecting usage information pertaining to use of the device, wherein said device is powered by a renewable

15   energy source, said system further comprising means for calculating carbon offsets from the usage information.

57. The system according to claim 55 or claim 56 wherein the device is any one of a lamp, a radio, a kitchen appliance, a generator or a vehicle.

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58. The system according to any of claims 55 to 57 wherein said transaction processing system is primarily used to process transactions relating to the use of the user interface as a cellular phone.

59.   A method of operating a device connected to a renewable energy source, the method comprising having the device communicate wirelessly with a user interface and a transaction processing system wherein the device does not have, as its primary function, communication and wherein the user interface operates as a cellular phone, wherein the

5   transaction processing system determines an operational state of the device based on a transaction initiated by the user using the user interface.

60.   The method according to claim 58 further comprising the step of collecting information pertaining to the use of the device and, on the basis of this information,
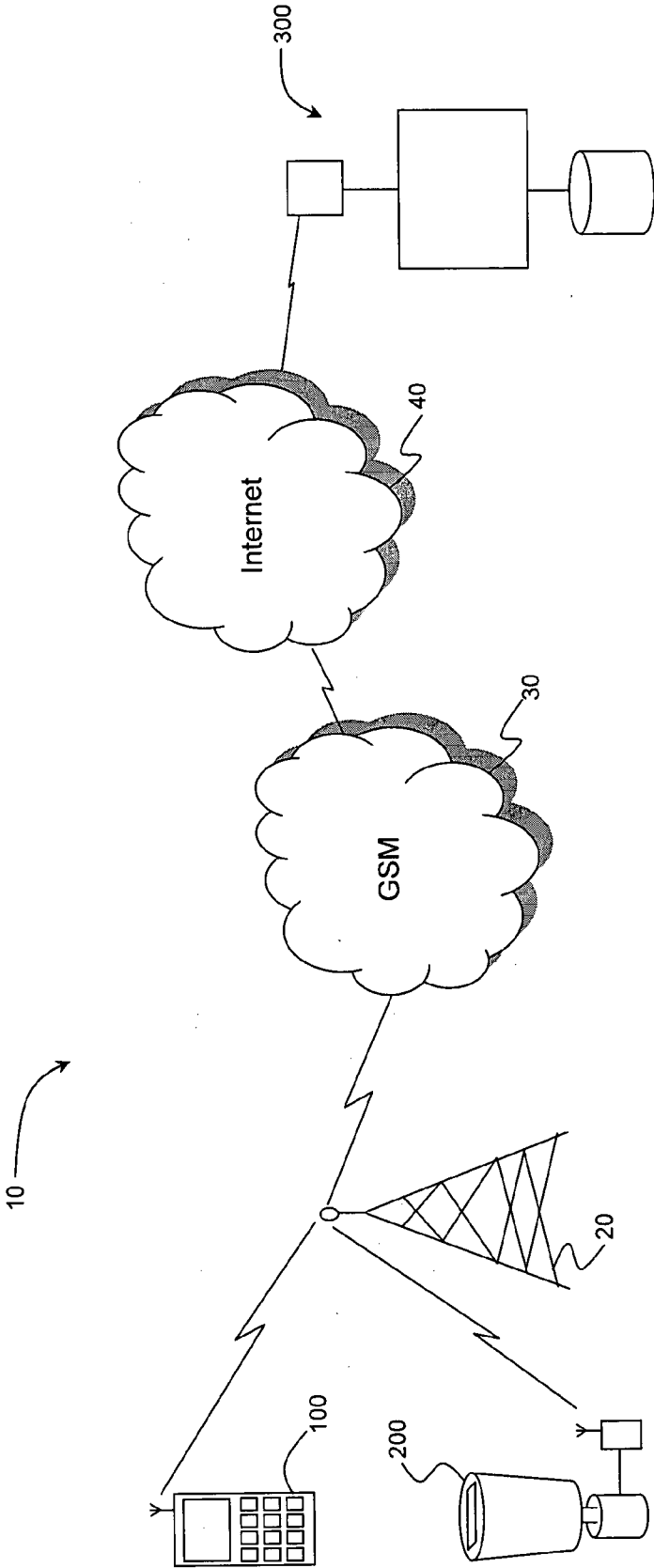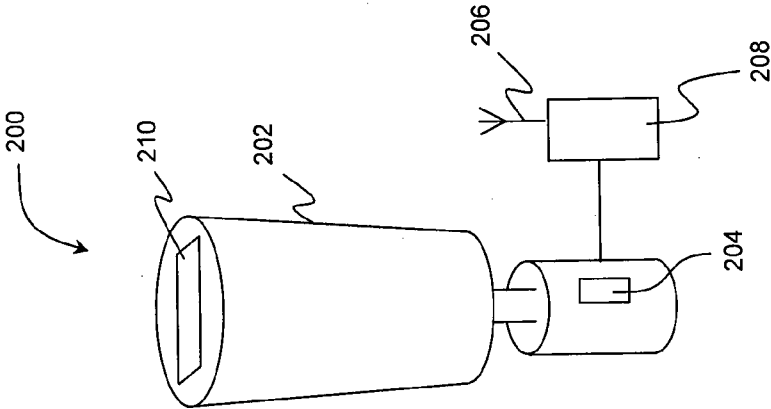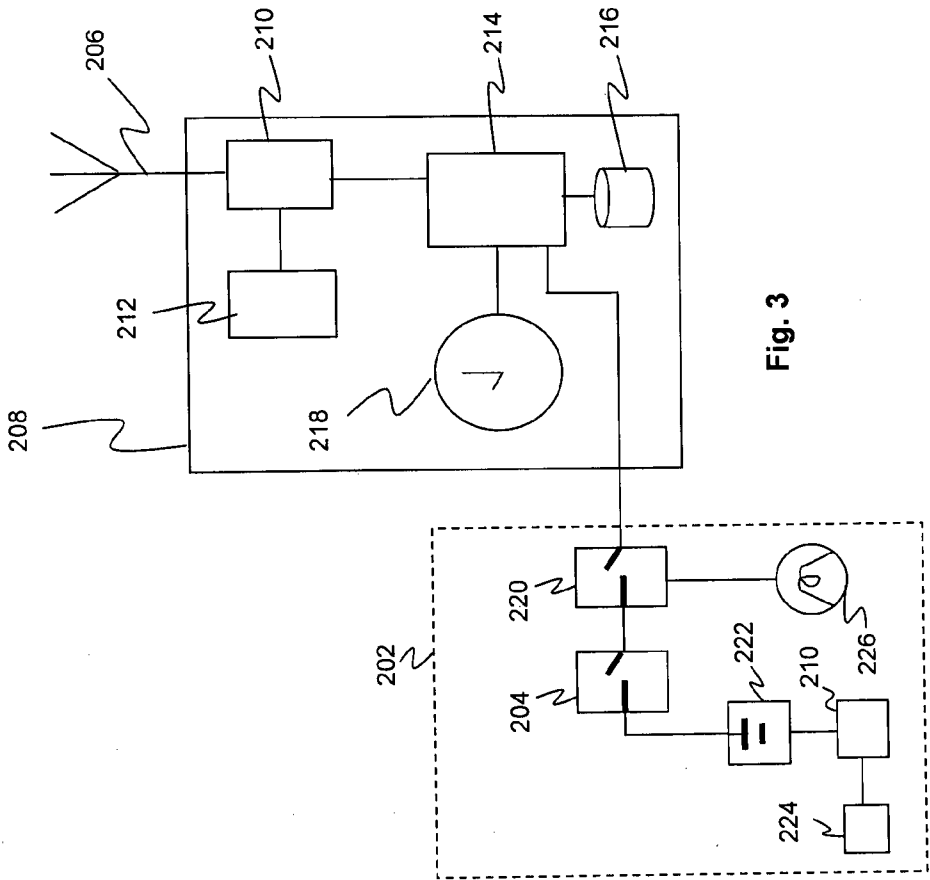
10   calculating carbon offsets.

