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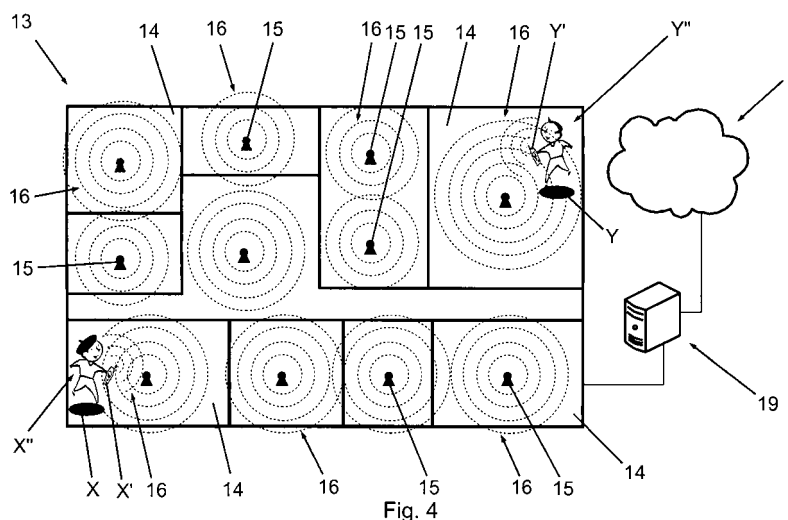
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(54) **Providing information in a communication network**

(57) The present invention relates to a method for providing information (2) that can be used by means of a mobile terminal to be operated in a communication network (1), wherein the information comprises data how one can get from a first place (X) to a second place (Y) or from a second place (Y) to a first place (X), wherein the first place (X) is defined by the local position of a mobile terminal (X') to be operated in the communication network (1) and belonging to a first communication network user (X'') and the second place (Y) is defined by the local position of a mobile terminal (Y') to be operated in the communication network (1) and belonging to a second communication network user (Y''), which is **characterized in that** in the method at least one local information (X''') with respect to the first place (X) and at least one local information (Y''') with respect to the second

place (Y) are determined, the determined local information (X''' and Y''') are sent to at least one information processing unit (6), the provided local information (X''' and Y''') are processed by the at least one information processing unit (6) for generating information (2) to be provided dependent on individual and/or predefined conditions of the first and/or second communication network user (5, 5'), the first place (X), the second place (Y) and/or conditions that are specific for the local position, and the generated information is provided for being used by a mobile terminal.

The subject of the invention is furthermore a mobile terminal to be used in a communication network (1), preferably a mobile network (1), which is **characterized in that** the mobile terminal is designed and/or adapted for at least partially carrying out a method according to the invention.



Description

[0001] The present invention relates to a method for providing information that can be used by means of a mobile terminal to be operated in a communication network, wherein the information comprises data how one can get from a first place to a second place or from a second place to a first place, wherein the first place is defined by the local position of a mobile terminal to be operated in the communication network and belonging to a first communication network user and the second place is defined by the local position of a mobile terminal to be operated in the communication network and belonging to a second communication network user.

[0002] Furthermore, the invention relates to a mobile terminal that is designed and adapted for being usable or being used according to the method in a communication network.

[0003] Technical devices and services that assist the user in finding his way from a place A to another place B on roads that are unknown to him facilitate the daily life both in professional life and in leisure-time. They partially or even completely save leafing and searching in maps and/or road atlases and thus help to obtain information about the possibilities how to get from a place A to a place B without high efforts and in a timesaving way.

[0004] Methods that assist a user in finding his way from a geographical start point to a geographical target point are known from the state of the art. They are for example used in so called route planners that can be used by means of a device having a computing unit and/or can exchange data with such one. Usually, the user is provided with the data in form of a route description, wherein the actual local position is not considered. Such route planners can actually be used both in connection with a computing unit and by calling them in the internet, such as at present for example under the internet address www.de.map24.com or www.viamichelin.com. Such route planners that are available via the internet can also be used by a corresponding mobile terminal in a mobile network, for example according to the GSM, GPRS and/or UMTS radio network standard. Usually, route planners provide a route description upon indication of a start and a target address in consideration of selectable options, such as "shortest distance" or "most rapid route". Herein, the route to be travelled will be usually explained in full sentences or in catchwords and is most often represented in a map extract. Since such route planners are normally not provided with information about the route travelled by the user, the previous route description will not be adapted, if the user deviates from the described route. Thus, it is a static route planning.

[0005] A dynamic route planning that enables or considers adaptations is realized by so called navigation systems that have a navigation functionality or target guiding. Corresponding navigation systems are known in the state of the art from for example EP 1 003 016 A2 and are in particular used for navigation in motor vehicles. In

such navigation systems, the actual local position and thus also the start address is mostly determined using the GPS technology (GPS: Global Positioning System) and a target address has to be indicated or entered. Then, the navigation system calculates a route that connects the actual local position to the target place defined by the target address. The directional instructions leading to the target place are given depending on the actual local position and are adapted if the user leaves the proposed route.

[0006] Mobile terminals that can be operated in a communication network, in particular a mobile network, such as mobile phones or PDAs (PDA: Personal Digital Assistant) partially also have a navigation functionality. For this, the terminal is often provided with a GPS receiver or connected to such one via an interface. Alternatively or additionally, network based localisation techniques are also used, wherein the local position of the mobile terminal is determined in a radio cell and is aligned with a geographical location corresponding to the radio cell.

[0007] It is a drawback of the existent systems that the target place or the target address has to be known. Herein, the target address is always stationary, also for target addresses that can be functionally indicated, such as for example "next fuel station", "next hotel", "next parking place" and like target addresses to be indicated, which are connected to corresponding address information.

[0008] The hitherto known solutions are in particular neither adapted nor able to show the way to a place where a certain person whom one wants to meet is standing, or to provide a route description that guides to the person. If a person wants to meet another person and wants the assistance of a route planner or navigation system for this, the local position of the other person has at first to be determined. If the local position has been for example determined in a phone conversation, the local position of the other person will have to be entered as target address in case of use of a corresponding technical device. But often it is not possible to precisely indicate the local position or it is sometimes even not known to the other person, such that a direct target guiding is not possible or related to high efforts.

[0009] It is the object of the present invention to provide a method, by means of which a communication network user can get the route to a place, where another communication network user is standing, described and/or indicated, while avoiding the above mentioned disadvantages and without the other communication network user having to precisely mention his local position and/or without special entries by the communication network user, in particular with respect to a target address, being necessary.

[0010] As technical solution of this problem, the present invention proposes a method for providing information that can be used by a mobile terminal to be operated in a communication network, wherein the information comprises data how one can get from a first place to a second place or from a second place to a first place,

wherein the first place is defined by the local position of a mobile terminal to be operated in the communication network of a first communication network user and the second place is defined by the local position of a mobile terminal to be operated in the communication network of a second communication network user, wherein at least one local information with respect to the first place and at least one local information with respect to the second place are determined, the determined local information is sent to at least one information processing unit, the provided local information is processed by the at least one information processing unit for generating information to be provided dependent on individual and/or pre-defined conditions of the first and/or second communication network user, the first place, the second place and/or conditions that are specific for the local position, and the generated information is provided for being used by a mobile terminal.

[0011] The use of the terms "first communication network user" and "second communication network user" only serves for clarity and for a better understanding. However, they do not define any priority. In particular, the first communication network user can also be the second communication network user and vice versa.

[0012] The present invention is based upon the knowledge that numerous problems with respect to daily life due to the non-finding of a certain person can be solved in a simple and comfortable way and without high efforts by means of the method according to the invention. In the following some of such problematic situations are exemplarily outlined.

[0013] The involved persons respectively have a mobile phone that is operable and registered in the mobile network and that is provided or equipped with navigation functionality.

- Person A and B have agreed to meet in front of the entry of a big department store in a pedestrian precinct. As the department store has a plurality of entries, person A and B are waiting at different entries. Since they are at the same local address, the navigation functionality of their mobile phones does not help them. Therefore, they have to get into contact with each other, such that at least one person can describe his local position to the other person so that this one can find the place.
- Person A is riding on a bicycle on an out-of-the-way road and wants to get picked up by person B in a car because of a puncture. Due to missing signposts and lacking knowledge of the place, person A can only very vaguely describe his own local position to person B. Eventually, person A can determine his local coordinates by means of his mobile phone, such that person A can communicate these local coordinates to person B via the mobile phone and person B can formulate a target address by means of the coordinates.

- Person A and person B are in a shopping centre, wherein person A is a child and person B is the child's mother. Person A and person B have lost sight. Since it is surely difficult for person A to describe where he is, it won't be easy for the persons to find each other again in the shopping centre.

- In a phone conversation person A and person B find out that they are by chance presently in the same town and decide to meet. Since both have no knowledge of the town, it is difficult for them to find their way and to find each other.

- Person A arrives too late at a group meeting point. The group has already left the meeting point. Without getting into contact with one of the group members it will be difficult for person A to find the group again.

[0014] Many of such and other problems happening in daily life can be quickly and simply solved with a minimum effort of the communication network users by means of the method according to the invention. The information generated and provided by the method helps the at least one communication network user to get to the place of a certain other communication network user, without the at least one communication network user needing knowledge about the local position of the concerned communication network user.

[0015] Herein, the wide spreading of mobile terminals to be operated in a communication network advantageously allows making the method according to the invention accessible for use to a large public. Thanks to the determination according to the invention of both at least a first local information with respect to a first place and at least a second local information with respect to a second place, the method advantageously assigns the start and target point of a route automatically. The local position of the communication network user who initiates the method will be for example determined as start point and the local position of the communication network user to be found will be determined as target point. For providing the route describing information within the method, the determination of both a start point and a target point by the communication network users can thus be advantageously omitted. Advantageously, the local information is not restricted to one format, such that depending on the application case, the local information is provided for example as geographical coordinates or as address, but also as information for describing the local position in a radio cell. The provided information can be advantageously converted into another format, at least during the further processing

[0016] In the processing of the provided information, certain wishes will be advantageously considered. Thus, the communication network users can for example advantageously determine whether they wish a static or a dynamic route planning, whether they want to use public means of transport or a car for greater distances, whether

they want to have supporting map material to be indicated, whether information shall be provided how much time they will probably need for travelling the distance. These and/or other such indications are advantageously memorized in a user profile, such that they do not have to be completely entered again each time.

[0017] The processing of the provided local information is advantageously realized upon wish of the communication network user also in consideration of the places and/or the conditions that are specific for the places. Thus, it will be advantageously considered in the processing when the communication network user to be found is located at a far distanced place, which is difficult to reach on foot due to the distance.

[0018] Properties that are specific for a place in the sense of the present invention are in particular properties, such as "the place cannot be reached by car", "there is a bus stop close to the place", "the place is close to a known building" and/or the like. The use of the provided information by means of a mobile terminal advantageously includes the further treatment and/or processing of the information by means of a mobile terminal, in particular also memorizing, copying, transmitting and/or such treatments or processings.

[0019] In a most preferred embodiment, the communication network user calls a service of the communication network for initializing the method, wherein the service advantageously realizes or administrates process steps, such as determination, treatment, possibly transmission and/or provision.

[0020] A preferred embodiment of the method provides that the provided information will be output on a mobile terminal, preferably on the one of the first communication network user. In this way, the provided information is advantageously available in a mobile manner for the communication network user(s).

[0021] In another preferred embodiment of the method according to the invention the provided information will be output using at least one service of the communication network. Hereby, the manipulation effort of the communication network user is advantageously minimum, in particular since the communication network user does not have to call the provided information himself, for example on an internet page. The provider of the communication network can furthermore connect the output of the provided information advantageously to a fee or he can add additional information material, for example containing advertisement or product information, to the provided information.

[0022] Another realization mode of the method according to the invention provides that the service of the communication network is a message service of the communication network, preferably according to MMS or SMS. The output of the provided information by means of a message service offers several advantages. Services, such as MMS (MMS: Multimedia Messaging Service) and SMS (SMS: Short Message Service) are usually known to communication network users and thus allow the com-

munication network user an easy handling of the provided information. Using WAP Push (WAP: Wireless Application Protocol) the provided information is advantageously directly displayed on the mobile terminal. Furthermore, the output by means of a message service offers the simple possibility to memorize the messages on the mobile terminal and to call them later when they are again needed. MMS advantageously allows to output and/or to illustrate the provided information for example by means of voice instructions and/or graphical representations.

[0023] In a most preferred embodiment of the method, the output information explains how the first communication network user can get from the first place to the second place or how the second communication network user can get from the second place to the first place. The output information can then be advantageously output in particular in form of a route description that enables the communication network user advantageously in a simple way to meet another communication network user. With respect to the initially outlined problem, in which a first and a second communication network user have agreed to meet at the entry of a big department store, but due to the plurality of entries of such a department store the communication network users are waiting at different entries, the output information can then be for example a description of the way the first communication network user has to walk in order to get from the entry at which he is standing to the entry at which the other communication network user is standing. Thus, the communication network users do advantageously no more require long and sometimes difficult explanations.

[0024] A variant of this realization mode provides that the output information leads the first communication network user from the first place to the second place or the second communication network user from the second place to the first place. In this variant that realizes a navigation no route description is advantageously output or at least output not only once, but short describing instructions that are advantageously dependent on the local position are transmitted. Such an instruction can be for example "continue to go straight ahead!" This advantageously further facilitates for the communication network user to find the other communication network user.

[0025] According to another embodiment of the invention, the generated information is output acoustically, in particular as voice instruction, in written form, in particular as text instructions, symbolically, in particular by displaying directional arrows and/or graphically, in particular by displaying map material by means of the mobile terminal or a device of the mobile terminal. The communication network user can advantageously determine how the generated information is output, whether acoustically, in written form or a like signalisation. Thus, for example in a loud surrounding, such as a pedestrian precinct, the generated information can be advantageously output in written form. If the communication network user however uses a bicycle for example, in order to get to the other

communication network user, an output of the information as voice instruction is advantageous, wherein the voice instruction is optionally supported by fading in directional arrows by means of an output device.

