A METHOD AND SYSTEM RELATING TO DIRECTION INDICATION

The present invention relates to a method and system in a mobile station (10, 10a, 10b), for indicating a direction to a predetermined destination to a user of said mobile station (10, 10b, 10c), which is provided with a display and means for sending and receiving data. A compass function is incorporated in said mobile station, which visually indicates on said display, the direction to said destination, said compass function comprising a direction indicator (13, 18) and representation of at least one for the user visible object in an existing environment of the user as a sign (12, 14, 17) and relating direction indicated by said direction indicator to said sign.
(utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.


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TITLE
A METHOD AND SYSTEM RELATING TO DIRECTION INDICATION

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a method and arrangement for indicating the position of a user and direction to a destination on a mobile terminal such as a cellular phone, a portable or handheld computer, a positioning device or the like.

BACKGROUND OF THE INVENTION

Location or positioning services are becoming more and more common today. Cellular network operators, for example, can pinpoint in which cell a cellular phone is located. It is also possible to approximately pinpoint where in the cell a cellular phone is located.

In a cellular network, the operator has knowledge about where a cellular phone is located by using a combination of in which cell the phone is located and information about the current power levels of the current cell and neighbouring cells. Solutions where the current timing advance parameters are used exist as well. The knowledge about power levels is available only in the cellular phone and this information is transmitted on request (together with other relevant information) to a location server that in turn has knowledge about the actual location of each base station. The location server then combines the information in order to approximately determine the actual location of the cellular phone. The actual location can then be transmitted back to the cellular phone or to another party of interest.

It is now possible to store information in a cellular phone or in a unit in conjunction to a cellular phone. The problem with the current solutions and implementations are that it is difficult to indicate the direction to a predetermined destination to a carrier of a mobile terminal. It is possible to describe the position with geographical terms, such as north,
northwest, south and so on. However, this approach is useless since the user must have access to the quarters. It is also possible to indicate the direction with direction terms such as forward, left, right etc., which demands attention of the user and linguistic considerations, for example when the user is in another country, meaning that the direction commands from the operator must be translated to the users (mobile station) language.

SUMMARY OF THE INVENTION

What is needed is a method of indicating the direction on a mobile communication device, which is flexible and in an easy but reliable way indicates the direction to a predetermined destination without need for modification of the mobile device or network.

Therefore in a mobile station, a method is provided for indicating a direction to a predetermined destination to a user of said mobile station, which is provided with a display and means for sending and receiving data. The method comprises visually indicating on said display the direction to said destination with respect to at least one for the user visible object in an existing environment of the user.

Preferably, the visual object is at least one of position of a celestial body, position of a satellite, or position of a landmark.

The method comprises the steps of: generating a destination direction request by the user, retrieving the position of the mobile station, and based on the position information, local time of the user=s position and the position of the destination point, generating a position for an object visible for the user and transferring it to the mobile station.

It is also possible to base the direction indication on other parameters, such as the weather conditions. Thus, the visual object information excludes an amount of information or combines information with information about other visual objects with respect to the parameters.

The position of the mobile station is obtained through one or several of querying the
mobile station, the network operator or through a position broker.

In one embodiment the mobile station can display graphical information and the information displayed is in form of icons for indicating the position of the visible object relative the mobile station and an arrow indicating the direction to the destination point. As the user moves towards the destination point, said arrow changes direction and/or the icons are displaced to indicate the position of the object relative the mobile station.

In another embodiment the information is displayed is in form of characters and may also include textual information. The display shows a square divided into a number of sub-squares, and the position of the visible object relative the mobile station is indicated by a first character, the direction indication with a second character, and non relevant directions with a third character. As the user moves towards the destination point, the second character changes place to other sub-squares and/or the characters representing the object moves to other sub-squares to indicate the position of the object relative the phone.

The invention concerns a system for indicating a direction to a predetermined destination to a user of a mobile station, being provided with a display and means for sending and receiving data. The system in communication with a communications network comprises a processing unit for receiving a search request (SPU) from said mobile station, a processing unit for compiling and/or forwarding direction information to said mobile station and one or more databases including information on position relevant information, and that said position relevant information visually indicates on said display, the direction to said destination with respect to at least one for the user visible object in an existing environment of the user.

Moreover, the invention relates to a cellular communication device for providing holder of the device a direction to a requested destination. The device comprises means for generating a graphical representation of the visible object and a direction indicator, and means for controlling said display for displaying said representation and means for receiving update information of said representation positions on said display.
Another cellular communication device, according to the invention, for providing holder of the device a direction to a requested destination comprises means for generating squares, a graphical representation of the visible object and a direction indicator, and means for controlling said display for displaying said representation and means for receiving update information of said representation positions on said display.

BRIEF DESCRIPTION OF THE DRAWINGS

In the following, the invention will be further described in a non-limiting way under reference to the accompanying drawings in which:

Fig. 1 is a block diagram illustrating a communications network involving a direction indication arrangement according to the invention, and

Figs. 2 and 3 illustrate schematically two mobile stations with different direction indicator approaches.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Fig. 1 illustrates a mobile station MS, 10, in a cellular communications network 20, such as GSM, AMPS etc. The network comprises aerials 21-23 connected to base stations 24-26, respectively. The operation of the network is assumed to be known to a skilled person and not described further here.

According to the invention, the cellular network includes or is in communication with a system 30 for receiving a destination search from the MS 10 and providing the MS with information for finding the destination. The system 30 mainly comprises a processing unit 31 for receiving the search request (SPU), a processing unit 32 for compiling (CPU) and forwarding direction information and one or more databases 33, 34 including data about position relevant information, PRI.
The PRI may include, among others, position of celestial bodies, such as sun, moon, stars or the like, position of satellites or the like, position of landmarks, etc. However, it is important that said information includes position of an object visible for the user.

When a destination direction request is received, the SPU 31 fetches the position of the MS, e.g. by asking the MS, if terminal positioning is conducted, through the network operator if network positioning is conducted or through a position broker (e.g. see Swedish Pending Patent Application No. 9903980-3, for the same applicant, incorporated herein through reference). Based on the position information, local time of the user=s position and the position of the destination place, a position for an object visible for the user is fetched from the database 33 by the CPU 32 and sent to the MS. The information retrieval may also be based on other parameters, such as the weather condition, whereby visual object information can exclude some information, such as position of the sun, e.g. if cloudy, or combine the information with information about other visual objects, such as position of a building. It is also possible to integrate SPU, CPU and position broker in one unit.

If the system cannot provide the user with information on visible objects, the user is informed or textual information is provided.

Fig. 2 illustrates a schematic view of a cellular phone 10a, having a display 11a. In this case, the phone has a graphical display, i.e. it can display graphical information. The information displayed is in form of icons and may also include textual information. The display shows a sun icon 12 indicating the position of the sun relative the phone and an arrow 13 indicating the direction to the destination point. Also, the position of other objects, such as a building can be displayed, e.g. by means of a building icon 14. More data on the building can be obtained through textual information. As the user moves towards the destination point, the arrow will change direction and/or the icons will be relocated to indicate the position of it/them relative the phone. Thus, the phone comprises means, such as a graphical memory and driving unit, for generating the icons representing the visible object and the direction indicator, and means for controlling said display, such as display drivers, for displaying said representation and means, such as
radio receiving unit, for receiving update information of said representation positions on said display.

Fig. 3 illustrates another schematic view of a cellular phone 10b, having a display 11b. In this case, the phone has a non-graphical display. The information displayed is in form of characters and may also include textual information. The display shows a square 15 divided into nine sub-squares 16. The position of an object, for example the sun, relative the phone is indicated with *, 17, the direction indication (similar to arrow as described above) with +, 18, and non-relevant directions with -, 19. Also, the position of other objects, such as a building can be displayed by means of another character in a relevant sub-square. Also, in this case more data on the building can be obtained through textual information. As the user moves towards the destination point, the cross 18 changes place to other sub-squares and/or the characters representing the objects will move to other sub-squares to indicate the position of it relative the phone. Thus, the phone comprises means, such as a graphical memory and driving unit, for generating the squares and representations of the visible objects and the direction indicator, and means for controlling said display, such as display drivers, for displaying said representation and means, such as radio receiving unit, for receiving update information of said representation positions on said display.

The information to the phone can be transferred and updated using WAP (Wireless Application Protocol), SMS (Short Messages Service), Smart SMS (able to transfer bit-mapped data) or any other suitable protocol. The transmissions (updates) are done in real-time.

The communication device may also be arranged for third, four etc., generations of communication standards providing a fast update of the visual information.

It is also possible to combine the visual indication with audio signals. Moreover, the invention is not limited to the cellular phones and cellular networks, which is merely given as an example, and can be implemented in any network being able to position a mobile unit such as a portable computer, a handheld computer, a GPS device etc., which
can send and receive information.

The invention is not limited the shown embodiments but can be varied in a number of ways without departing from the scope of the appended claims and the arrangement and the method can be implemented in various ways depending on application, functional units, needs and requirements etc.
CLAIMS

1. In a mobile station (10, 10a, 10b), a method of indicating a direction to a predetermined destination to a user of said mobile station (10, 10a, 10b), being provided with a display (11a, 11b) and means for sending and receiving data, characterised by

incorporating a compass function in said mobile station, which visually indicates on said display, the direction to said destination, said compass function comprising a direction indicator (13, 18) and representation of at least one for the user visible object in an existing environment of the user as a sign (12, 14, 17) and relating direction indicated by said direction indicator to said sign.

2. The method of claim 1,
characterised in

that said visual object is at least one of position of a celestial body, position of a satellite, or position of a landmark.

3. The method of claim 1,
characterised in,

that the method comprises the steps of:

S generating a destination direction request by the user,
S retrieving the position of the mobile station, and
S based on the position information, local time of the user’s position and the position of the destination point, generating a position for an object visible for the user and transferring it to the mobile station.

4. The method of claim 3,
characterised in,

that the direction indication is also based on other parameters, such as the weather conditions.
5. The method of claim 4, 
characterised in, 
that said visual object information excludes an amount of information or combines information with information about other visual objects with respect to the parameters.

6. The method according to any of preceding claims, 
characterised in, 
that the position of the mobile station is obtained through one or several of querying the mobile station, the network operator or through a position broker.

7. The method according to any of preceding claims, 
characterised in, 
that said mobile station (10a) can display graphical information and the information displayed is in form of icons for indicating the position of the visible object relative the mobile station and an arrow (13) indicating the direction to the destination point.

8. The method of claim 7, 
characterised in, 
that as the user moves towards the destination point, said arrow changes direction and/or the icons are displaced to indicate the position of the object relative the mobile station.

9. The method according to any of one of claims 1-6, 
characterised in, 
that, the information is displayed is in form of characters and may also include textual information.

10. The method of claim 9, 
characterised in, 
that the display shows a square (15) divided into a number of sub-squares (16), and the position of the visible object relative the mobile station is indicated by a first character (17), the direction indication with a second character (18), and non relevant directions with a third character (19).
11. The method of claim 10, characterised in,
that as the user moves towards the destination point, the second character (18) changes
place to other sub-squares and/or the characters (17) representing the object moves to
other sub-squares to indicate the position of the object relative the phone.

12. A system for indicating a direction to a predetermined destination to a user of a
mobile station (10, 10a, 10b), being provided with a display (11a, 11b) and means for
sending and receiving data, characterised in,
that the system in communication with a communications network comprises a
processing unit (31) for receiving a search request (SPU) from said mobile station, a
processing unit (32) for compiling and/or forwarding direction information to said
mobile station and one or more databases (33, 34) including information about position
relevant information, and that said mobile station incorporates a compass function,
which with respect to said position relevant information, visually indicate on said dis-
play, the direction to said destination with respect to at least one for the user visible ob-
ject in an existing environment of the user represented as a sign on said display.

13. A cellular communication device (10a) for providing holder of the device a direction
to a requested destination according to a method of one of claims 1-11, characterised in,
that said device incorporates a compass function, comprising means for generating a
graphical representation (12, 14) of the visible object in form of a sign and a direction
indicator (13), and means for controlling said display (11a) for displaying said sign and
means for receiving update information of updating said position of said sign on said
display.

14. A cellular communication device (10b) for providing holder of the device a direction
to a requested destination according to a method of one of claims 1-11, characterised in,
that said device incorporating a compass function, comprising means for generating
squares (15, 16), a graphical representation (17) of the visible object in form of a sign
and a direction indicator (18), and means for controlling said display (11b) for display-
ing said sign and means for receiving update information of updating position of said
sign on said display.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPCG: G09B 29/10, G01C 21/20
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)

IPCG: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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

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