Fig. 1

Fig. 3
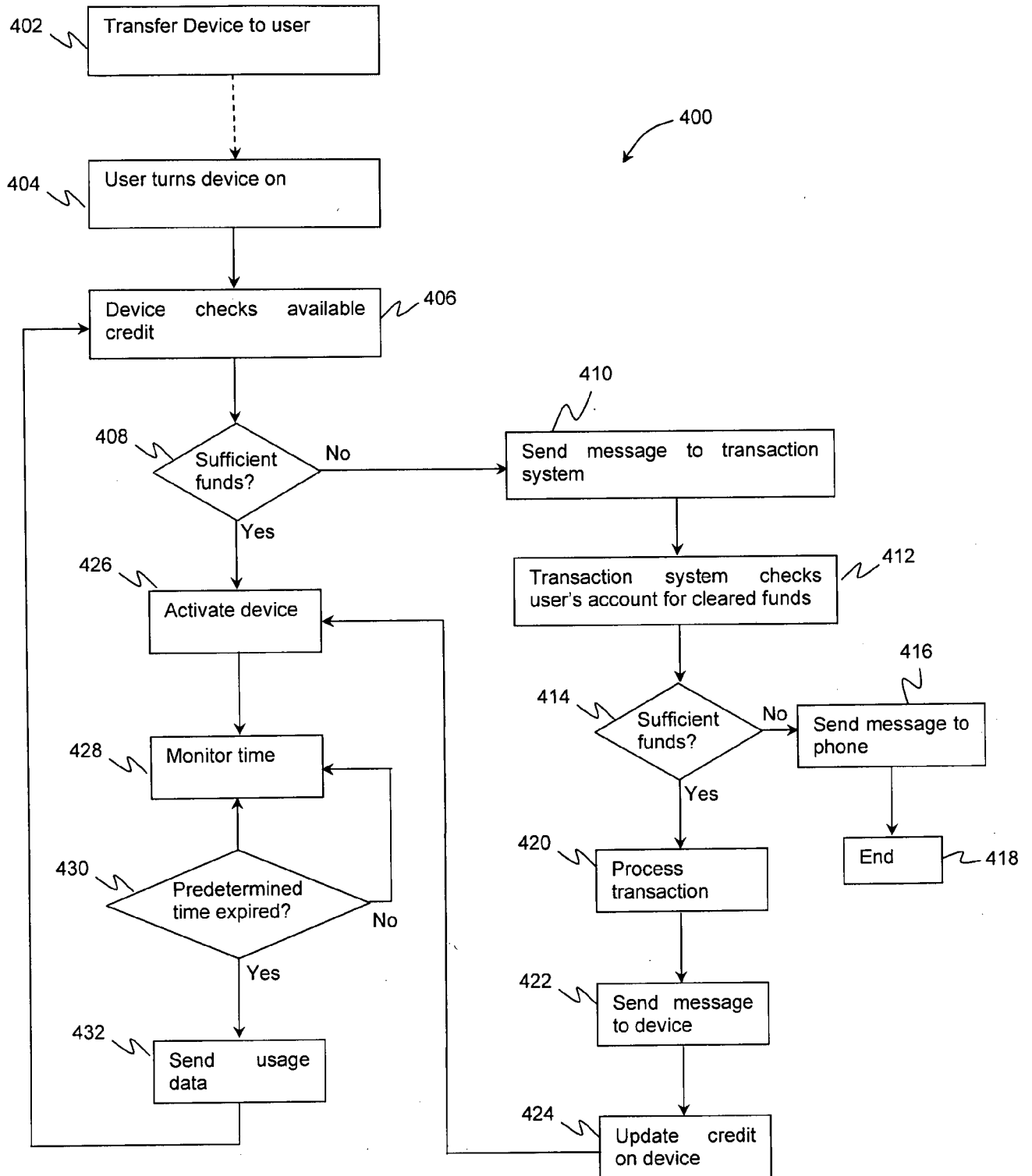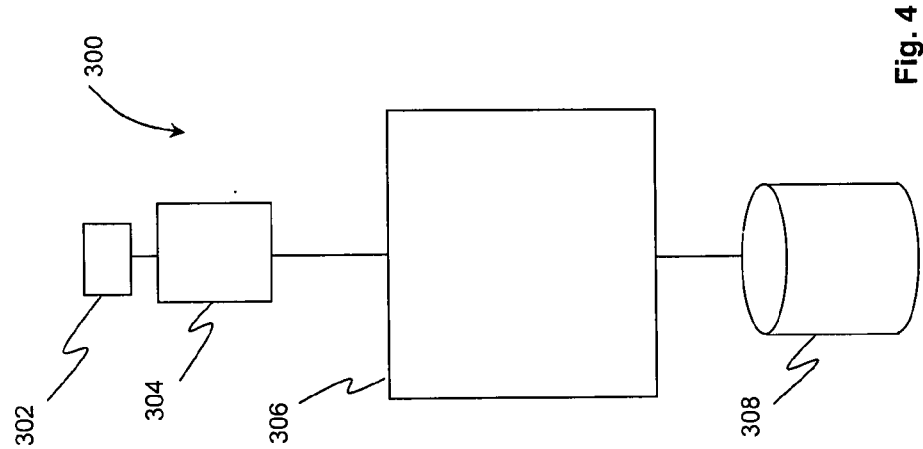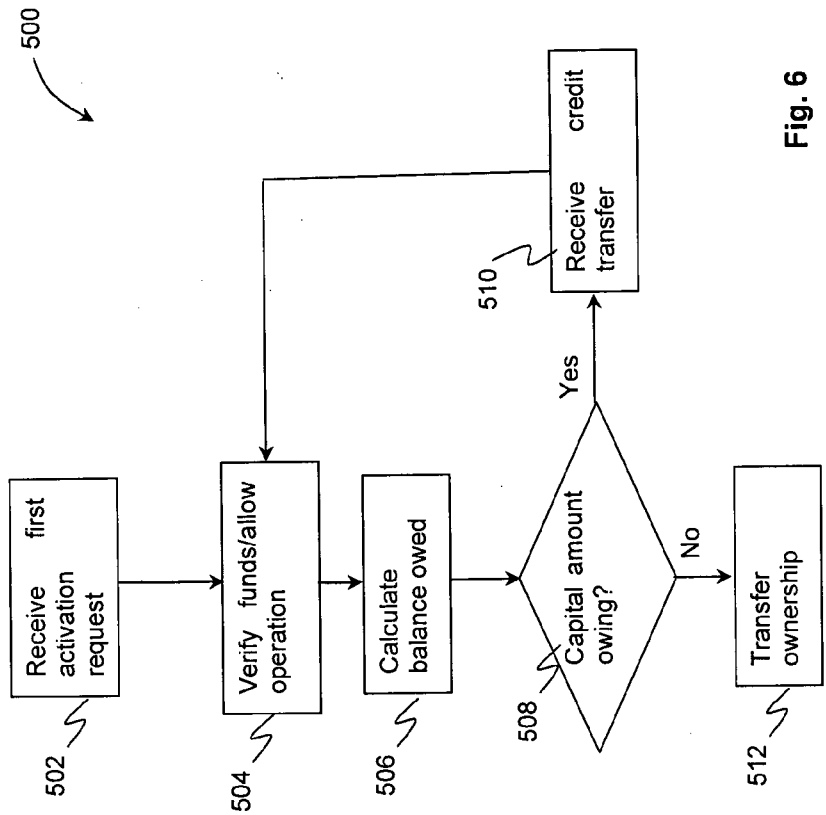
Fig. 2

