

ELECTRONIC REGISTRATION SYSTEM AND METHOD

Field of the Invention

5 The present invention relates generally to the field
of electronic registration systems and methods, and more
particularly but by no means exclusively, to a system and
method for registering the sale of a wireless
communications device, such as a mobile telephone,
10 personal digital assistant (PDA), or the like.

Background of the Invention

 When selling certain electronic devices, it is
15 necessary to register details of the sale and/or product.
For example, when selling an electronic device such as a
mobile telephone, registration details such as the IMEI
number of the telephone and identity of the store from
which the phone was sold, are usually provided to the
20 phone manufacturer for warranty purposes. The
registration details may also be utilised by the
manufacturer, retailer or other party for obtaining sales
statistics, performing marketing analysis, etc.

25 Mobile telephone registration typically involves the
sales person and/or customer filling out a customer
information card, adhering an IMEI number sticker located
in the mobile phone packaging to the customer information
card, and posting the card off to the manufacturer. Once
30 received, the manufacturer manually enters the relevant
registration details into a database to complete the
registration process. As can be readily appreciated this
process can be time consuming for both the salesperson and

manufacturer. Furthermore, operator error can lead to incorrect details being entered on the customer information card or into the database, resulting in incorrect details being registered.

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Summary of the Invention

In accordance with a first aspect, the present invention provides a method for registering details of an electronic device removably coupled to a registration module carrying registration-related information, the method comprising the steps of: initiating the registration module to retrieve a device identifier of the electronic device; and communicating the device identifier and registration-related information to a processing system for affecting the registration.

An advantage of at least an embodiment of the invention is that the registering details of an electronic device, such as a mobile phone, may be conveniently and quickly provided to a processing system for registration. Furthermore, in contrast to conventional registration techniques where operator error can lead to incorrect details being registered, embodiments of the present invention ensure that accurate registration details are provided to the registration system.

In an embodiment, the registration-related information is associated with an identity of an entity providing the electronic device. The entity may, for example, be a vendor or retailer of the electronic device. In an embodiment, the entity may be an owner of the electronic device.

In an embodiment, the electronic device is a mobile telephone. In an embodiment, the registration-related information is a Mobile Identification Number (MIN)

5 associated with the entity.

In an embodiment, the registration module is a Subscriber Identity Module (SIM). In an embodiment, the SIM is provided with a registration application which includes at least one instruction for causing the mobile
10 telephone to provide the device identifier and communicate the device identifier and registration-related information to the processing system.

In an embodiment, the device identifier is an IMEI number of the mobile telephone.

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In an embodiment, the method comprises the further step of providing a confirmation message once the details have been registered.

20 In an embodiment, the registration-related information and device identifier are communicated to the processing system in short message format.

In an embodiment, the step of initiating the
25 registration module comprises powering-on the electronic device. In an embodiment, the step of initiating the registration module comprises selecting a registration application from a SIM application menu.

30 In accordance with a second aspect of the present invention there is provided a method of registering details of an electronic device removably coupled to a registration module carrying registration-related

information, the method comprising the steps of: receiving
a message from the electronic device, responsive to the
registration module being initiated; and processing the
message to determine a device identifier and registration-
5 related information for registering details of the
electronic device.

In accordance with a third aspect of the present
invention there is provided a registration module arranged
10 to be removably coupled to an electronic device for
registering details thereof, the module carrying
registration-related information and comprising a program
including at least one instruction for causing the
electronic device to implement the following steps:
15 retrieve a device identifier associated with the
electronic device; and communicate the device identifier
and registration-related information to a processing
system for carrying out the registration.

20 In accordance with a fourth aspect of the present
invention there is provided a processing system for
registering details of an electronic device removably
coupled to a registration module carrying registration-
related information, the processing system comprising: a
25 receiving module arranged to receive the registration-
related information and a device identifier from the
electronic device in response to the registration module
being initiated; and processing module arranged to process
the registration-related information and device identifier
30 to register the details of the electronic device.

In accordance with a fifth aspect, the present
invention provides a computer program including at least

one instruction which, when implemented by a computer readable medium of a computing system, causes the computing system to implement the method steps in accordance with any one of first or second aspects.

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In accordance with a sixth aspect the present invention provides a computer readable medium providing a computer program in accordance with the fourth aspect of the invention.

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In accordance with a seventh aspect the present invention provides a method for authorising a request to register details of a mobile telephone comprising the steps of: receiving, over a wireless network, a message containing an IMEI number of the mobile telephone; processing the message to determine whether the IMEI number is valid; and providing an authorisation notification to either accept or decline the request based on the determination.

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In an embodiment the step of processing the message comprises comparing the IMEI number against at least one previously registered IMEI numbers to determine whether the IMEI number is valid.

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In an embodiment the step of processing the message comprises comparing details of the message against one or more known fraudulent message patterns to determine whether the IMEI number is valid.

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In an embodiment, if it is determined that the IMEI number is valid, the authorisation notification instructs a processing system to register the IMEI number of the

mobile telephone in association with an identifier of an entity sending the message. In an embodiment the identifier is a mobile identification number (MIN) of the entity.

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In an embodiment, if it is determined that the IMEI number is invalid, the authorisation notification instructs a processing system to decline the request to register details.

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In an embodiment the method comprises the further step of instructing a vendor of the mobile telephone to decline a sale of the mobile telephone.

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In an embodiment the message is received in response to invoking a registration method for the mobile device in accordance with the first aspect whereby the electronic device is the mobile telephone.

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In accordance with an eighth aspect the present invention provides a computer program including at least one instruction which, when implemented by a computer readable medium of a computing system, causes the computing system to implement the method steps in

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accordance with the seventh aspect.

In accordance with a ninth aspect the present invention provides a computer readable medium providing a computer program in accordance with the eighth aspect.

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Brief Description of the Drawings

Features and advantages of the present invention will become apparent from the following description of
5 embodiments thereof, by way of example only, with reference to the accompanying drawings, in which;

Fig. 1 is a schematic illustration of a system for carrying out embodiments of the present invention;
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Fig. 2 shows a process flow of a method for registering details of an electronic device utilising the system of Fig. 1, in accordance with an embodiment of the invention.

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Fig. 3 is a schematic of the individual system elements of Fig. 1.

Fig. 4 shows a process flow for registering details of an electronic device, in accordance with an alternative
20 embodiment of the present invention.

Detailed Description of Preferred Embodiments

25 With reference to Fig. 1, there is shown a schematic of a system 100 for carrying out embodiments of the present invention. The system 100 is configured to register details of an electronic device in the form of a mobile telephone 104, with a processing system 106. The
30 registration details are provided to the processing system 106 in a message, such as a short message (SMS), which is sent by the mobile telephone 104 over a wireless communications network 108. The message is sent to the

processing system 106 under instruction from a registration module 102 in this example embodiment being in the form of a subscriber identity module (or "SIM") 102, coupled to the mobile telephone 104.

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In the embodiment described herein, the registration details include a device identifier in the form of an IMEI number and registration-related information in the form of a mobile identification number (MIN) associated with a retailer 110 of the mobile telephone 104. The processing system 106, in this embodiment a registration server 106, records the registration details in a database 107. The registration details may subsequently be used by a manufacturer of the mobile telephone, retailer, or other party for a number of uses including managing warranties, obtaining sales makes, performing marketing analysis, etc. In an embodiment, the registration details may also be used by the retailer as a "proof of sale" for a reward program or by the purchaser as a "proof of purchase" for a customer loyalty scheme.

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With additional reference to Fig. 2, an embodiment of a basic registration process utilising the system of Fig. 1, will now be described.

At step 202, the retailer 110 of the mobile telephone 104 inserts the SIM 102 into the mobile telephone 104, in a conventional manner. The retailer 110 then initiates the SIM 102 by "powering-on" the mobile telephone 104 at step 204 and enters a registration program in a SIM application menu of the mobile phone 104 (step 204). The SIM 102, utilising a registration module loaded thereon, instructs the mobile telephone 104 to retrieve the IMEI number from

the mobile telephone memory (step 206). At step 208, the registration application instructs the mobile telephone 104 to package details of the IMEI number in a message, using for example, the short message service (SMS)

5 protocol. The mobile telephone 104 is then instructed to transmit the short message to the registration server 106 over the communications network 108. At step 210, the registration server 106 processes the message to extract the IMEI number and details of the retailer 110 (in this
10 embodiment, the Mobile Identification Number registered to the retailer 110) and stores these registration details in the database 107. A confirmation message is then provided to the mobile telephone 104 confirming that the registration process has been successful.

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The individual elements of the system 100 will now be described in more detail, with reference to the block diagram of Fig. 3.

20 As previously mentioned, the registration module in this example embodiment is in the form of a SIM 102 which is registered to the retailer and as such carries a mobile identification number (MIN) unique to that retailer. The SIM also includes standard hardware and software for
25 operating in a GSM network. In accordance with the embodiment described herein, the SIM 102 includes a data storage module 302 and operating system 304 in the form of a Java Card platform which is particularly suited for small embedded devices. The Java Card platform allows the
30 SIM 102 to contain applications that are hardware independent and interoperable. In this regard, the SIM 102 is loaded with a registration application in the form of a Java registration program which functions to instruct

the mobile telephone 104 to send the relevant registration details to the registration server 106. A SIM tool-kit, such as the 3GPP TS 11.4 tool-kit, is also stored on the SIM and communicates with the registration program for
5 instructing the mobile telephone to compose short messages.

The Java registration program includes code which, when initiated, causes the mobile telephone 104 to
10 retrieve the IMEI number stored in memory. Utilising the SIM tool-kit, the registration program subsequently instructs the mobile telephone 104 to compose a short message containing the IMEI number and sends the message to the registration server 106, using address details
15 stored in the storage module 302. In an embodiment, the address is determined from the MIN which has been assigned to an SMS gateway of the registration server 106. In an embodiment, the retailer 110 initiates the Java registration program by powering on the mobile telephone
20 104, once the SIM 102 has been installed.

The mobile telephone 104 can be any form of mobile or wireless device which is capable of co-operating with the registration module 102 so as to send messages to
25 registration server 106 over the network 108. In the embodiment described herein, the mobile telephone 104 includes standard hardware and software including a transceiver 306, memory 308, power supply 310 etc. Furthermore, the mobile telephone 104 also includes a
30 standard port/connection 312 for receiving and communicating with the SIM 102.

The network is in the form of a standard GSM mobile telecommunications network 108. Although not illustrated in Fig. 3, the network 108 includes standard network elements including a base station controller, home
5 location register, mobile switching centre, message centre, equipment identity register, SMS gateway, etc. It will be understood, however, that the network 108 could be any form of communications network arranged to send messages to the processing system including, for example
10 third-generation networks, CDMA networks among others.

Lastly, the system 100 includes a processing system in the form of a registration server 106 coupled to a registration database 107. As mentioned above, the
15 registration server 106 functions primarily to receive and record the registration-related information and device identifier from the mobile telephone 104 and where applicable, provide feedback to the vendor as to whether the details were successfully registered. To perform
20 this functionality the registration server 106 comprises computer hardware including a motherboard 314, central processing unit 316, read only memory (ROM) 317, random access memory (RAM) 318, hard disk 320 and networking hardware 322. In an embodiment, the registration server
25 106 communicates with the network 108 by way of a GSM modem and/or SMS gateway. In an embodiment, these components are provided by the GSM network operator. The registration database 107 stores the received registration details. It also includes a listing of all retailers
30 stored in association with their mobile identity number. In addition to the hardware, the registration server 106 includes an operating system (such as the Linux operating system, which can be obtained from the Internet at a

website located at URL <http://www.redhat.com>) that resides on the hard disk and which co-operates with the hardware to provide an environment in which the software applications can be executed. In this regard, the hard
5 disk 320 of the registration server 106 is loaded with a processing application which processes the incoming short messages to extract both the IMEI number and mobile identification number. The mobile identification number can subsequently be utilised to identify the retailer (and
10 other associated details, such as for example, store location, employee name, contact details etc) and for storing in association with the device identifier in the database 107. In an embodiment, the registration details are provided to the mobile telephone manufacturer or
15 contractor in a batch file exchange or via a web server, for warranty purposes, marketing analysis, sales tracking, incentive programs, etc.

Fig. 4 illustrates an alternative registration
20 process flow to that shown in Fig 2. The major difference when compared to the process flow of Fig. 2 is that, in this embodiment, if a duplicate IMEI number is detected by the registration server 106, a message will be sent to notify the retailer of the duplicate entry; otherwise a
25 fraud detection system (see the third column process flow indicated generally by arrow "A") will compare the entry against known fraud patterns (for example time of entry, frequency, etc). If the entry matches a known fraud pattern, the fraud detection system subsequently flags the
30 entry as "suspect" and notifies a customer service repetitive (CSR) who in turn studies the message to decide whether it should be approved, declined, or escalated (see column 4, indicated generally by arrow "B"). This may

involve calling the retailer and asking for supporting documents (customer receipts, etc). If the retailer fails to provide the requested documents, then the CSR can be confident that the details are fraudulent and decline the entry. Otherwise the CSR may decide to escalate the matter to his/her manager. If it is decided to escalate the matter an alert message is sent to notify the vendor. If approved, details of the duplicate entry are recorded in an off-line register.

