

CLAIMS

We Claim:

1. A smart safety network system (100) for tracking a mobile computing device having no access to a global positioning system (GPS) in an emergency environment, the smart safety network system (100) comprising:

a first mobile computing device (102) communicatively coupled to an application server (104), wherein the first mobile computing device (102) comprises a first proximity communicator (106) configured to communicate with a plurality of proximity communicators (108) installed within a plurality of nearby mobile computing devices (110) respectively;

a location tracker (112) embedded within the first mobile computing device (102) wherein the location tracker (112) is configured to determine and track current location of the first mobile computing device (102) through GPS during a normal mode of operation of the first mobile computing device (102), whereas the location tracker (112) fails to determine the current location of the first mobile computing device (102) during an emergency mode of operation of the first mobile computing device (102);

a controller (114) configured to generate a first set of information using the current location during the normal mode of operation and transmit the first set of information to the application server (104) regularly at predetermined intervals, wherein when a first user of the first mobile computing device (102) is in emergency situation, then first mobile computing device (102) initiates an SOS, wherein, a signal is transmitted to the application server (104), and the application server (104) in turn sends details of such emergency situation and transmits the location of the first mobile computing device (102) to the plurality of nearby mobile computing devices (110), wherein, the first mobile computing device (102) collects the device ids of the plurality of nearby mobile computing devices (110) in the vicinity and location of the first user of the first mobile computing device (102);

the application server (104) comprising:

a server controller (116) configured to generate a second set of information using the first set of information when the first mobile computing device (102) is in the emergency mode of operation, wherein the second set of information includes at least instructions for the plurality of nearby mobile computing devices (110) to initiate scanning operations to detect present location of the first mobile computing device (102) within their respective communication range;

a receiver (118) to receive information from the plurality of nearby mobile computing devices (110) regarding respective scanning operations; and

an object locating unit (120) configured to analyze the respective scanning operations and determine the present location of the first mobile computing device (102) therefrom,

wherein the object locating unit (120) is configured to firstly determine probability of an existence of the first mobile computing device (102) based on the analysis of the respective scanning operations and thereafter, determine the current location based on the probability of the existence of the first mobile computing device (102), wherein when the first mobile computing device (102) gets disconnected with the application server (104) and the application server (104) is not able to receive the location of the first mobile computing device (102) then the application server (104) identifies last known location of the first mobile computing device (102) and sends instructions to the plurality of nearby mobile computing devices (110) in and around of the last known location of the first mobile computing device (102), wherein the first mobile computing device (102) is communicatively synchronized with a second mobile computing device; wherein the object locating unit (120) is configured to analyze the respective scanning operations to determine present location of the second mobile computing device therefrom and determine probability of present location of a first user in accordance with the present locations of the first mobile computing device (102) and the second mobile computing device.

2. The system (100) as claimed in claim 1, wherein the first proximity communicator (106) is configured to communicate with the other proximity communicators (108) using at least one near or far-field communication technology to receive information regarding current locations of the respective plurality of nearby mobile communicating devices (110) and the controller (114) is configured to transmit the current locations of the respective plurality of nearby mobile communicating devices (110) to the application server (104).
3. The system (100) as claimed in claim 2, wherein the application server (104) is configured to place the first mobile computing device (102) under observation when the user inputs last known location of the first mobile computing device (102) from another computing device and request to place the first computing device (102) under the observation, wherein the application server (104) is configured to track the location of the first mobile computing device (102) using additional plurality of nearby communication devices (110) and transmitting the tracked location to the user.

4. The system (100) as claimed in claim 2, wherein the first set of information includes the current location, a plurality of identity attributes of the first mobile computing device (102), attributes of a first user of the first mobile computing device (102), device identities of the plurality of nearby mobile communicating devices (110) and their respective locations.
5. The system (100) as claimed in claim 4, wherein the device identities include static identities or dynamic identities of the respective plurality of nearby mobile computing devices (110).
6. The system (100) as claimed in claim 1, wherein the application server (104) further comprises a monitoring unit (122) configured to:
 - regularly analyze the first set of information from the first mobile computing device (102); and
 - in absence of availability of the first set of information, the monitoring unit (122) is configured to label an existing mode of operation of the first mobile computing device (102) as the emergency mode of operation.
7. The system (100) as claimed in claim 6, wherein the server controller (116) is configured to label the first mobile computing device (102) as a non-trackable device when the server controller (116) does not receive the first set of information for a predetermined amount of time.
8. The system (100) as claimed in claim 1, wherein the mobile computing device (102) comprises:
 - an emergency detecting unit (124) configured to detect at least one emergency operational mode of the first mobile computing device (102) wherein during the at least one emergency mode the location tracker (112) fails to determine the current location of the first mobile computing device (102) through GPS; wherein the controller (114) is configured to transmit the information pertaining to the emergency operational mode of the first mobile computing device (102) to the application server (104).
9. The system (100) as claimed in claim 8, wherein the emergency detecting unit (124) is configured to display a user interface for facilitating the user to manually activate the emergency operational mode of the first mobile computing device (102).
10. The system (100) as claimed in claim 1, wherein the application server (104) further comprising:
 - a device identifying unit (126) configured to determine additional plurality of mobile computing devices (110) found within a predetermined range of a last detected current

location of the first mobile computing device (102), wherein the server controller (116) is configured to send identity related information of the first mobile computing device (102) to the additional plurality of mobile computing devices (110).

11. The system (100) as claimed in claim 1, wherein the application server (104) is configured to store the information corresponding to the plurality of nearby mobile computing devices (110) and associate the information with the first mobile computing device (102).

12. A method (500) for tracking a mobile computing device having no access to a global positioning system (GPS) in an emergency environment, the method (500) comprising:

establishing a communication between a first proximity communicator (106) and a plurality of proximity communicators (108), wherein the first proximity communicator (106) installed within a first mobile computing device (102) and the plurality of proximity communicators (108) installed within a plurality of nearby mobile computing devices (110) respectively;

determining and tracking, via a location tracker (112), a current location of the first mobile computing device (102) through the GPS during a normal mode of operation of the first mobile computing device (102), wherein the location tracker (112) fails to determine the current location of the first mobile computing device (102) during an emergency mode of operation of the first mobile computing device (102);

generating, by a controller (114) a first set of information using the current location during the normal mode of operation and transmitting the first set of information to an application server (104) regularly at predetermined intervals, wherein when a first user of the first mobile computing device (102) is in emergency situation, then first mobile computing device (102) initiates an SOS, wherein, a signal is transmitted to the application server (104), and the application server (104) in turn sends details of such emergency situation and transmits the location of the first mobile computing device (102) to the plurality of nearby mobile computing devices (110), wherein the first mobile computing device (102) collects the device ids of the plurality of nearby mobile computing devices (110) in the vicinity and location of the first user of the first mobile computing device (102);

generating, by a server controller (116), a second set of information using the first set of information when the first mobile computing device (102) is in the emergency mode of operation, wherein the second set of information includes at least instructions for the plurality of nearby mobile computing devices (110) to initiate scanning operations to detect

the presence of the first mobile computing device (102) within respective communication range;

receiving, by a receiver (118), information from the plurality of nearby mobile computing devices (110) regarding respective scanning operations;

analyzing, by an object locating unit (120), the respective scanning operations and determine the present location of the first mobile computing device therefrom;

determining, by the object locating unit (120), probability of an existence of the first mobile computing device (102) based on the analysis of the respective scanning operations;

ascertaining, by the object locating unit (120), the current location based on the probability of the existence of the first mobile computing device (102), wherein when the first mobile computing device (102) gets disconnected with the application server (104) and the application server (104) is not able to receive the location of the first mobile computing device (102) then the application server (104) identifies last known location of the first mobile computing device (102) and sends instructions to the plurality of nearby mobile computing devices (110) in and around of the last known location of the first mobile computing device (102);

establishing a synchronous communication between the first mobile computing device (102) and the second mobile computing device;

analyzing, by the object locating unit (120), the respective scanning operations to determine present location of the second mobile computing device therefrom; and

determining, by the object locating unit (120), probability of present location of a first user in accordance with the present locations of the first mobile computing device (102) and the second mobile computing device.

13. The method (500) as claimed in claim 12, comprising:

receiving, by the first proximity communicator (106), information regarding current locations of the respective plurality of nearby mobile communicating devices (110); and

transmitting, by the controller (114), the current locations of the respective plurality of nearby mobile communicating devices (110) to the application server (104).

14. The method (500) as claimed in claim 13, wherein the first set of information includes the current location, a plurality of identity attributes of the first mobile computing device (102), attributes of a first user of the first mobile computing device (102), device identities of the plurality of nearby mobile communicating devices (110) and their respective locations.

15. The method (500) as claimed in claim 12, further comprising:

regularly analyzing, by monitoring unit (122), the first set of information from the first mobile computing device (102); and

in absence of availability of the first set of information, labelling, by monitoring unit (122), an existing mode of operation of the first mobile computing device (102) as the emergency mode of operation.

16. The method (500) as claimed in claim 12, comprising:

detecting, by an emergency detecting unit (124), at least one emergency operational mode of the first mobile computing device (102) wherein during the at least one emergency mode the location tracker (112) fails to determine the current location of the first mobile computing device (102) through GPS; and

transmitting, by the controller (114), the information pertaining to the emergency operational mode of the first mobile computing device (102) to the application server (104).