402 — Transfer Device to user

404 — User turns device on

406 — Device checks available credit

400

408 — Sufficient funds?

— No → 410 — Send message to transaction system

412 — Transaction system checks user's account for cleared funds

414 — Sufficient funds?

— No → 416 — Send message to phone

418 — End

— Yes → 420 — Process transaction

422 — Send message to device

424 — Update credit on device

— Yes (from 408) → 426 — Activate device

428 — Monitor time

430 — Predetermined time expired?

— No → (back to Monitor time)

— Yes → 432 — Send usage data

Fig. 5

Fig. 4

Fig. 6

A.	CLASSIFICATION OF SUBJECT MATTER

Int. Cl

G06Q 30/00 (2006.01)   *G07F 15/06* (2006.01)

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

B.	FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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)
Database: EPODOC and WPI with Keywords (TRANSACTION, PAYMENT, MOBILE PHONE, OPERATIONAL) and like terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6535726 B1 (JOHNSON) 18 March 2003 See the Abstract, Summary of the invention and Figure 1A	1 – 44 and 55 – 60
X	WO 2004/049585 A1 (ISKRAE-MECO ECL LTD.) 10 June 2004 Abstract and Page 7 line 4 – Page 8 line 13	1 – 44 and 55 – 60
L	WO 2002/033669 A1 (U P ELEKTRONSKIH NAPRAV D.O.O) 25 April 2002 See the Abstract (This document is referred to explicitly in WO 2004/049585, page 9 line 19)	1 – 44 and 55 – 60

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

*	Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
21 July 2011	04 August 2011

Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. +61 2 6283 7999	Authorized officer **Vivek Joshi** AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : +61 2 6222 3663

Box No. II   Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.   **45 – 54**

because they relate to subject matter not required to be searched by this Authority, namely:

Schemes, rules or methods of doing business.

2. [ ] Claims Nos.:

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. [ ] Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III   Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

As reasoned on the extra sheet.

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [X] As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.

Supplemental Box
(To be used when the space in any of Boxes I to IV is not sufficient)

Continuation of Box No: III

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

This Authority has found that there are different inventions based on the following features that separate the claims into distinct groups:

- Claims 1 – 44 and 55 – 60 are directed to a device which is made operational after a payment is received through a remote transaction processing system using a mobile communication device. The feature of "the remote transaction processing system being adapted to process transactions involving a mobile communication device, wherein the operational state of the device is set according to an outcome of a processed transaction" is specific to this group of claims.

- Claims 45 – 54 are directed to a method of arranging payment for an asset. The feature of "charging the user for the use of the device for a predetermined period, wherein the amount charged for the use includes a portion allocated to the retail cost of the device" is specific to this group of claims.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature there is no unity of invention.

In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claims and therefore cannot provide the required technical relationship. Therefore there is no special technical feature present in the claims and the requirements for unity of invention are consequently not satisfied *a priori.*

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	6535726	AU	25338/01	EP	1247262	US	2003153278
		US	7039389	WO	0152202		
WO	2004049585	AU	2003290217	GB	2411557		
WO	0233669	AU	76802/00	BG	107746	BR	0017365
		CA	2423770	CN	1454373	CZ	20031096
		EE	200300154	EP	1327230	HK	1058424
		HR	20030271	HU	0303059	IL	155076
		IS	6790	JP	2004512607	MX	PA03003308
		NO	20031598	PL	360936	SK	4782003
		US	7835942				

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX