Abstract Title: Mobile communication control system

A service package for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network. The service package is arranged to be capable of permitting or denying the establishment of a communication link with one of the terminals over the network by means of a control unit responsive to instructions, the instructions identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified terminals. The control unit is further arranged to use the instructions to permit or deny the establishment of a communication link with the said one terminal.
MOBILE COMMUNICATION CONTROL SYSTEM

The present invention relates to a service package useable by a first person to provide control of the functionality of a mobile device operated in a mobile telecommunications system by a second person, apparatus for controlling the functionality of a mobile device operated by a first user in a mobile telecommunications system, a computer program product comprising program code means useable in a telecommunications system to operate a service package and a communication policing arrangement for a mobile communication system.

Sales of mobile devices such as mobile telephones have increased dramatically in recent years. As well as adults purchasing telephones for their own use, many people purchase telephones for their children, spouses or elderly relatives because they are concerned for their safety. The idea behind this is to allow them to know where, for example their children are and to allow the children to contact their parents if they are delayed or to report their location and wellbeing. Such adults can be termed "guardians" of the relative in question. Thus some of the sales of mobile telephones rely on the fear, real and otherwise, which is prevalent in modern society.

Initially many customers of these telephones carried them to use in emergencies only. However, as ownership of mobile devices has increased and the service packages expanded, purchase for everyday use has become increasingly common.

Currently there are no restrictions on who can call, text or communicate with a mobile device. This has given rise to various problems. One problem is that children, for example, can receive inappropriate material at their telephones from their friends or via an Internet link. Children in particular are also likely to cause problems for their parents by over-use of their mobile phones and hence running up an unacceptably large bill.

There do exist systems known as a "closed user group". This means that the service provider sets up a service in which a group of people whom a user can call and who can call the user is specified. One example would be a restriction on use of a mobile telephone to set up communication only with other users of a company intranet. However, this system places no restriction on the type of communication which can be set up and so does not solve the above-mentioned problems.
Another problem is spam or unsolicited communication. With more media formats and functionality being provided in mobile network services the ability and propensity for mobile telephones to receive items which are inappropriate, unwanted or abusive is increasing. This sort of communication is often in the form of voice calls or messages and comes from a source unknown to the recipient. This can take the form of telling the recipient that they have won a prize and must phone a particular number to claim the prize, simply providing unwanted information to the recipient or, in the worst case, sending obscene or otherwise undesirable information. Some of this sort of communication targets particular groups of people by way of a list of phone numbers. Such a list can be computer-generated and, for example, a text message sent automatically to all the generated phone numbers. Alternatively it is the result of random selection of a number in the same way as nuisance calls to landlines.

Spam communication is a particular problem when it comes to vulnerable people such as children and the elderly. Neither group is hardened to such things and is likely to be upset by such communication or reply to it and thereby put themselves at risk. It is also relatively easy for mobile devices to transmit material to unknown or inappropriate receivers.

Another problem with current systems for mobile phone use is that there is no direct provision for action to be taken in the event of the user indicating an emergency.

It would be desirable to provide a service which allows an individual or a guardian responsible for another individual to control the operation of a mobile device and in particular correspondence with the mobile device. For example, it would be useful for the numbers which the user of the mobile device can receive communications from to be restricted, together with the amount of use permitted by the user and the type of communications allowed. Such a service would also be useful for tracking of the mobile phone, for example following an emergency alert by the user, so that a suitable response can be executed.

According to a first aspect of the present invention, there is provided a service package for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the service package being arranged to be capable of permitting or denying the establishment of a communication link with one of the terminals over the network by means of a control unit responsive to instructions, the instructions identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified
terminals, and the control unit being further arranged to use the instructions to permit or deny the establishment of a communication link with the said one terminal.

A service package includes any type of service provided within a mobile communications system that can be contracted into as a service or as part of a service for operation of a mobile device, and is usually provided by a service provider.

According to a second aspect of the present invention, there is provided apparatus for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the apparatus being arranged to permit or deny the establishment of a communication link with one of the terminals over the network, the apparatus comprising a communication link and a control unit, the control unit being responsive to instructions received over the communication link, which instructions identify which of the other of the plurality of terminals can communicate with the said one terminal and define the type of communication permitted with each of the identified terminals, and the control unit being further arranged to use the instructions to permit or deny the establishment of a communication link with the said one terminal.

According to a third aspect of the present invention, there is provided a computer program product comprising program code means useable to operate a service package for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the service package being arranged to be capable of permitting or denying the establishment of a communication link with one of the terminals over the network, the computer program product providing the following steps: receiving instructions identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified terminals; and using the instructions to permit or deny the establishment of a communication link with the said one terminal. Embodiments of the invention will now be described, by way of example only, with reference to the accompanying figure 1 which shows schematically a mobile telephone system and the various parties interacting in the system that are of relevance to the invention.

The idea behind embodiments of the present invention is for a person(s) designated as a guardian of another person to have the ability to enable services and control access to and correspondence with the mobile telephone of the other person. These controls are activated by the mobile service provider upon instruction from the guardian and may be activated at the mobile device itself. The service may of course be applicable to individuals who wish to
control their own mobile telephones to stop unwanted incoming communication or to ensure a limit on their telephone bill.

Control of some or all of the following features is provided:

- Who can correspond with the mobile device
- Which type of communication facilities are allowed to/from the mobile device
- Which type of media is allowed to be used
- Times at which communication is permitted
- Which direction communications are allowed
- Which mobile service provider service is enabled e.g. international, GPRS, etc
- Which local communications are allowed - IrDA, Bluetooth, WiFi, Hot Spots, etc
- Distress and emergency procedure - when the mobile user needs help
- The location of the mobile device

All or some of the above features may be controlled in conjunction with one another. Controllable features are not limited to the list above.

The service and system within which it operates will now be described in more detail with reference to figure 1.

Figure 1 shows a system labelled generally with reference numeral 1. Central to the system 1 is a mobile telecommunications network 2. This comprises the usual network elements to enable mobile communication between users of the network 2. However, some parts of the network 2 are shown separately. These are a filter database 4 located in between the network 2 and three base stations 6a, 6b, 6c. In practice there would be many more base stations than three and indeed more than one filter database 4 could be provided, and these would have the same function as will be described below. The filter database 4 comprises both a control and a storage function.

The base stations 6a, 6b and 6c are the parts of the network 2 to which mobile devices communicate directly in order to gain access to the network 2. One such mobile device 8 is shown, currently in communication with the base station 6b, although the mobile device 8 can roam and thus communicate with different base stations as is known in the art. The mobile device 8 comprises an internal filter 10. The mobile device 8 is in this embodiment used by a child. The mobile device can be any of a mobile telephone, a mobile pager, a text
messaging device, a PDU, a personal communicator and any other type of suitable mobile
device.

There is also shown a local communication source 12. This source represents any non-
network communication that can in theory be received by the mobile device 8, such as IrDA,
Bluetooth, WiFi, Hot Spots, etc.

A service control module 14 is shown to be connected to the network 2. This has access to
a service database 17. The service control module 14 can also receive communications
from a help desk 16 and the Internet 18. Such communications originate from instructions
sent by the guardian 20.

Finally, there is shown a spam user 22 in the form of a mobile device which can access the
network 2. The spam user 22 represents the generation of any type of unsolicited
communication.

In use, the guardian 20 sets up a subscription contract to the control service provided by the
service provider. This may include purchase of the mobile device 8 and setting up a
standard mobile contract plus an additional subscription to the control service, or the
Guardian could choose to add the control service to an existing mobile account. In order to
do this, the guardian 20 would either telephone the help desk 16 (or contact the help desk
indirectly by way of a high street store) or set up the account over the Internet 18. Any
account set up over the Internet 18 would be via a secure web-based browser.

In order to assist the guardian 20 in setting up the control service, the service provider could
provide suitable templates for various control options, or could provide a predefined basic
package with optional extras. In other words a set of predetermined profiles could be offered
by the service provider which would be suitable for immediate use. For example, a profile
could enable emergency calls but block all forms of messaging. These profiles would be
available on-line to the guardian so that they could be re-enabled in the future or activated
as new features become available and are added to the profiles.

Besides or instead of choosing a predetermined profile when setting up the service, the
Guardian 20 specifies any or all of the following network originating features defining the type
of communication allowed, which are then set up by the service provider. In general terms,
the type of communication can include, for example, the characteristic of the communication
and the time of day at which it is permitted. This can include the following but is not limited to these:

(i) Incoming to the mobile device 8

a) Ongoing Communication
   - which entities can establish a voice call
   - which entities can establish a video call
   - which entities can establish an interactive text communication ("chat")
   - which entities can establish a pictorial communication
   - which entities can enter into gaming communication
   - when a call can be accepted i.e. times of day

b) One-off Messaging
   - which entities can send a text message to the mobile device 8
   - which entities can send a graphic image message to the mobile device 8
   - which entities can send a photographic image to the mobile device 8
   - which entities can send a moving image or video to the mobile device 8
   - which entities can send an Internet Link to the mobile device 8
   - when a message can be received i.e. times of day

(ii) Outgoing

a) Ongoing Communication
   - which entities the mobile device 8 can establish a voice call with
   - which entities the mobile device 8 can establish a video call with
   - which entities the mobile device 8 can establish an interactive text communication with ("chat")
   - which entities the mobile device 8 can establish a pictorial communication with
   - which entities the mobile device 8 can enter into gaming communication with
   - when a call can be established i.e. times of day
   - limit on charge accrued

b) One-off Messaging
   - which entities the mobile device 8 can send a text message to
   - which entities the mobile device 8 can send a graphic image message to
   - which entities the mobile device 8 can send a photographic image to
which entities the mobile device 8 can send a moving image or video to
which entities the mobile device 8 can send an Internet Link to
when a message can be sent i.e. times of day
limit on charge accrued

(iii) Message Content

- Specific information to be stopped e.g. name of school, home address, and home telephone number.
- Specific content to be filtered e.g. photographic images and video images, text messages

The above settings are arranged at the service control module 14. In practice, specifying “entities” is mainly done by way of mobile or landline telephone numbers but could be done by identification numbers e.g. IMSI codes. The information is stored with reference to the mobile device 8 in the service database 17 as a number of parameters defining the necessary numbers and other information. These parameters are also transferred over the network 2 to the filter database 4, where they are also stored with reference to the mobile device 8.

The parameters are stored at the mobile telephone 8 either in a chip in the phone itself and/or in a SIM card. If they are stored in a SIM card, the child can maintain the settings if using another phone by transferring the SIM card.

When the mobile device 8 makes a call or tries to send a message, a request for connection is sent to a base station, such as the base station 6b. Instead of the request being transmitted directly to the network 2, the request is passed via the filter database 4. The request is passed into the control part of the filter database 4, wherein the fact that the request has come from the mobile device 8 is determined by reference to the database part of the filter database 4, because the number of the mobile device 8 is stored therein. The database is further consulted to determine whether the request is to one of the numbers enabled by the guardian’s instructions, and whether the time of day is a permitted time. If the answer to both these questions is positive, the request is enabled via the network. If the answer to either of these questions is negative, the request is not enabled, and a message is sent to the mobile device 8 to inform the child that his call will not be connected or his message will not be sent.
Similarly, if a call is made to the mobile device 8 over the network 2 or a message sent, the request passes from the network 2 into the filter database 4 and the same process is carried out. In this case, any necessary message will be sent back to the caller. Thus if the spam user 22 attempts to call the mobile device 8, the spam user's number will not be held in the database 4 with reference to the mobile device 8. Consequently no calls or messages from the spam user will be put through.

In this way, the guardian 20 knows that if the child attempts to call any disallowed numbers from the mobile device 8 he will be unsuccessful and no charge will be made to the account. Similarly, if any undesirable calls or messages are made to the child, these will not be connected.

The service can also be arranged with a limit on the charge accrued from calls and messages etc. sent by the mobile device 8. When a predetermined limit is reached, the guardian would be notified and given the option of barring further calls for a time or allowing further calls.

The other part of the set up procedure for the mobile device 8 is for the guardian to specify any restrictions with respect to local communications from the local communication source 12. Since such communications do not come over the network 2, the necessary settings must be made at the mobile device 8. These can either be made on the mobile device 8 or they can be transmitted to the mobile device 8 over the network 2. The mobile device 8 may be a standard mobile device or a special mobile device which has the capability to filter local communications. In this embodiment the mobile device 8 has a filter 10 which is set to store information on the type of local communications allowed. Thus when such a communication arrives, it is passed through the filter 10 and either allowed or disallowed accordingly.

Thus it can be understood that the mobile device 8 is not able to utilise all the potential services provided by the service provider to other users and able to be used by the mobile device 8, but is restricted to the service specified by the guardian 20. However, with respect to the enabled services, the mobile device 8 operates like a conventional mobile device.

Numbers that the guardian 20 enables are either unalterable e.g. the police or emergency services, or alterable e.g. the home telephone landline and mobile number of the guardian. The specified numbers could include only national numbers or international numbers too. Numbers such as emergency and guardian numbers are likely to be always required within
the service whereas some other numbers such as numbers of the child's friends may be changed more often.

When the service is set up, the guardian 20 specifies how control of the service will be effected. It is probable that the guardian 20 will want sole control over the service but the guardian could specify a third party who would also be able to make alterations to the service profile. This would allow, for example, two parents to have control of the service. The service provider could offer multiple levels of control in different service packages that would offer varying degrees of specific control to the guardian, thus enabling the guardian to decide how much time is to be spent in altering the service.

As indicated above, the service is not fixed in the form set up but can be changed whenever required by the guardian 20. For example, the guardian’s home telephone number might change and this would need to be reflected in the numbers able to be called from the mobile device 8. Also, the guardian 20 may wish to enable more services as the child becomes older and more responsible. Conversely, access problems may become apparent to the guardian 20 after the service has been set up and the child begins to use the mobile device 8 and hence the guardian would wish to add further restrictions at this stage.

In order to allow modification of the service by the guardian 20, the service provider provides the guardian 20 with a secure access to select new features and modify existing features that the guardian wishes to control in the mobile device 8. This can be achieved in two ways in the embodiment of figure 1, although the invention is not limited to these two ways. The first way is for the guardian 20 to set up and change the control parameters over the Internet 18. The second way is for the guardian 20 to contact the helpdesk 16 and instruct an operator as to the changes to be made. For example, the guardian 20 may use the Internet 18 for most changes but use the helpdesk 16 for emergency changes when the guardian has no access to a secure browser (e.g. while on holiday or out of the country).

Therefore, in order to use the Internet method, the guardian 20 makes changes to the service on-line and the service provider facilitates this by providing a website address through which the guardian 20 can access a secure browser. The guardian chooses a user ID and password or passnumber at set-up of the service and the service provider has a website and corresponding user interface. Thus the guardian can enter a secure area using the user ID and password/passnumber and then view the current settings e.g. a list of numbers which can be called by the mobile device 8, types of communication allowed, time of day at which communication allowed. The interface also allows the addition or removal of
the services subscribed to within the limits of what is technically available from the service provider. The use of a user ID and password or passnumber prevents alteration of the service by anyone other than the guardian 20.

A suitable format for the user interface is a menu system which leads the guardian 20 through the possible modifications and specific modifications selected by the guardian 20 and allows for the review of the newly-selected options prior to enablement. The guardian 20 is notified that that the requested changes have been made either by an immediate message displayed on the screen or by any other means convenient to the guardian 20 such as an e-mail to an e-mail address chosen by the guardian 20. If for any reason requested changes can not be made, the guardian 20 is notified in a similar way.

The interface could also enable the guardian 20 to check the current bill for the mobile device 8, including an itemised list of calls made and messages sent etc.. This may be in response to notification by the system provider that the mobile device 8 has accrued charges up to a predetermined limit.

In the case of both the Internet method and the helpdesk method, the new or modified instructions are sent to the service control module 14. In the case of instructions over the internet, these would be sent automatically, whereas in the case of the helpdesk 16 the operator would send the instructions to the service control module 14 over a secure connection between the helpdesk 16 and the service control module 14.

The new or modified instructions are then stored in the service database 16 and sent to the filter database 4 in the same way as the initial instructions provided at set-up of the service.

It is possible for a guardian 20 to be in charge of more than one service, each for a different mobile device. This might be required if the guardian 20 has more than one child and wishes each to have a controlled mobile device. Each account could be accessed using the same user ID and password, enabling all the services to be altered simultaneously or for different changes to be made to each service.

Another option for the guardian to send instructions to the service provider would be in writing with an authorised signature.

One option for the service provided is for the service provider to automatically update the numbers and/or type of communication allowed with the mobile device 8 without specific
referral to the guardian. This would be particularly useful for dealing with spam calls or messaging because certain types of such communication may become well-known to the service provider from time to time and the service could thereby be updated without the guardian having to spend time monitoring such communications and asking the service provider to update the service.

One aspect of the service which is provided by the service provider will now be discussed, namely the emergency or distress service. This part of the service can be provided either as an option or as part of one of the standard service profiles. Although not compulsory it is likely that most users of the service will wish to include it.

The distress service of the embodiment provides the user of the mobile device 8, in this case the child, with a secret code which can be activated on the mobile device 8 to indicate that they are in danger or distress of some sort and need assistance. The code is chosen by the guardian 20 when the service is set up or the distress option enabled. When the code is activated by the child, a message is sent to the service provider alerting them to the situation. This message prompts the service provider to initiate a predefined emergency procedure which includes alerting any or all of the guardian, the police and other emergency services. If the facility to listen to the mobile device 8 is available, this would be activated. The physical location of the mobile device 8 is also actively tracked to enable the alerted parties to reach the child as soon as possible. Various methods for tracking the location of a mobile device are known in the art and would be available to the service provider.

Depending on the service requested by the guardian 20, the police could be connected to the mobile device 8 to speak with the child, either by the service provider or by the service provider informing them of the number of the device. The police and/or the service provider can also keep in contact with the guardian to advise the guardian of progress made and to issue the guardian with any instructions.

The use of a code is only one option for an emergency procedure. Other options include use of the service provider’s standard emergency number or a device on the mobile device 8 such as a particular button or combination of key presses. In the case of use of a standard emergency number, the number of the mobile device 8 would be flagged to the operator as being a guardian-controlled device and hence alert the operator to initiate the above-discussed procedure. By contrast, use of the emergency number by a normal user might simply prompt connection to an emergency service without the other actions mentioned.
It would be possible for the guardian 20 to select a service option which informs of the location of the mobile device 8 at times other than during an emergency. This could be accessed by the guardian 20 either via the secure Internet method or via the helpdesk 16 at any time that the guardian wishes to locate the child but can not connect a call. For example, the child may have the mobile device 8 located somewhere where it can not be heard.

It will be understood that another advantage of setting up the mobile device 8 in accordance with an above-described service is that the device is of limited use to non-owners of the device because it is only possible to call a limited range of numbers and to receive calls from a limited range of numbers. This makes the device less attractive to potential thieves and hence improves the owner's safety. The mobile device 8 could be marked prominently to indicate its limited use.

The applicant draws attention to the fact that the present invention may include any feature or combination of features disclosed herein either implicitly or explicitly or any generalisation thereof, without limitation to the scope of any of the present claims. In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.
CLAIMS

1. A service package for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the service package being arranged to be capable of permitting or denying the establishment of a communication link with one of the terminals over the network by means of a control unit responsive to instructions, the instructions identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified terminals, and the control unit being further arranged to use the instructions to permit or deny the establishment of a communication link with the said one terminal.

2. A service package according to claim 1, wherein the control unit is arranged to use the instructions to generate one or more parameters identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified terminals, to store the parameters and to use the stored parameters to thereby permit or deny the establishment of a communication link with the said one terminal.

3. A service package according to claim 2, wherein the control unit is arranged to store the parameters in an accessible database which can be read from and written to by the control unit over a connection.

4. A service package according to claim 2 or claim 3, wherein the control unit is arranged to store the parameters in a further accessible database which can be read from and written to by the control unit over the communications network.

5. A service package according to claim 4, wherein the further accessible database is arranged to receive a request to establish a communication link with the said one terminal, to read the stored parameters and to thereby permit or deny the establishment of a communication link with the said one terminal.

6. A service package according to any of claims 3 to 5, wherein the control unit is arranged to store the parameters together with an identification of the said one terminal.
7. A service package according to any preceding claim, wherein the instructions and the parameters identify the said terminals by means of a list of mobile communication numbers.

8. A service package according to any preceding claim, wherein the communication defined may be substantially identical for all terminals or may be different for different terminals.

9. A service package according to any preceding claim, wherein the type of communication defined includes one or more of the following:
   characteristic of communications permitted; times of day when communications are permitted; specific information not permitted to be included in communications; and an emergency communication procedure.

10. A service package according to claim 9, wherein the characteristic of communications permitted includes one or more of:
   - voice calls; video calls; text communication; interactive text communication; pictorial communication; photographic communication; moving image or video; gaming communication; and an Internet link.

11. A service package according to claim 9 or claim 10, wherein the said specific information not permitted to be included in communications includes one or both of:
   - the personal details of a user of the said one terminal including but not limited to any of name, telephone number, home address and school; and types of communication or parts of communications containing information deemed unsuitable for the said user.

12. A service package according to any of claims 9 to 11, wherein the emergency communication procedure includes an emergency number to be called or an emergency code or key sequence to be used, and action to be taken by a service provided in the event of activation of the emergency communication procedure.

13. A service package according to any preceding claim, wherein the instructions are substantially identical in respect of incoming and outgoing communications.

14. A service package according to any of claims 1 to 12, wherein the instructions are different in respect of incoming and outgoing communications.

15. A service package according to any preceding claim, wherein at least some of the instructions can be programmed directly into the mobile device.
16. A service package according to any preceding claim, wherein at least some of the instructions are variable.

17. A service package according to claim 16, wherein the control unit is further responsive to variations in the instructions to permit or deny the establishment of a communication link with the said one terminal in accordance with the variations to the instructions.

18. A service package according to claim 17, as dependent on claim 2, wherein the control unit is arranged to use the variations to the instructions to alter the parameters or generate new parameters.

19. A service package according to any preceding claim, wherein instructions can only be accepted by the control unit when received via a secure communication means.

20. A service package according to claim 19, wherein the secure communication means includes one or more of: a telephone service using security information or a password or passnumber; an Internet link; and writing using proof of authenticity of writer to provide instructions.

21. A service package according to any of claims 2 to 20, wherein at least some of the said parameters are set by a service provider upon commencement of the service package.

22. A service package according to any preceding claim, arranged to send a notification message to an originator of a request to establish a communication link with the said one terminal if establishment of a communication link is denied.

23. A service package according to any preceding claim, comprising location monitoring of the mobile device.

24. A service package according to any preceding claim, wherein the control unit is arranged to receive instructions from a user of the said one terminal.

25. A service package according to any of claims 1 to 24, wherein the control unit is arranged to receive instructions from a user other than the user of the said one terminal.
26. A service package according to any preceding claim, wherein the communication link is one that is capable of being established with the said one terminal.

27. A service package substantially as herein described with reference to the accompanying drawings.

28. Apparatus for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the apparatus being arranged to permit or deny the establishment of a communication link with one of the terminals over the network, the apparatus comprising a communication link and a control unit, the control unit being responsive to instructions received over the communication link, which instructions identify which of the other of the plurality of terminals can communicate with the said one terminal and define the type of communication permitted with each of the identified terminals, and the control unit being further arranged to use the instructions to permit or deny the establishment of a communication link with the said one terminal.

29. A computer program product comprising program code means useable to operate a service package for a mobile communication system in which a plurality of terminals can communicate with each other over a communication network, the service package being arranged to be capable of permitting or denying the establishment of a communication link with one of the terminals over the network, the computer program product providing the following steps:

   receiving instructions identifying which of the other of the plurality of terminals can communicate with the said one terminal and defining the type of communication permitted with each of the identified terminals; and

   using the instructions to permit or deny the establishment of a communication link with the said one terminal.
Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

<table>
<thead>
<tr>
<th>Category</th>
<th>Relevant to claims</th>
<th>Identity of document and passage or figure of particular relevance</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>-</td>
<td>WO 99/018704 A2 (ERICSSON GE MOBILE INC (US)) Refer e.g. to text page 1, line 5 - page 3, line 32 and page 8, lines 4 - 29. Figure 1-3.</td>
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<tr>
<td>A</td>
<td>-</td>
<td>WO 01/020939 A1 (NOKIA NETWORKS OY (FI); MUHONEN AHTI (FI)) Refer e.g. to abstract, text sections 0002-0008.</td>
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<tr>
<td>A</td>
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<td>WO 97/030559 A1 (ERICSSON GE MOBILE INC (US)) Refer e.g. to abstract, text page 5, line 11 - page 6, line 6 and page 14, line 19 - page 18, line 26. Figure 9-10.</td>
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Categories:

- X Document indicating lack of novelty or inventive step
- Y Document indicating lack of inventive step if combined with one or more other documents of same category
- A Document indicating technological background and/or state of the art
- P Document published on or after the declared priority date but before the filing date of this invention
- E Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC:

- Worldwide search of patent documents classified in the following areas of the IPC:
  - H04M, H04Q

The following online and other databases have been used in the preparation of this search report:

- WPI, EPDOC, JAPIO

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