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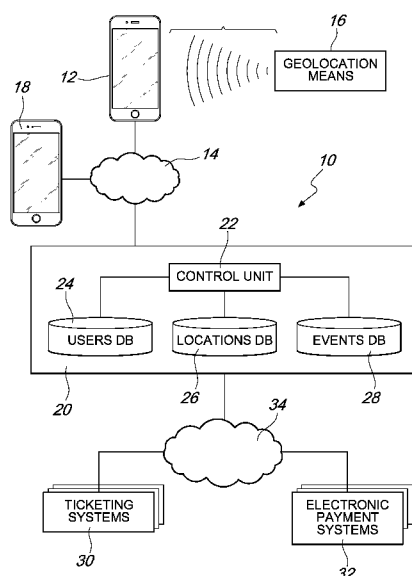


Fig. 1

(57) Abstract: A system (10) for access control based on geolocation, comprising at least one first mobile device (12) associated with a user and a remote device (20), which are mutually connected by means of a telematic communications network (14), and further comprising geolocation means (16) that define a virtual demarcation line; the at least one first mobile device (12) comprising means for establishing a communication with the geolocation means (16) when the user crosses the virtual demarcation line, and means for transmitting toward the remote device (20) a signal that the virtual demarcation line has been crossed by the user.

SYSTEM AND METHOD FOR ACCESS CONTROL BASED ON GEOLOCATION

The present invention relates to a system and a method for access control based on geolocation, particularly but not exclusively useful and practical in the field of the control and management of accesses (or entries) of a more or less large number of users into areas or locations that are reserved or in any case have conditional access, related for example to museums, exhibitions, concerts and events in general, which provide for a step of accreditation and identification at the entrance of the guest user who owns a nominal personal invitation, or provide for the purchase of an admission ticket by the visiting user.

Background of the invention

Various methods are currently used in access control systems of the known type and are adopted as a function of the characteristics of the specific event and as a function of the requirements of the organizers or operators of the event.

By way of example, access control can be performed by means of the accreditation of the guest user and the subsequent verification of his identity by means of a name list on paper or by means of a name list stored on an electronic device.

In this case, the guest user goes to the location or entrance of the event that he wishes to access and proceeds with his identification by dealing with the access control operators, who check that the name of said user is on the paper or electronic list.

Currently, these known systems are unable to avoid one of the steps that require the most time in the procedure for controlling accesses to an event, i.e., the verification performed by access control operators regarding the right to enter, on the part of the guest user, by stating his identity and/or by means of the manual showing of a paper or electronic nominal personal invitation by the guest user.

Again by way of example, access control can be performed by means of the purchase of one or more tickets at the box office on the part of the visiting user, with the subsequent issuing of paper access documents on the part of said box office via a certified system, or by means of the purchase of one or more tickets online by the visiting user, with the subsequent reception of a confirmation email, a QR code, a bar code or another code or electronic item that certifies that the purchase has occurred.

In this case, the visiting user goes to the location or entrance of the event that he is interested in visiting and proceeds with the purchase of the paper ticket at the box office or shows to the access control operators the electronic access document purchased previously online.

In the background art, in a manner similar to what has already been stated, these known systems are unable to avoid one of the steps that require the most time within the procedure for controlling accesses to an event, i.e., the verification performed by the access control operators regarding the right to enter on the part of the visiting user, by means of the manual showing of a paper or electronic entrance ticket on the part of said visiting user.

Even in the case of electronic tickets, which are commonly considered "faster", current systems provide for their manual showing by the visiting user, this manual showing being necessary in order to show or move one's own mobile device closer to the access control operators, which are constituted by human personnel or by automatic recognition sensors.

Disclosure of the invention

The aim of the present invention is to overcome the limitations of the background art described above, providing a system and a method for access control based on geolocation that allow to obtain effects that are similar or better than those obtainable with access control systems of the known type, improving the visiting experience of the user and making the access procedure more dynamic, reducing the associated queues at the

entrance, so that the user does not perceive physical or virtual barriers between himself and the experience of the event.

Within this aim, an object of the present invention is to conceive a system and method for access control based on geolocation that allow to
5 eliminate the steps related to identification of the guest user by the access control operators by checking for the presence of the name of said guest user on the electronic or paper list, or related to the purchase of paper or electronic tickets at the box office or online on the part of the visiting user and the subsequent showing thereof to the access control operators. The
10 invention must in any case allow quick and precise blocking of users that are not accredited or do not have a ticket by the access control operators.

Another object of the present invention is to provide a system and a method for access control based on geolocation that allow organizers to optimize the management of the event and to monitor the flows of the
15 audience, for example in order to remain within capacity limits, consequently improving the experience and safety conditions.