[0026] Another embodiment provides that the at least one information processing unit is provided by means of the respective mobile terminal and/or by means of the communication network. Advantageously, the biggest part of the processing that is related to high efforts and intensive calculations is realized by means of an information processing unit of the communication network. In this manner it is further assured that the method according to the invention is made accessible to a plurality of communication network users, since the information processing by the communication network in particular requires less performance of the hardware of the mobile terminals and thus, the communication network user does generally not have to buy a new terminal. Advantageously, there is furthermore the improved possibility to be able to always include the most actual data in the processing and to refer to substantially higher data amounts. Furthermore, an embodiment according to the invention is provided, in which the processing, preferably the entire processing of the provided local information is realized by means of an information processing unit of the respective mobile terminal. Thanks to this realization of the method according to the invention, the communication network user is advantageously independent from the communication network after provision of the local information, which means that the mobile terminal does no more have to be operable in the communication network for processing the local information, which is in particular advantageous in case of connection faults or interruptions.

[0027] In a preferred embodiment of the method according to the invention, the local position of the respective mobile terminal in the communication network is determined using localisation technologies on the base of the terminals and/or on the base of the network. If the respective local information is exclusively determined by means of a device of the mobile terminal, satellite supported systems, such as GPS (GPS: Global Positioning System) are preferably used. Herein, the actual local position can be advantageously determined very precisely. Another improvement of the localisation is advantageously obtained, if additionally network-based localisation techniques are used. Therefore, a most preferred embodiment provides the use of A-GPS (A-GPS: Assisted GPS). In order to be able to offer the method according to the invention almost independent from the equipment of the respective terminals of the communication network users, it is provided according to the invention to also use network-based methods, such as so called cell-ID-methods (ID: identifier), for determining the local position. Hereby, also mobile terminals can be advantageously localised, which do not have any device for determining the own local position without network support. E-OTD (E-OTD: Enhanced Observed Time Difference) advantageously presents a localisation method that offers the possibility to obtain the respective local information by means of at least one service of the communication network.

tageously presents a localisation method that offers the possibility to obtain the respective local information by means of at least one service of the communication network.

[0028] In another preferred embodiment, the respective local information is obtained by using an Indoor Positioning System. Thus, it is advantageously possible to obtain the local information inside buildings, since the common GPS receivers are usually not suitable for receiving signals in buildings. Methods that are used for this according to the invention are for example also based upon radio cells. However, it is usually not possible in the determination of a local position by means of radio cells to determine on which floor of a building a person is. Therefore, a preferred embodiment provides that the Indoor Positioning System uses local radio networks and/or short-range radiotelegraphy, in particular WLAN or Bluetooth, for determining the local position. Thus the local position of a mobile terminal can be determined more precisely, if corresponding access points are established in the building. If parents have for example lost sight with their child in a shopping centre and if both the parents and the child have a mobile terminal, it is also advantageously possible to obtain the local information in the shopping centre, such that after determination of the respective local information a description is output on the mobile terminal that shows the parents the way to their child.

[0029] Another realisation variant of the method according to the invention provides that at least one local information allocated to a certain place is determined in an at least partially automatised manner, preferably initiated by the network. A communication network user can for example establish a list of contacts with other communication network users. The local information is determined by the network on the base of these contacts, which are actualised in certain time intervals. Advantageously, the local information will be supplied to an information processing unit, if the communication network user initiates the method according to the invention. If the communication network user initiates the method, it can be advantageously realised in an accelerated way, since the local information of the contact has not only to be obtained at the moment of the initialisation. Thanks to another automatisisation of the method, an increased functionality can be advantageously realised. Thus, the method could be for example initiated, if the distance between two communication network users who have registered for this service, is beneath the distance that has been determined for them by the communication network. Two communication network users who are friends and who go for a walk by chance in the same park can thus be informed about each other, wherein information is provided how the one communication network user gets to the other communication network user. Furthermore, the generated information can advantageously be provided in an accelerated manner because of the partially automatised determination of the at least one local

information. If for example a father is in the zoo together with his daughter and his son, wherein father and daughter have a mobile terminal, and the daughter prefers to look at the animals alone, the father can at least initiate in good time the determination of the local information. According to the method, one only has to wait for an instruction (initialisation) to process, provide and output the obtained local information. At this point, the determination of the local information can be omitted. The father will thus be faster shown the way to his daughter.

[0030] In another embodiment, the local position of at least one of the mobile terminals is determined continuously or at least in defined time intervals and the associated local information is provided within the scope of the determination of the local information.

[0031] Hereby, a dynamic route guiding is advantageously made possible, which will be adapted if the local position of one of the communication network users changes or when directional instructions are output, such as for example "please turn right after 50 metres!", depending on the local position of the guided communication network user. In a special realisation variant, the signalisation of the local position of the second communication network user preferably on the mobile terminals of several "first" communication network users in certain time intervals enables to play, under real conditions, the known game "chasing after Mister X" ("Jagd nach Mister X") that is similar to the board game "Scotland Yard" from Ravensburger Verlag. Hereby, a use of the solution according to the invention for playing purposes is realised.

[0032] Another realisation variant of the method according to the invention provides that when the determined local information is provided, at least one sending and at least one receiving operation using the communication network will be realised. If the information processing unit is realised by the first mobile terminal and if the information about the own local position is also obtained by the terminal for example by means of a GPS receiver, at least the obtained local information of the other communication network user has to be sent to the first mobile terminal and the sent local information has to be received by the first mobile terminal. In a preferred embodiment, the method is at least almost completely carried out by the communication network. A first communication network user initiates the method by for example sending the call number of the second communication network user to a service number. A computing unit in the communication network will call a service, which will send a so called "silent" SMS to both communication network users, whereby it is made possible to detect the local position of the mobile terminal. The service then sends the obtained local information to the information processing unit, where it is then present as input parameter for a further processing.

[0033] Another variant of the method according to the invention provides that within the scope of the generation of the information to be provided a route description is made depending on and/or in consideration of individual

and/or predefined conditions of at least the first communication network user, which route description contains the information about the shortest way to use by the communication network user in order to get from the first place to the second place, and/or a time-table information, eventually with the option of an online ticket purchase, is given, which informs about how the communication network user can get from the first place to the second place using public transport means, and/or a hint to known and/or easily recognizable objects as possible meeting point in the surrounding of the second place is given, and/or map material is provided by means of which the first communication network user can identify and reach the second place, and/or directional instructions are given, from which the communication network user can learn the shortest way to use for getting from the first place to the second place, and/or the distance between the places is divided into at least two route sections, wherein at least one of the above listed activities is carried out for the at least two route sections and the at least two carried out activities are connected to each other. The latter realisation variant considers in particular that the method according to the invention can also include functionalities of a route planner or a navigation device. Two communication network users have for example agreed to meet in a restaurant. The first communication network user is still at his place of work, because he had to work over-time, whereas the other one has already arrived in the restaurant. Since the first communication network user wants to go directly to the restaurant, but does not know the way, he starts the method according to the invention and indicates that he wants to use public transport means for getting to the restaurant. Thereupon he will get a time-table output on his mobile terminal and will select the desired connection, for example by train. Thereupon, there will be the option to directly buy a ticket for the desired connection, wherein the amount for this will be for example charged to the account with his communication network provider. As output, the communication network user will receive a route description of how to go from his actual local position to the station, a time-table information eventually adapted to delays of the train and the estimated arrival at the target station and a route description from the target station to the restaurant. In order to facilitate the mutual finding of two communication network users, also information about easily recognizable objects in the proximity of the local position of the second communication network user will be advantageously output on the mobile terminal, such as for example "The restaurant is beside the cathedral". If there are no cartographic route data, in particular if the meeting point is for example a park or forest area, the communication network user will at least get shown the direction into which he has to go for getting to the other communication network user. Advantageously, also a satellite photo of the concerned area, such as they are for example known from "Google Earth", will be provided on the mobile terminal, on which photo the local position of the

other communication network user will be optically represented. In particular if the localisation within the scope of the determination of the local information is very unprecise, both communication network users will be alternatively provided with an information, in which a prominent meeting point, preferably close to the second communication network user, is proposed, such as "fountain at the west entry".

[0034] In a preferred embodiment, at least one internet based service will be used in the context of the information processing. Hereby, the communication network user does advantageously not have to collect himself all data that are required for generating the above mentioned information. Instead, an information processing unit can refer to internet based services, which provide for example time-table information (as "mobile.bahn.de") or map material.

[0035] In another embodiment of the method according to the invention, an execution of the process steps is initiated, preferably in an automatised way, by an instruction that is connected to an appointment entry memorized in an electronic appointment book, which marks an agreed meeting between the communication network users, preferably before and/or at the beginning of the agreed meeting. Such a functionality for example offers artisans who have to go to a client the advantage that simultaneously with reminding of the appointment the route to the client is provided. For this functionality, the method can be advantageously also carried out in several steps. If the client for example calls the artisan from home by means of his mobile terminal, in order to fix an appointment, the artisan can directly enter the appointment into the mobile terminal and with the client's approval initiate the method according to the invention for determining the local position of the client and connect it to the appointment. The method according to the invention will then be temporarily finished and again started for execution with reminding the appointment by means of the mobile terminal. Hereby, the artisan does advantageously neither have to note down the client's address nor hold the noted address ready for entering this one for example into a common navigation device. In order to use the method according to the invention as improved route planner or improved navigation device, the provided information can also be sent to an e-mail address for enabling for example to print out the route description afterwards by means of a printer. Furthermore, it is provided that the determined local information can be extracted as start or target addresses from the provided information and be transmitted to a usual navigation device by means of an interface, preferably according to the Bluetooth standard.

[0036] In a most preferred embodiment, the communication network is a cellular mobile network, preferably according to a GSM, GPRS and/or UMTS radio network standard. Advantageously, mobile terminals that can be operated in a cellular mobile network are widely spread. Furthermore, such a cellular mobile network advantageously

already meets the technical requirements for network based localisation technologies.

[0037] Another realisation variant of the method according to the invention provides that based upon the actual local positions of the communication network users and within the scope of the processing of the provided local information, at least one other local position will be determined, which is located on the distance between the actual first local position and the actual second local position, wherein the at least one other local position corresponds to the expected future local position of the mobile terminal of the second communication network user, and information is generated about how one can get from the actual first local position and the actual second local position to the at least one other local position, i.e. a future second local position. Thanks to this realisation variant, the time until the two communication network users will meet is advantageously shortened, since both communication network users can approach each other. If the method was initiated, a meeting point will be proposed on the base of the determined local information within the scope of the processing, which meeting point can be reached by both communication network users approximately in the same time. In a preferred variant it is provided that the generated information that informs about how to get from the actual first local position or the actual second local position to the at least one other local position is output. Hereby, the generated information is advantageously made available to both communication network users, wherein the output of the generated information is preferably realized on the respective mobile terminal. Based upon the actual local information, the communication network users are guided to the other local position in this manner.

[0038] It is clear that additional process steps can be included in each realisation variant of the method according to the invention, which process steps assure that the local position of a communication network user cannot be determined and/or revealed against his will. This can be for example realised in that a communication network user has to agree to the determination of the local position in a previous corresponding inquiry, and only after receipt of the agreement, the method according to the invention will be further carried out or already generated information will be provided. Other realization modes of a corresponding dialogue between the communication network users can be realised.

[0039] For the technical solution of the initially mentioned problem, the present invention further proposes a mobile terminal to be used in a communication network, preferably a mobile network, according to claim 20, which is designed and/or adapted for at least partially carrying out the method according to the invention.

[0040] The mobile terminal is in particular adapted to initiate a method according to the invention, to interact with the communication network such that at least the process steps according to the invention comprising the characteristics according to claim 1 can be carried out,

and to enable the output of the provided information on the mobile terminal. Advantageously, many of the circulating mobile terminals, such as mobile phones, PDAs and the like, already meet the hardware requirements of the mobile terminal. Thus, the devices can be adapted at least to the partial use of the method according to the invention by an uncomplicated actualisation (update).

[0041] Another embodiment of the mobile terminal provides that the device is adapted to at least partially carry out a method according to the invention if a local information defined by the local position of another mobile terminal is available. Thanks to the at least partial possibility to carry out the method according to the invention on the own mobile terminal, one is advantageously less dependent on the fact whether the mobile terminal is operable in the communication network.

[0042] According to a preferred embodiment, the mobile terminal at least comprises one operating element, wherein initialisation of a method according to the invention can be started by means of the operating element, in particular also during use of the mobile terminal in the communication network. Hereby, it is advantageously possible that during a communication, in which a first communication network user communicates to a second communication network user that he cannot find him at the agreed meeting point, the first communication network user initiates the method according to the invention by pressing a key, wherein the second communication network user gives his consent, advantageously by pressing a comparable operating element on his own mobile terminal.

[0043] In another realisation variant of the mobile terminal, the exclusive function of the operating element is to start the initialisation of a method according to the invention. Advantageously, the operating element, preferably a key, is located on the device, such that it can also be easily operated during a phone conversation. The special allocation of an operating element highly simplifies the application of the method advantageously.

[0044] Other details, characteristics and advantages of the invention will be explained in detail in the following by means of the exemplary embodiments represented in the figures of the drawing. Herein:

Fig. 1 is a schematic diagram showing an exemplary embodiment for determining local information in an exemplary situation of application of a method according to the invention,

Fig. 2 is a schematic diagram showing an exemplary situation of application according to fig. 1 of an exemplary embodiment of a method according to the invention,

Fig. 3 is a schematic diagram showing an exemplary embodiment of sending and receiving operations according to the invention during execution of a method according to the invention and

Fig. 4 is a schematic diagram showing another exemplary situation of application of an exemplary embodiment of a method according to the invention.

[0045] Fig. 1 shows a first communication network user X" having a mobile phone X' who is standing at a local position X at a point in a city 12, as well as a second communication network user Y" having a mobile phone Y' who is standing at a local position Y at another point of the city 12. The city 12 comprises different buildings 13 that are symbolically represented in fig. 1. Both mobile phones X' and Y' respectively have a device, in the present case respectively a non explicitly represented GPS receiver, by means of which the respective local positions X and Y can be determined. Furthermore, fig. 1 shows satellites 11, which send out so called GPS signals that are represented in the figure as radio waves 16. If the GPS receiver receives the GPS signal from a sufficient number of satellites, the respective local position X or Y will be precisely determined. The receipt of the GPS signal is symbolically represented in fig. 1 by the drawn arrows that point from the satellites 11 to the respective mobile phone.

[0046] In fig. 2, a situation of application according to fig. 1 is exemplarily represented for an exemplary embodiment of the method according to the invention. A first communication network user X" and a second communication network user Y" have agreed to meet. Due to a misunderstanding they have gone to different places of the city 12 (local position X and local position Y). Both communication network users have a mobile phone X' respectively Y' to be operated in a mobile network 1 (symbolically represented as a cloud). The first communication network user X" calls the second communication network user Y" in order to ask for his whereabouts. Herein, the operation of the mobile phones X' or Y' in the mobile network 1 is represented in fig. 2 by the dash-dotted double arrow between the respective mobile phone X' or Y' and the mobile network 1. In the phone conversation, represented by "balloons" in the figure, it is found that the first communication network user X" is not at the right meeting point. However, he does not know the way from his actual local position X to the local position Y where the second communication network user Y" is standing. For nevertheless finding the way to the second communication network user Y" as fast as possible, the first communication network user X" presses a certain key 18 on his mobile phone X' during the conversation, whereby the provision of a route description 2 is initiated.

[0047] Fig. 3 is a schematic diagram showing an exemplary embodiment of the processes that are initiated by pressing the special key 18 according to fig. 2, in particular sending and receiving operations. The pressing of the special key 18 on the mobile phone X' of the first communication network user X" starts an application on the mobile phone X'. The application causes the actual local position X according to fig. 1 to be determined and

initiates the sending of a SMS 9 to a service of the mobile network 1. Herein, the SMS 9 also comprises the order instruction 3 for providing a route description 2. Furthermore, the determined local information X''' as well as the options 5' with respect to the provision of the usable information 2 that are preselected and memorized by the first communication network user X'' on his mobile phone X' are transmitted to the mobile network 1. Herein, the selected options 5' comprise details, such as the call number of the other communication network user Y'', with whom the conversation is being established, and details about how the information 2 shall be provided.

[0048] Referring to the exemplary embodiment in fig. 2, the call number of the second communication network user Y'' that serves for determining the local position Y that is also the target point, and the instruction that the route description shall be provided as text with supporting graphic representation are transmitted. Thereupon, the mobile network 1 sends an authorization inquiry 3' to the second communication network user Y'', whether this one agrees to provide his local information Y'''. The confirmation of the consent of the second communication network user Y'' is realised by pressing the key 18' on his mobile phone Y', wherein the pressing of key 18' causes the local information Y''' determined according to fig. 1 to be transmitted to the mobile network 1. Then, the local information X''' and Y''' as well as the selected options 5' are made available to an information processing unit 6 realized by the mobile network 1 for processing. Herein, the information processing unit 6 has access to at least one database 7, in which geographical data are kept ready, at least one database 7', in which communication network user related data are memorized, and the internet 8. From the database 7' comprising the communication network user related data, the information processing unit 6 gets data that include other options 5 predefined or predetermined by the communication network user X'', as well as from the database 7, which contains the geographical data, it gets data 4 for generating the route description 2.

[0049] The other options 5 for example determine whether the use of public transport means or a car shall be included in the provision of the route description 2 from a certain distance on, in which language the information 2 shall be provided, or whether an alternative meeting point (local position (Z)) shall be determined and whether information 2 about the way to reach the alternative meeting point (local position (Z)) shall be made available to both communication network users. In the present case, the first communication network user X'' has selected another option 5 that the provided information 2 shall not be sent once as static route description 2 to his mobile phone X', but that the route description 2 shall be made dynamically, i.e. that directional changes are sent to the first communication network user X'', in particular in consideration of the actual local position of the first communication network user X'', by the mobile network 1 as subset of the provided information 2 or 2'.

For this, the mobile phone X' sends the actual local position of the first communication network user X'' as local information X''' in regular intervals to the mobile network 1.

[0050] The information processing unit 6 refers to services of the internet 8 for providing other data 4', such as time-table information, and for generating the route description 2. On the base of all processed data that are made available the information processing unit 6 provides information 2 about how to get from the first local position X to the second local position Y. These data are memorized in the database 7' comprising the communication network user related data and the respective actual subset of the usable information 2' for the actual route section will be sent by MMS 10 by means of the mobile network 1 to the mobile phone X' of the first communication network user X'' and this subset of the usable information 2' will be output as information (output information (17)) on the mobile phone X'.

[0051] In fig. 4 another situation of application is represented for an exemplary embodiment of the method according to the invention in a simplified schematic diagram. Both communication network users X'' and Y'' are in a shopping centre 13 that comprises many shops 14. They are located at different places X and Y, wherein the first communication network user X'' wants to get to the place Y of the second communication network user Y''. Both communication network users X'' and Y'' respectively have a mobile phone X' or Y' according to fig. 3, which is equipped with a Bluetooth interface besides a GPS receiver. Since both communication network users X'' and Y'' are in the building 13, a GPS signal cannot be received. The determination of the respective local information X''' or Y''' is therefore realised using an Indoor Positioning System based upon Bluetooth technology. For this, special access points 15 have been established in the shopping centre 13, which access points respectively build up a short range radio line section that is respectively represented in the figure as radio waves 16. At least adjacent short range radio line sections shall at least partially overlap; but for reasons of clarity a corresponding representation has been omitted in the figure. The access points 15 are connected to each other, wherein the cooperation of the access points 15 is controlled by a computing unit 19. The Bluetooth interface of the respective mobile phone X' or Y' enables to determine the local position of the respective mobile phone X' or Y'. Herein, an unequivocal identity is allocated to the respective mobile phone X' or Y'. The first communication network user X' requests route information 2 by pressing key 18. He has chosen option 5', which means in the present case that he is inside a building 13. In contrast to the explanations with respect to the exemplary embodiment according to fig. 3, his local position will be at first approximately determined by means of a network based localisation method. On the base of a comparison with corresponding database entries, the mobile network 1 determines the building 13 as local position. For pro-

viding the desired route information 2, the mobile network 1 has access to the data available in the computing unit 19, which data will be processed by an information processing unit 6 provided by the mobile network 1. The output of the provided information 1 is preferably realised via MMS 10, as in fig. 3.

[0052] The exemplary embodiments of the invention that have been represented in the figures of the drawing and described in connection with these ones only serve for explanation of the invention and are not limiting for this one.

List of reference numerals:

[0053]

X	first local position	
X'	mobile terminal of a first communication network user	
X''	first communication network user	
X'''	local information with respect to the first local position	
Y	second local position	
Y'	mobile terminal of a second communication network user	
Y''	second communication network user	
Y'''	local information with respect to the second local position	
Z	other local position (corresponds to future local position Y)	
1	communication network/ mobile network	
2	usable information/route description	
2'	subset of the usable information	
2''	other subset of the usable information	
3	order instruction	
3'	authorization inquiry	
4	data for generating usable information	
4'	other data for generating usable information	
5	predefined/preset options	
5'	selected options	

6	information processing unit	
7	database comprising geographical data	
5	7'	database comprising communication network user related data
8	internet	
10	9	SMS
	10	MMS
	11	satellite (GPS)
15	12	city
	13	building/shopping centre
20	14	shop
	15	access point
25	16	radio waves (GPS/Bluetooth)
	17	output information
	18	operating element/key on the mobile terminal of a first communication network user
30	18'	operating element/key on the mobile terminal of a second communication network user
	19	computing unit
35		

Claims

1. A method for providing information (2) that can be used by means of a mobile terminal to be operated in a communication network (1), wherein the information comprises data how one can get from a first place (X) to a second place (Y) or from a second place (Y) to a first place (X), wherein the first place (X) is defined by the local position of a mobile terminal (X') to be operated in the communication network (1) and belonging to a first communication network user (X'') and the second place (Y) is defined by the local position of a mobile terminal (Y') to be operated in the communication network (1) and belonging to a second communication network user (Y''),
characterized by the following process steps:
 - determining at least one local information (X''')
 - with respect to the first place (X),
 - determining at least one local information (Y''')
 - with respect to the second place (Y)

- supplying the determined local information to at least one information processing unit,
 - processing the provided local information (X''' and Y''') by the at least one information processing unit (6) for generating information (2) to be provided dependent on individual and/or predefined conditions of the first and/or second communication network user, the first place (X), the second place (Y) and/or conditions that are specific for the local position,
 - providing the generated information for being used by a mobile terminal.
2. A method according to claim 1, **characterized in that** the provided information (2) is output on a mobile terminal, preferably the one of the first communication network user (X'').
 3. A method according to claim 2, **characterized in that** the provided information (2) is output using at least one service of the communication network (1).
 4. A method according to claim 3, **characterized in that** the service of the communication network (1) is a message service of the communication network (1), preferably according to MMS (10) or SMS (9).
 5. A method according to one of the claims 2 through 4, **characterized in that** the output information (17) explains how the first communication network user (X'') can get from the first place (X) to the second place (Y) or how the second communication network user (Y'') can get from the second place (Y) to the first place (X).
 6. A method according to one of the claims 2 through 4, **characterized in that** the output information (17) leads the first communication network user (X'') from the first place (X) to the second place (Y) or the second communication network user (Y'') from the second place (Y) to the first place (X).
 7. A method according to one of the claims 2 through 6, **characterized in that** the generated information is output acoustically, in particular as voice instruction, in written form, in particular as text instructions, symbolically, in particular by displaying directional arrows and/or graphically, in particular by displaying map material by means of the mobile terminal or a device of the mobile terminal.
 8. A method according to one of the claims 1 through 7, **characterized in that** the at least one information processing unit (6) is provided by means of the respective mobile terminal and/or by means of the communication network (1).
 9. A method according to one of the claims 1 through 8, **characterized in that** the local position of the respective mobile terminal in the communication network (1) is determined using localisation technologies on the base of the terminals and/or on the base of the network.
 10. A method according to one of the claims 1 through 9, **characterized in that** the respective local information is determined by means of a device of the respective mobile terminal.
 11. A method according to one of the claims 1 through 10, **characterized in that** the respective local information is determined by means of at least one service of the communication network (1).
 12. A method according to one of the claims 1 through 11, **characterized in that** the respective local information is determined using an Indoor Positioning System.
 13. A method according to claim 12, **characterized in that** the Indoor Positioning System uses local radio networks and/or short-range radiotelegraphy, in particular WLAN or Bluetooth, for determining the local position.
 14. A method according to one of the claims 1 through 13, **characterized in that** at least one local information allocated to a certain place is determined in an at least partially automatised manner, preferably initiated by the network.
 15. A method according to one of the claims 1 through 14, **characterized in that** the local position of at least one of the mobile terminals is determined continuously or at least in defined time intervals and the associated local information is provided within the scope of the determination of the local information.
 16. A method according to one of the claims 1 through 15, **characterized in that** when the determined local information (X''' and Y''') is provided, at least one sending and at least one receiving operation using the communication network (1) will be realised.
 17. A method according to one of the claims 1 through 16, **characterized in that** within the scope of the generation of the information (2) to be provided a route description (2) is made depending on and/or in consideration of individual and/or predefined conditions (5, 5') of at least the first communication network user (X''):
 - which route description (2) contains the information about how the first communication network user (X'') can get the most quickly from the first place (X) to the second place (Y), and/or

- a route description (2) is made which, contains the information about the shortest way to use by the communication network user (X") in order to get from the first place (X) to the second place (Y), and/or
 - a time-table information is given (eventually with the option of the online ticket purchase) (4'), which informs about how the communication network user (X") can get from the first place (X) to the second place (Y) using public transport means, and/or
 - a hint to known and/or easily recognizable objects as possible meeting point in the surrounding of the second place (Y) is given, and/or
 - map material is provided by means of which the first communication network user (X") can identify and reach the second place (Y), and/or
 - directional instructions are given, from which the communication network user (X") can learn the shortest way to use for getting from the first place (X) to the second place (Y), and/or
 - the distance between the places (X) and (Y) is divided into at least two route sections, wherein at least one of the above listed activities is carried out for the at least two route sections and the at least two carried out activities are connected to each other.
18. A method according to one of the claims 1 through 17, **characterized in that** at least one internet based service will be used in the context of the information processing.
19. A method according to one of the claims 1 through 18, **characterized in that** an execution of the process steps is initiated, preferably in an automatised way, by an instruction that is connected to an appointment entry memorized in an electronic appointment book, which marks an agreed meeting between the communication network users (X" and Y"), before and/or at the beginning of the agreed meeting.
20. A method according to one of the claims 1 through 18, **characterized in that** the communication network (1) is a cellular mobile network (1), preferably according to a GSM, GPRS and/or UMTS radio network standard.
21. A method according to one of the claims 1 through 20, **characterized in that** based upon the actual local positions (X and Y) of the communication network users (X" and Y") and within the scope of the processing of the provided local information (X'" and Y'"), at least one other local position (Z) will be determined, which is located on the distance between the actual first local position (X) and the actual second local position (Y), wherein the at least one other local position (Z) corresponds to the expected future local position of the mobile terminal (Y") of the second communication network user (Y"), and information is generated about how one can get from the actual first local position (X) and the actual second local position (Y) to the at least one other local position (Z).
22. A method according to claim 21, **characterized in that** the generated information, which informs about how one can get from the actual first local position (X) or the actual second local position (Y) to the at least one other local position (Z), is output.
23. A mobile terminal to be used in a communication network (1), preferably a mobile network (1) according to claim 20, **characterized in that** the mobile terminal is designed and/or adapted for at least partially carrying out a method according to the claims 1 through 22.
24. A mobile terminal according to claim 23, **characterized in that** the mobile terminal is adapted to initiate a method according to the claims 1 through 22, to interact with the communication network (1) such that at least the process steps mentioned in claim 1 can be carried out, and to enable the output of the provided information (2) on the mobile terminal.
25. A mobile terminal according to claim 23 or claim 24, **characterized in that** this one is adapted to at least partially carry out a method according to the claims 1 through 22, if a local information defined by the local position of another mobile terminal is available.
26. A mobile terminal according to one of the claims 23 through 25, **characterized in that** the mobile terminal at least comprises one operating element (18), wherein the initialisation of a method according to the claims 1 through 22 can be started by means of the operating element (18), in particular also during use of the mobile terminal in the communication network (1).
27. A mobile terminal according to claim 26, **characterized in that** the exclusive function of the operating element (18) is to start the initialisation of a method according to the claims 1 through 22.

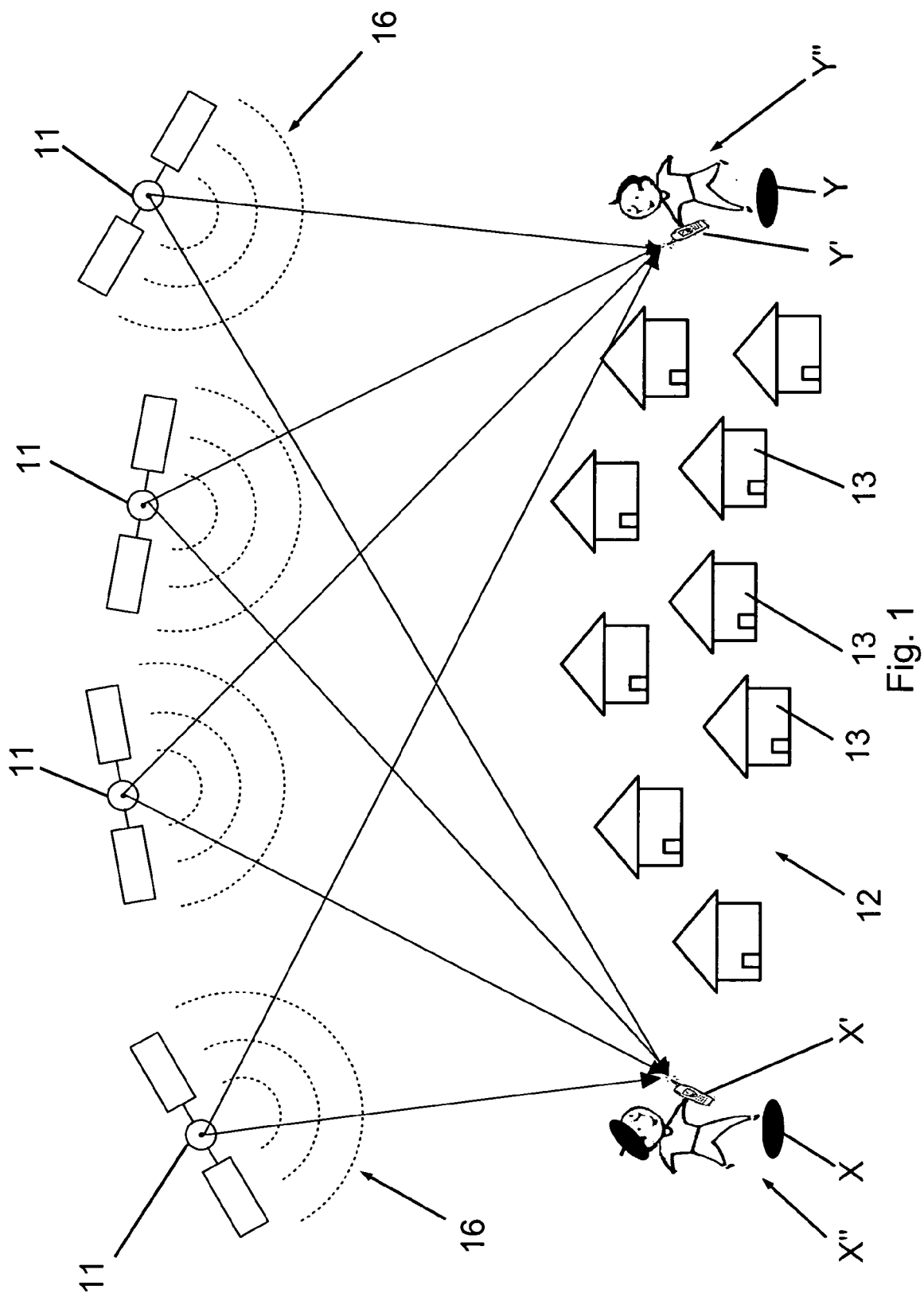


Fig. 1

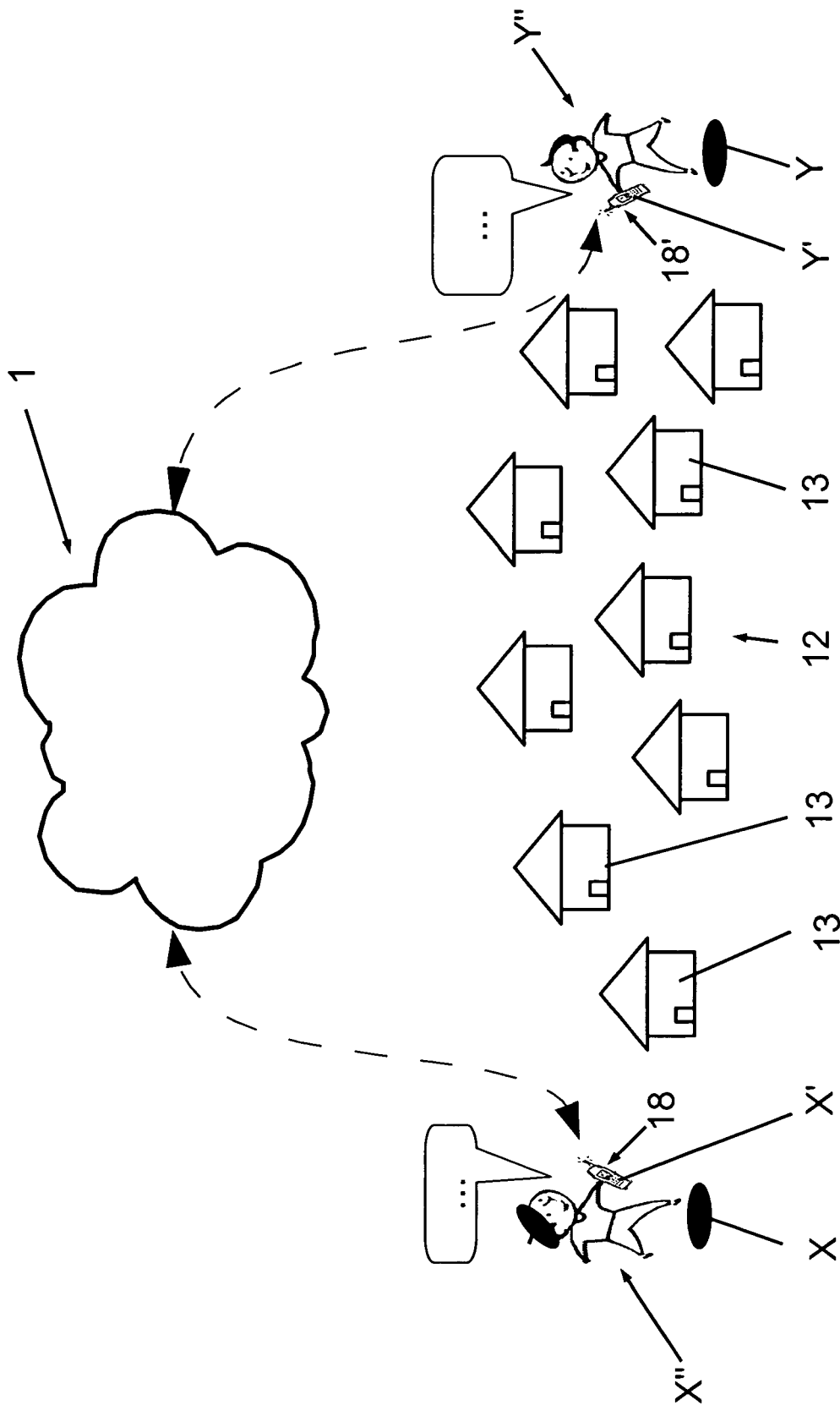
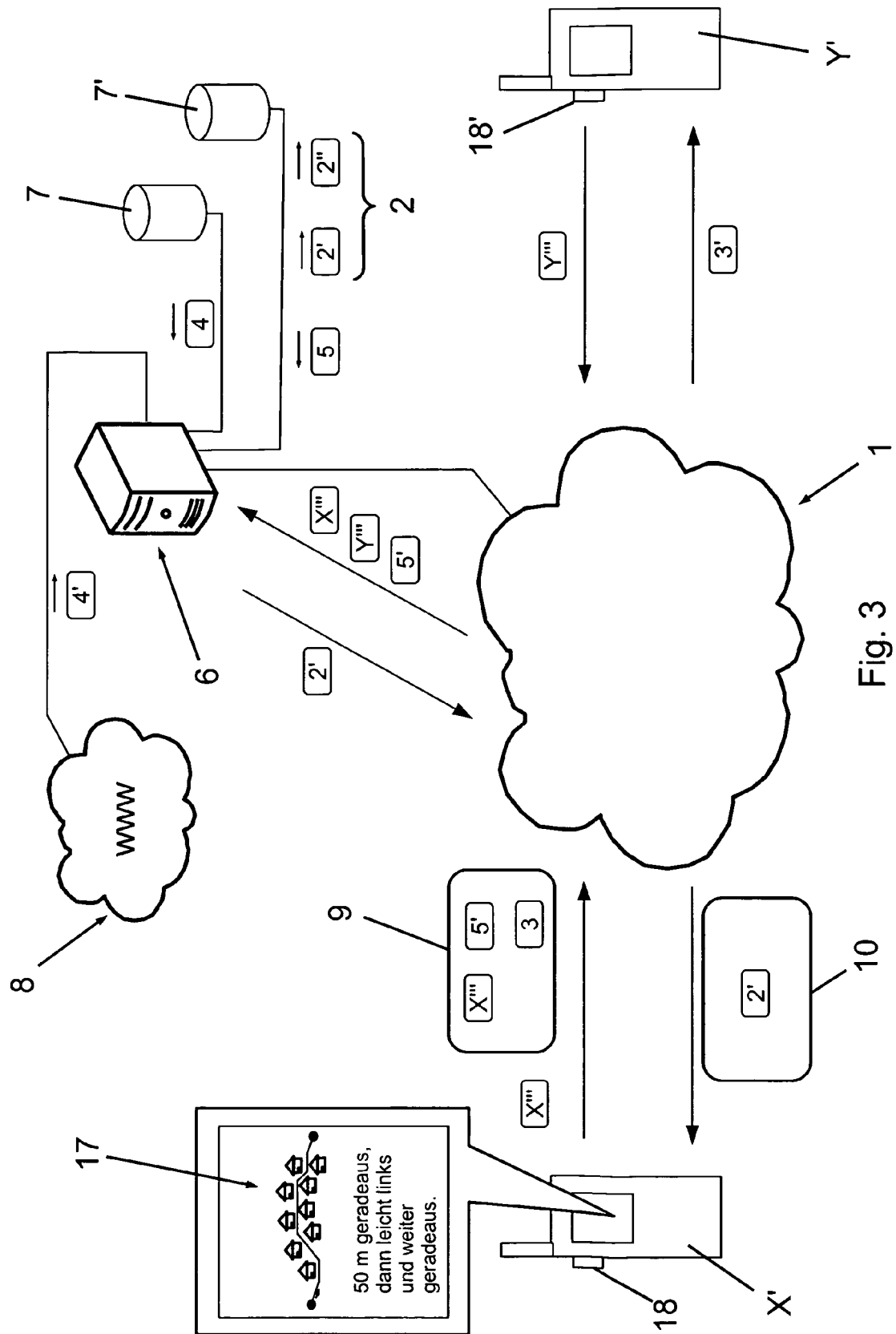


Fig. 2



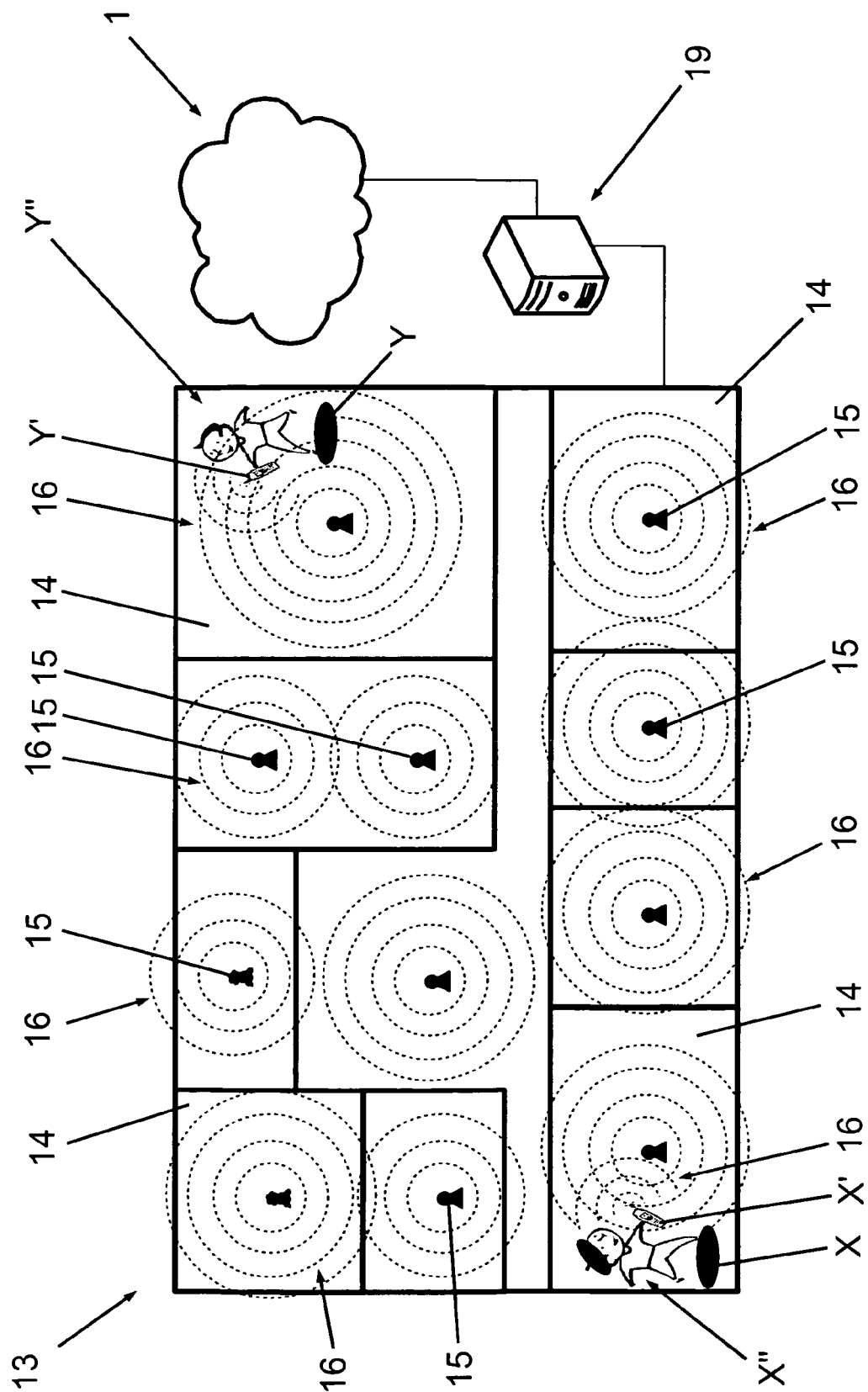


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 08 01 7384

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 March 2009	Examiner Jakob, Clemens
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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