10 Although embodiments of the present invention are particularly applicable for registering details of mobile telephones, it will be understood by persons skilled in the art that the present invention is equally suitable for registering details of any wireless device including, for
15 example, personal digital assistants (PDAs), wireless computers (e.g. using GSM data cards, USB dongles etc) or any other devices capable of sending a unique device identifier over a wireless link.

20 In preceding paragraphs, the registration-related information was a mobile identification number (MIN) associated with the SIM. However, in an alternative embodiment the registration-related information may be a code which is manually entered into the short message
25 using the phone's keypad (e.g. by the retailer). For example, the registration-related information may be an alphanumeric code entered into the short message and used by the registration system to identify the store or
30 assistant selling the mobile telephone. Furthermore, it is envisaged that the registration module may also take the form of a memory card (e.g. SD card) that stores the registration application.

While the invention has been described with reference to the present embodiment, it will be understood by those skilled in the art that alterations, changes and improvements may be made and equivalents may be substituted for the elements thereof and steps thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt the invention to a particular situation or material to the teachings of the invention without departing from the central scope thereof. Such alterations, changes, modifications and improvements, though not expressly described above, are nevertheless intended and implied to be within the scope and spirit of the invention. Therefore, it is intended that the invention not be limited to the particular embodiment described herein and will include all embodiments falling within the scope of the independent claims.

In the claims which follow and in the preceding description of the invention, except where the context requires otherwise due to express language or necessary implication, the word "comprise" or variations such as "comprises" or "comprising" is used in an inclusive sense, i.e. to specify the presence of the stated features but not to preclude the presence or addition of further features in various embodiments of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method for registering details of an electronic device removably coupled to a registration module carrying registration-related information, the method comprising the steps of:
 - initiating the registration module to retrieve a device identifier of the electronic device; and
 - communicating the device identifier and registration-related information to a processing system for affecting the registration.
2. A method in accordance with claim 1, whereby the registration-related information is associated with an identity of an entity providing the electronic device.
3. A method in accordance with any one of the preceding claims, whereby the electronic device is a mobile telephone.
4. A method in accordance with claim 3 when dependent on claim 2, whereby the registration-related information is a Mobile Identification Number (MIN) associated with the entity.
5. A method in accordance with claims 3 or 4, whereby the registration module is a Subscriber Identity Module (SIM).
6. A method in accordance with claim 5, whereby the SIM is provided with a registration application which includes at least one instruction for causing the mobile telephone to provide the device identifier and communicate the

device identifier and registration-related information to the processing system.

7. A method in accordance with any one of claims 3 to 6,
5 whereby the device identifier is an IMEI number of the mobile telephone.

8. A method in accordance with any one of the preceding claims, comprising the further step of providing a
10 confirmation message once the details have been registered.

9. A method in accordance with any one of claims 3 to 8,
whereby the registration-related information and device
15 identifier are communicated to the processing system in short message format.

10. A method in accordance with any one of preceding claims, whereby powering-on the electronic device causes
20 the registration module to be initiated.

11. A method in accordance with any one of the preceding claims 6 to 9 when dependent on claim 5, whereby the step of initiating the registration module comprises selecting
25 a registration application from a SIM application menu.

12. A method of registering details of an electronic device removably coupled to a registration module carrying registration-related information, the method comprising
30 the steps of:

receiving a message from the electronic device,
responsive to the registration module being initiated; and
processing the message to determine a device

identifier and registration-related information for register details of the electronic device.

13. A method in accordance with claim 12, comprising the
5 further step of providing the electronic device with a confirmation message once the details have been registered.

14. A method in accordance with either of claims 12 or
10 13, whereby the registration-related information is associated with an identity of an entity providing the electronic device.

15. A method in accordance with any one of the preceding
15 claims 12 to 14, whereby the electronic device is a mobile telephone.

16. A method in accordance with claim 15 when dependent
on claim 14, whereby the registration-related information
20 is a Mobile Identification Number (MIN) associated with the entity.

17. A method in accordance with claims 15 or 16, whereby
the registration module is a Subscriber Identity Module
25 (SIM).

18. A method in accordance with claim 17, whereby the SIM
is provided with a registration application which includes
at least one instruction for causing the mobile telephone
30 to send the device identifier and registration-related information.

19. A method in accordance with any one of claims 14 to

18, whereby the device identifier is an IMEI number of the mobile telephone.

20. A method in accordance with any one of claims 12 to 19, whereby the message is encoded in a short message format.

21. A registration module arranged to be removably coupled to an electronic device for registering details thereof, the module carrying registration-related information and comprising a program including at least one instruction for causing the electronic device to implement the following steps:

retrieve a device identifier associated with the electronic device; and

communicate the device identifier and registration-related information to a processing system for carrying out the registration.

22. A registration module in accordance with claim 21, wherein the electronic device is in the form of a mobile telephone and wherein the registration module is a Subscriber Identity Module (SIM).

23. A registration module in accordance with claim 22, wherein the registration-related information is in the form of a Mobile Identification Number (MIN) associated with a provider of the mobile telephone.

24. A processing system for registering details of an electronic device removably coupled to a registration module carrying registration-related information, the processing system comprising:

a receiving module arranged to receive a message from the electronic device in response to the registration module being initiated; and

processing module arranged to process the message to
5 determine registration-related information and device identifier for registering the details of the electronic device.

25. A processing system in accordance with claim 24,
10 whereby the registration-related information is associated with an identity of an entity providing the electronic device.

26. A processing system in accordance with any one of the
15 preceding claims 24 to 25, whereby the electronic device is a mobile telephone.

27. A processing system in accordance with claim 26 when
dependent on claim 25, whereby the registration-related
20 information is a Mobile Identification Number (MIN) associated with the entity.

28. A processing system in accordance with claims 26 or
27, whereby the registration module is a Subscriber
25 Identity Module (SIM).

29. A processing system in accordance with claim 28,
whereby the SIM is provided with a software and/or
hardware application which includes at least one
30 instruction for causing the mobile telephone to provide the device identifier and communicate the device identifier and registration-related information to the processing system.

30. A processing system in accordance with any one of claims 26 to 29, whereby the device identifier is an IMEI number of the mobile telephone.

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31. A processing system in accordance with any one of the preceding claims, further comprising a transmitting module arranged to provide the electronic device with notification as to whether the registration has been effected.

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32. A processing system in accordance with any one of claims 26 to 31, whereby the registration-related information and device identifier are sent to the processing system by the electronic device in short message format.

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33. A processing system in accordance with any one of the preceding claims 24 to 32, whereby the step of initiating the registration module comprises powering-on the electronic device.

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34. A computer program including at least one instruction which, when implemented by a computer readable medium of a computing system, causes the computing system to implement the method steps in accordance with any one of claims 1 to 11.

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35. A computer program including at least one instruction which, when implemented by a computer readable medium of a computing system, causes the computing system to implement the method steps in accordance with any one of claims 12 to 20.

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36. A computer readable medium providing a computer program in accordance with either of claims 34 or 35.

5 37. A method for authorising a request to register details of a mobile telephone comprising the steps of:
receiving, over a wireless network, a message containing an IMEI number of the mobile telephone;
processing the message to determine whether the IMEI
10 number is valid; and
providing an authorisation notification to either accept or decline the request based on the determination.

38. A method in accordance with claim 37, wherein the
15 step of processing the message comprises comparing the IMEI number against at least one previously registered IMEI number to determine whether the IMEI number is valid.

39. A method in accordance with claims 37 or 38, wherein
20 the step of processing the message comprises comparing details of the message against one or more known fraudulent message patterns to determine whether the IMEI number is valid.

25 40. A method in accordance with any one of the preceding claims 37 to 39, whereby if it is determined that the IMEI number is valid, the authorisation notification instructs a processing system to register the IMEI number of the mobile telephone in association with an identifier of an
30 entity sending the message.

41. A method in accordance with claim 40, whereby the identifier is a mobile identification number (MIN) of the

entity.

42. A method in accordance with anyone of the preceding
claims 37 to 40, whereby if it is determined that the IMEI
5 number is invalid, the authorisation notification
instructs a processing system to decline the request to
register details.

43. A method in accordance with claim 42, comprising the
10 further step of instructing a vendor of the mobile
telephone to decline a sale of the mobile telephone.

44. A method in accordance with any one of claims 37 to
43, whereby the message is received in response to
15 invoking a registration method for the mobile device in
accordance with any one of claims 1 to 11.

45. A computer program including at least one instruction
which, when implemented by a computer readable medium of a
20 computing system, causes the computing system to implement
the method steps in accordance with any one of claims 37
to 44.

46. A computer readable medium providing a computer
25 program in accordance with claim 45.