A further object of the present invention is to conceive a system and a method for access control based on geolocation that allow the organizers to reduce the budget related to the event by reducing the number of access
20 control operators and consequently saving on personnel costs as well as reducing the costs for the installation of physical barriers.

Another object of the present invention is to devise a system and a method for access control based on geolocation that allow organizers to perform a detailed post-event analysis by means of an audience attendance
25 report, comprising also information related to guest users or visitors and their behaviors, so as to improve and target the offer of future events.

Another object of the present invention is to provide a system and a method for access control based on geolocation that are highly reliable, relatively simple to provide and at modest costs.

30 This aim, as well as these and other objects that will become better

apparent hereinafter, are achieved by a system for access control based on geolocation, comprising at least one first mobile device associated with a user and a remote device, which are mutually connected by means of a telematic communications network, characterized in that it comprises
5 geolocation means that define a virtual demarcation line, and in that said at least one first mobile device comprises means for establishing a communication with said geolocation means when said user crosses said virtual demarcation line, and means for transmitting toward said remote device a signal that said virtual demarcation line has been crossed by said
10 user.

This aim and these and other objects that will become more apparent hereinafter are also achieved by a method for access control based on geolocation, characterized in that it comprises the steps of activating , following the approach to a virtual demarcation line defined by geolocation
15 means, means for establishing a communication with said geolocation means, said means for establishing said communication being comprised in a first mobile device associated with a user; crossing said virtual demarcation line by said user, with establishment of said communication between said first mobile device and said geolocation means, and
20 transmitting a signal that said virtual demarcation line has been crossed toward a remote device; identifying the user on the part of said remote device; and access logging on the part of said remote device.

Brief description of drawings

Further characteristics and advantages of the invention will become
25 better apparent from the description of a preferred but not exclusive embodiment of the system and of the method for access control based on geolocation according to the invention, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a block diagram that shows schematically an embodiment
30 of the access control system based on geolocation according to the present

invention;

Figure 2 is a flowchart that shows schematically an embodiment of the access control method based on geolocation according to the present invention.

5 Detailed description of the invention

With reference to the figures, the access control system based on geolocation according to the invention, designated generally by the reference numeral 10, comprises substantially geolocation means 16, at least one first mobile device 12, at least one second mobile device 18, a remote
10 device 20 that comprises a control unit 22 and a plurality of databases 24, 26, 28 stored on appropriate storage media, both of said mobile devices 12 and 18 being connected to said remote device 20 by means of a telematic communications network 14, for example the Internet.

The first mobile device 12, constituted for example by a smartphone
15 or a tablet, is associated with or owned by the user and it is the element by means of which the user identifies himself at the system 10 for access control based on geolocation, particularly with the remote device 20. By virtue of the first mobile device 12, the system 10 according to the invention is capable of detecting access to an event on the part of the owner user.

20 In particular, access to an event on the part of the user is detected by the system 10 for access control based on geolocation when the user, and therefore the mobile device 12 that he owns, crosses a virtual demarcation line that is defined beforehand by the organizers of the event and corresponds to the point of access or entry to the location of the event.

25 Such virtual demarcation line is defined by the organizers of the event by virtue of the geolocation means 16, which can comprise, for example, GPS satellite positioning systems, location systems with Wi-Fi integration, location systems with Bluetooth integration, iBeacon proximity detection systems.

30 By way of example, in the case of geolocation means 16 of the GPS

type, the virtual demarcation line is defined by setting the GPS coordinates that correspond to the point of access or entry to the location of the event.

Also by way of example, in the case of geolocation means 16 of the Bluetooth or iBeacon type, the virtual demarcation line is defined by means
5 of the installation of Bluetooth or iBeacon transceiver modules that are conveniently oriented at the point of access or entry to the location of the event. And so forth for the other types of geolocation means 16.

Therefore, the first mobile device 12 is appropriately configured, for example by means of an adapted app that can be downloaded and installed,
10 in order to activate, as a consequence of the approach to the virtual demarcation line, means for establishing a communication with the geolocation means 16.

For example, these means for establishing a communication with the geolocation means 16, comprised in the first mobile device 12, can comprise
15 a GPS module, a Bluetooth module, an iBeacon module, and so forth depending on the type of geolocation means 16.

This activation can occur automatically, for example when the mobile device 12 reaches a minimum distance from the geolocation means 16, or manually, for example with the user acting on the mobile device 12 by
20 means of the above cited app.

Assuming for example the use of geolocation means 16 of the Bluetooth or iBeacon type, as a consequence of such activation, the first mobile device 12 enters a "listening" state until it detects the signal emitted by the Bluetooth or iBeacon transceiver modules installed at the point of
25 physical access to the event, which define the virtual demarcation line.

At this point, the first mobile device 12 is configured appropriately in order to establish a connection with the geolocation means 16, once the virtual demarcation line defined at the physical entrance to the location of the event has been crossed. The first mobile device 12 is further configured
30 in order to transmit toward the remote device 20 a virtual demarcation line

crossing signal, consequently activating the beginning of the process for the identification of the user, who is recognized by the access control operators, or of the process for the purchase and payment of one or more tickets ("transit transaction"), which are detected by the access control operators.

5 These processes for user identification or for the purchase and payment of one or more tickets are performed or managed in particular by the remote device 20, which is described in greater detail, together with its operation, in the continuation of the present description.

10 The second mobile device 18, also constituted for example by a smartphone or a tablet, is associated with or owned by the access control operators and is the element by means of which said operators interface with the other elements of the system 10 for access control based on geolocation, particularly with the remote device 20.

15 By virtue of the second mobile device 18, the access control operators are able to identify and recognize a guest user who has a nominal personal invitation or to identify and detect a visiting user who has an admission ticket, and to block rapidly and precisely users who are not accredited or do not have a ticket.

20 In practice, assuming again the use of geolocation means 16 of the Bluetooth or iBeacon type, when the user crosses the virtual demarcation line defined previously by the event organizers the mobile device 12 that he owns, appropriately configured, connects to the geolocation means 16 installed at the point of physical access to the location of the event, thus detecting said crossing and consequently starting the process for
25 identification of the user or the process for the purchase and payment of one or more tickets, performed or managed by the remote device 20.

30 The remote device 20 performs or manages these processes for user identification or for purchase and payment of one or more tickets, and once these processes have ended with a positive outcome it transmits a crossing authorized signal toward the mobile device 18 owned by the access control

operators, who can thus check whether the users in transit have or not a nominal personal invitation or a regularly purchased admission ticket, and can display the personal information related to the entering users who have the appropriate access document.

5 Within the remote device 20, constituted for example by a remote computer configured in web server mode, the execution of the various operations and the reception/transmission of the data from/toward the other elements of the system 10 for access control based on geolocation are managed by the control unit 22.

10 It is therefore the control unit 22 of the remote device 20 that manages the information and data stored in the plurality of databases 24, 26, 28, also allowing the organizers or users to add further information and data or to update existing information and data.

 Furthermore, the control unit 22 receives from the first mobile device
15 12 owned by the user the signal that the virtual demarcation line defined at the physical entrance to the location of the event has been crossed and the consequent command to start the process for identification of the user or the process for the purchase and payment of one or more tickets.

 Likewise, the control unit 22 of the remote device 20 transmits
20 toward the second mobile device 18 owned by the access controlled operators the various signals related to the outcomes of the user identification process or of the process for the purchase and payment one or more tickets.

 As mentioned, the remote device 20 also comprises a plurality of
25 databases 24, 26, 28 stored on appropriate storage media, said databases 24, 26, 28 being connected to the control unit 22.

 In one possible embodiment of the system 10 for access control based on geolocation according to the invention, said plurality of databases 24, 26, 28 comprises a user database 24, a location database 26 and an event
30 database 28.

The user database 24 allows to store and manage a plurality of user profiles, i.e., the set of profiles that correspond to the individual users recorded in the system 10 for access control based on geolocation according to the invention.

5 In general, each user profile stored in the user database 24 comprises personal data related to the corresponding user as well as data related to the events or locations to which the corresponding user has had access.

By way of example, each user profile stored in the user database 24 can comprise the following data related to the individual user: first name,
10 surname, gender, date of birth, place of birth, taxpayer identification code, nationality, home address, domicile address, telephone number, preferred types of events or locations, history of accesses to events or locations, and so forth.

In this manner, when the remote device 20, in particular the control
15 unit 22, receives from the first mobile device 12 owned by the user the virtual demarcation line crossing signal, the control unit 22 is capable of identifying the identity of the user who performed the crossing, by searching for the telephone number, the taxpayer identification code or other data of such signal among the various telephone numbers or the various taxpayer
20 identification codes or other data of the user profiles stored within the user database 24.

In one embodiment of the system 10 for access control based on geolocation according to the invention, the data related to the individual user, comprised in the corresponding user profile stored in the user database
25 24, can be used advantageously to offer the user the purchase of one or more admission tickets at a lower purchase price, according to a favored rate reserved to him indeed as a function of these data of his profile.

For example, the system 10 according to the invention might offer a reduction to users who are older than a threshold that is preset by the
30 organizers of the event or to the users who reside within the same city in

which the event location is located.

The first mobile device 12 can be further configured, for example by means of the above cited app, in order to allow the user to create and compile his own user profile and to store it within the user database 24.

5 The location database 26 allows to store and manage a plurality of places or locations, i.e., the set of information related to the individual locations recorded by the organizers in the system 10 for access control based on geolocation according to the invention.

10 In general, each location stored in the location database 26 is characterized by descriptive information, such as for example a unique identifier, a name, and address, a brief description and the audience attendance data, as well as information related to the virtual demarcation line associated with it, which is defined at the physical entrance to the location by virtue of the geolocation means 16.

15 In this manner, when the remote device 20, in particular the control unit 22, receives from the first mobile device 12 owned by the user the virtual demarcation line crossing signal, the control unit 22 is capable of identifying the exact location where the user crossed, by searching for the virtual demarcation line of the signal among the various virtual demarcation
20 lines associated with the locations stored within the location database 26.

Once the exact location where the user has crossed has been identified, the control unit 22 can update the history of accesses to locations that is included in the profile of the user, indeed adding to such history the location that has just been identified as well as the date and time of the
25 access to the location, i.e., of the crossing of the virtual demarcation line. Moreover, the control unit 22 can update the data and information related to audience attendance of the location, stored in the location database 26.

The event database 28 allows to store and manage a plurality of events, i.e., the set of information related to the individual events recorded
30 by the organizers in the system 10 for access control based on geolocation

according to the invention.

In general, each event stored in the event database 28 is characterized by descriptive information, such as for example a unique identifier, a name, a short description, a date or a period of time of occurrence, the audience attendance data and the unique identifier of the location where it occurs, as well as information related to the access or entry conditions, such as for example whether access is allowed exclusively to users who have a nominal personal invitation, exclusively to users who have an admission ticket, or both. In the case of access allowed to users who have a ticket, this information related to the access or entry conditions also comprises the various types of ticket, which can be for example a full ticket, a reduced child ticket, a reduced senior citizen ticket, and the associated purchase prices or tariffs.

In this manner, when the remote device 20, particularly the control unit 22, receives from the first mobile device 12 owned by the user the virtual demarcation line crossing signal, the control unit 22 is capable of identifying the exact event that the user accessed, by searching for example for the date and location of the signal among the various dates and the various locations related to the events stored within the event database 28.

Once the exact event that the user accessed has been identified, the control unit 22 can update the event access history included in the profile of said user, adding indeed to said history the event that has just been identified as well as the date and time of access to the event, i.e., of the crossing of the virtual demarcation line. Typically, the date and time of access to the event are identical to the date and time of access to the location where the event occurs. Moreover, the control unit 22 can update the data and information related to audience attendance of the event stored in the event database 28.

In a preferred embodiment of the invention, the system 10 for access control based on geolocation, particularly the remote device 20, is

connected to one or more ticketing systems 30, by means of a telematic communication network 34, for example the Internet.

By way of example, these ticketing systems 30 can be constituted by remote computers, configured in web server mode, which provide the public
5 with web services for purchasing electronic tickets. These servers for the purchase of electronic tickets are typically managed by companies that are specialized in the field.

The connection of the remote device 20 of the system 10 with the ticketing systems 30 is particularly useful and practical in the case of access
10 allowed to users who have a ticket. By virtue of this connection, the control unit 22 of the remote device 20 can in fact autonomously request and purchase, on the basis of the preferences set by the user and after authorization from said user, one or more admission tickets related to the location of which the user has crossed the virtual demarcation line, i.e.,
15 related to the event that the user accessed, thus performing the first step of the so-called "transit transaction".

In a preferred embodiment of the invention, the system 10 for access control based on geolocation, particularly the remote device 20, is connected to one or more electronic payment systems 32, by means of a
20 telematic communications network 34, for example the Internet.

By way of example, these electronic payment systems 32 can be constituted by remote computers, configured in Web server mode, which provide the public with web services for performing electronic payment operations. These servers for electronic payment are typically managed by
25 specialized companies of the field, such as for example PayPal, or by financial institutions specialized in the issuing of credit or debit cards, such as for example Visa or MasterCard.

In a manner similar to what has been mentioned with reference to the connection of the remote device 20 of the system 10 according to the
30 invention to the ticketing systems 30, the connection of the remote device

20 of the system 10 to the electronic payment systems 32 is particularly useful and practical in the case of access allowed to users who have a ticket. By virtue of this connection, the control unit 22 of the remote device 20 can in fact perform payment autonomously, on the basis of the preferences set
5 by the user and after authorization on the part of the user, of one or more admission tickets purchased previously by means of the ticketing systems 30, thus performing the second and last step of the so-called "transit transaction".

The above cited preferences and/or payment authorizations can
10 consist for example in recording one's own credentials for access to PayPal on the part of the user on his profile stored within the user database 24. As an alternative, they can consist for example in recording the data of one's own credit card (card number, cardholder name and surname, expiration date, CVV code) and in the subsequent setting of said credit card, recorded
15 on one's own user profile, as a predefined payment instrument.

The access control method based on geolocation according to the invention comprises the steps described hereinafter.

Initially, in step 50 one proceeds with the activation, following the approach to the virtual demarcation line, of means for establishing a
20 communication with the geolocation means 16. These means for establishing a communication with the geolocation means 16 are comprised in the first mobile device 12, which enters a "listening" state.

This activation can occur automatically, for example when the mobile device 12 reaches a minimum distance from the geolocation means 16, or
25 manually, for example with the user acting on the mobile device 12 by means of such app.

Subsequently, in step 52 the virtual demarcation line defined at the physical entrance to the location of the event is crossed and the first mobile device 12 establishes a connection with the geolocation means 16 and
30 transmits toward the remote device 20 a virtual demarcation line crossing

signal, consequently activating the start of the user identification process or of the process for the purchase and payment of one or more tickets ("transit transaction").

5 In step 54, one checks whether the event or location that the user has accessed, by crossing said virtual demarcation line, provides for free admission, i.e., with personal invitation after accreditation, or paid access, i.e., by means of the purchase and payment of one or more tickets or access documents.

10 In the case of a paid event, in step 56 the remote device 20 autonomously requests and purchases, on the basis of the preferences set by the user and after authorization on the part of the user, one or more admission tickets related to the location of which the user has crossed the virtual demarcation line, i.e., related to the event to which the user has had access, thus performing the first step of the so-called "transit transaction".

15 Subsequently, in step 58 the remote device 20 autonomously pays, on the basis of the preferences set by the user and after authorization on the part of said user, one or more admission tickets purchased previously in step 56, thus performing the second and last step of the so-called "transit transaction".

20 Following the payment described in step 58, or in the case of a free event in step 54, in step 60 user identification, the verification that the user in transit has a nominal personal invitation, in the case of a free event, or one or more admission tickets, in the case of a paid event, occurs.

25 Once this identification has ended positively, the remote device 20 transmits an authorized crossing signal toward the mobile device 18 owned by the access control operators, who can thus verify whether the users in transit have or not a nominal personal invitation or an admission ticket that has been purchased regularly, and can visualize the personal information related to the entering users who have the correct access document.

30 Finally, in step 62 the remote device 20 records the access that has

just occurred in the plurality of databases 24, 26, 28, updating the history of accesses to locations and events that is included in the profile of the user, and also updating the data and information of audience attendance of the location and of the event.

5 Steps 56 and 58 described above do not have to be performed necessarily following step 50, which is related to the activation of means for establishing a communication with the geolocation means 16, step 52, related to the crossing of the virtual demarcation line defined at the physical entrance to the location of the event, and step 54, related to the verification
10 of whether the event or location that the user has accessed provides for free admission or paid admission.

In an alternative embodiment of the method for access control based on geolocation according to the invention, these steps 56 and 58 can in fact be performed before steps 50, 52 and 54, since the mobile device 12 owned
15 by the user can be further configured, for example by means of the above cited app, to allow the purchase and payment of one or more tickets or access documents in advance with respect to the actual access to the location of the event, which as mentioned is determined by the crossing of the corresponding virtual demarcation line.

20 It should be noted that in this case the purchase of one or more admission tickets does not occur by means of the so-called "transit transaction".

By way of example, in this case the user can purchase and pay one or more tickets or access documents even some time away (a few days or a few
25 hours earlier) and/or some distance away (a few kilometers earlier) with respect to the actual access to the location of the event.

By doing so, in step 60 the user is in any case identified, verifying and checking with a positive outcome that the user in transit has one or more admission tickets, in the case of a paid event, and therefore is
30 authorized to cross the virtual demarcation line defined at the physical

entrance to the location of the event.

In summary, in the case of access control performed by accreditation of the guest user and subsequent verification of his identity by the access control operators, the access control system 10 according to the invention
5 offers the guest user the possibility to be accredited and access the events directly by means of his own mobile device 12 via geolocation.

The guest user does not have to perform any operation except cross the virtual demarcation line identified by the operator of the event as access point.

10 The guest user, by approaching the virtual demarcation line and without removing the mobile device 12 from his pockets, activates the connection between his own mobile device 12 and the geolocation means 16 of the system 10, and by crossing the virtual demarcation line starts the process for his identification, being recognized by the access control
15 operators.

A mobile device 18 available to the access control operators identifies the guest users who have a nominal personal invitation or other access document, allowing to facilitate their admission to the event.

In summary, in the case of access control performed by means of the
20 purchase of one or more tickets at the box office or online tickets on the part of the visiting user, the access control system 10 according to the invention offers the visiting user the possibility to purchase and pay for the tickets directly with his own mobile device 12 via geolocation and the so-called "transit transaction".

25 The visiting user does not have to perform any operation except cross the virtual demarcation line identified by the operator of the event as access point.

The visiting user, by approaching the virtual demarcation line and without removing the mobile device 12 from his pockets, activates the
30 connection between his own mobile device 12 and the geolocation means 16

of the system 10, and by crossing the virtual demarcation line starts the process for the purchase and payment of one or more tickets, which are detected by the access control operators.

A mobile device 18 available to the access control operators identifies
5 the visiting users provided with a ticket or other access document, allowing to facilitate their admission to the event.

In a preferred embodiment of the access control system 10 based on geolocation, the organizers of the event may also send to the users, in an automatic manner and as a function of their location, warnings related to the
10 points of greatest interest within the event itself, or to areas that cannot be visited of the space where the event is occurring, or if the users approach sensitive points, these warnings being for example in the form of notifications on the mobile devices 12 of the users and/or in the form of emails.

15 In practice it has been found that the invention achieves fully the intended aim and objects. In particular, it has been show that the system and method for access control based on geolocation thus conceived allow to overcome the quality limitations of the background art, since they allow to improve the visiting experience of the user and to make the access
20 procedure more dynamic, eliminating or at least reducing the corresponding entrance queues, so that the user does not perceive physical or virtual barriers between himself and the experience of the event.

Another advantage of the system and of the method for access control based on geolocation according to the invention resides in that they allow to
25 eliminate the steps related to the identification of the guest user on the part of the access control operators by means of the verification of the presence of the name of said guest user on the paper or electronic list, or related to the purchase of paper or electronic tickets at the box office or online on the part of the visiting user and the subsequent showing of said tickets to the
30 access control operators.

Despite this, the system and method according to the invention in any case allow the rapid and precise blocking of users who are not accredited or do not have a ticket on the part of the access control operators.

A further advantage of the system and of the method for access control based on geolocation according to the invention resides in that they allow the organizers to optimize the management of the event and to monitor the flows of the audience, for example in order to remain within capacity limits, consequently improving the experience and safety conditions.

The system and the method according to the invention in fact allow the organizers of the event to have a precise verification of the number of accesses, of the location of the guest users/visiting users within the space and of the corresponding crowding of the various areas, allowing constant monitoring of the visiting experience and ensuring greater safety.

Another advantage of the system and of the method for access control based on geolocation according to the invention resides in that they allow the organizers to reduce the budget related to the event, reducing the number of access control operators and consequently saving on personnel costs and also eliminating costs for installation of physical barriers.

A further advantage of the system and of the method for access control based on geolocation according to the invention resides in that they allow the organizers to perform a detailed post-event analysis, obtaining automatically a precise and immediate report of audience attendance, also comprising information related to the guest users or visiting users and to their behaviors, so as to improve and target the offer of future events.

Another advantage of the system and method for access control based on geolocation according to the invention resides in that they allow the organizers to guide, for example by means of notifications, the guest users or visiting users during the event and direct them toward the points of greatest interest within the event itself, or warn them about areas that cannot

be visited of the space where the event is occurring or if they approach sensitive spots.

Although the system and method for access control based on geolocation according to the invention have been conceived in particular for control and management of accesses (or entrances) of a more or less large number of users into areas or locations that are reserved or in any case have a conditional access, they can in any case be used more generally for the control and management of accesses of users into any type of areas or locations, be they with conditional access or with free access.

10 The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. All the details may further be replaced with other technically equivalent elements.

15 In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to the requirements and the state of the art.

In conclusion, the scope of the protection of the claims must not be limited by the illustrations or preferred embodiments shown in the description by way of example, but rather the claims must comprise all the characteristics of patentable novelty that reside in the present invention, including all the characteristics that would be treated as equivalents by the person skilled in the art.

CLAIMS

1. A system (10) for access control based on geolocation, comprising at least one first mobile device (12) associated with a user and a remote device (20), which are mutually connected by means of a telematic communications network (14), characterized in that it comprises geolocation means (16) that define a virtual demarcation line, and in that said at least one first mobile device (12) comprises means for establishing a communication with said geolocation means (16) when said user crosses said virtual demarcation line, and means for transmitting toward said remote device (20) a signal that said virtual demarcation line has been crossed by said user.

2. The system (10) for access control based on geolocation according to claim 1, characterized in that it comprises furthermore at least one second mobile device (18) associated with an access control operator, connected to said remote device (20) by means of said telematic communication network (14), comprising means for the reception, from said remote device (20), of a signal related to authorized crossing of said virtual demarcation line on the part of said user.

3. The system (10) for access control based on geolocation according to claim 1 or 2, characterized in that said geolocation means (16) comprise GPS satellite positioning systems, location systems with Wi-Fi integration, location systems with Bluetooth integration, iBeacon proximity detection systems.

4. The system (10) for access control based on geolocation according to one or more of the preceding claims, characterized in that said remote device (20) comprises a control unit (22) and a plurality of databases (24, 26, 28).

5. The system (10) for access control based on geolocation according to claim 4, characterized in that said plurality of databases (24, 26, 28) comprises a user database (24), a location database (26) and an event

database (28).

6. The system (10) for access control based on geolocation according to one or more of the preceding claims, characterized in that said remote device (20) is connected to one or more ticketing systems (30) by means of
5 a telematic communications network (34).

7. The system (10) for access control based on geolocation according to one or more of the preceding claims, characterized in that said remote device (20) is connected to one or more electronic payment systems (32) by means of a telematic communications network (34).

10 8. A method for access control based on geolocation, characterized in that it comprises the steps of:

– activating (50), following the approach to a virtual demarcation line defined by geolocation means (16), means for establishing a communication with said geolocation means (16), said means for
15 establishing said communication being comprised in a first mobile device (12) associated with a user;

– crossing (52) said virtual demarcation line on the part of said user, with establishment of said communication between said first mobile device (12) and said geolocation means (16), and transmitting a signal related to
20 crossing of said virtual demarcation line toward a remote device (20);

– identifying (60) the user on the part of said remote device (20);

– logging (62) the access on the part of said remote device (20).

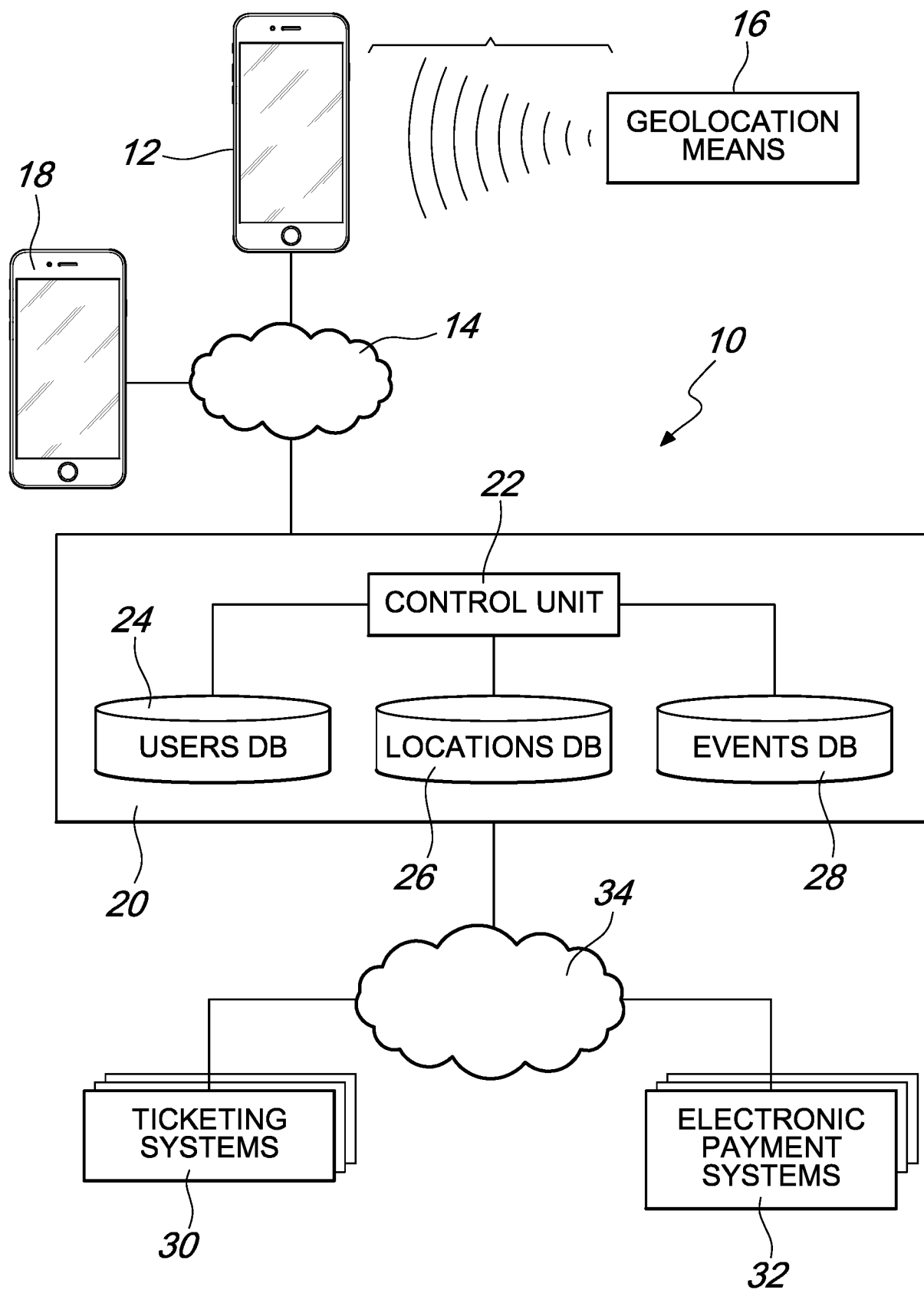
9. The method for access control based on geolocation according to claim 8, characterized in that said step of identifying (60) the user further
25 comprises a transmission, toward a second mobile device (18) associated with an access control operator, of a signal related to authorized crossing of said virtual demarcation line on the part of said user.

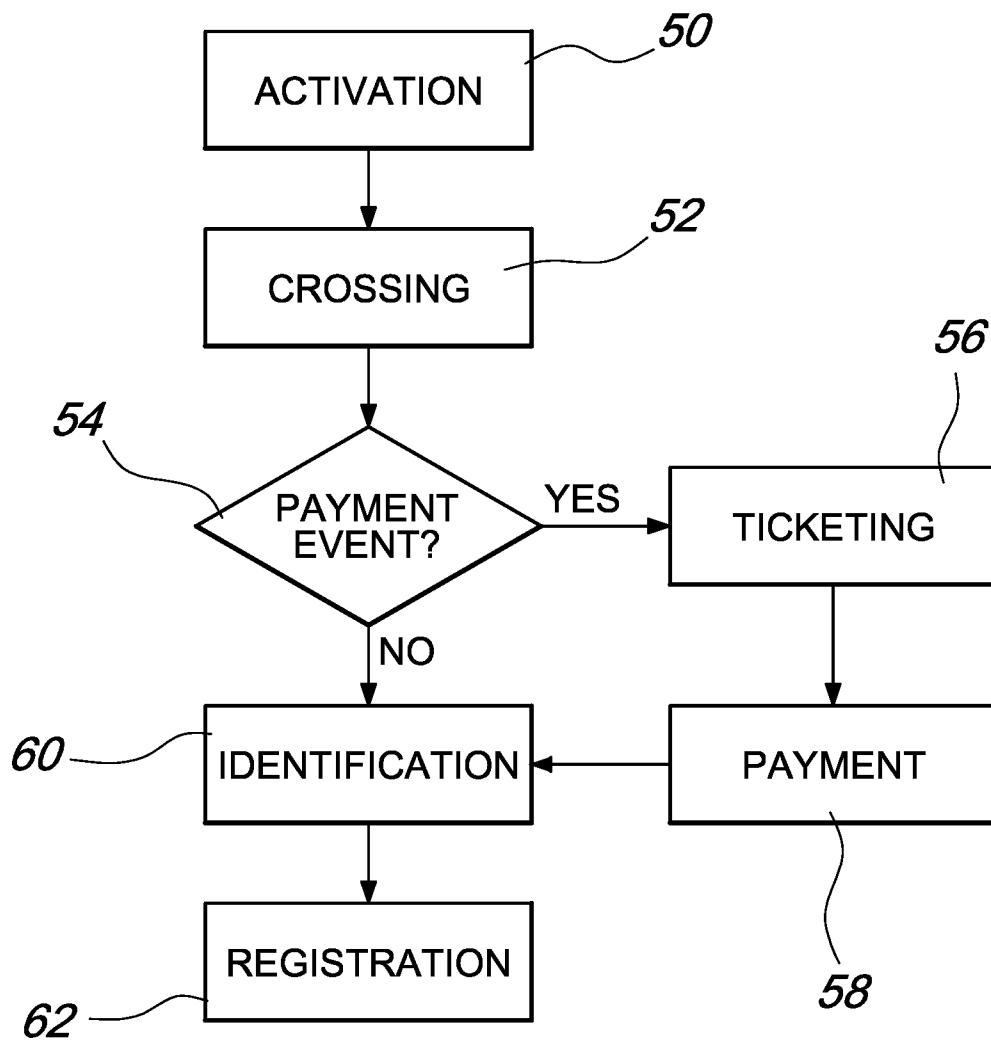
10. The method for access control based on geolocation according to claim 8 or 9, characterized in that it further comprises the step of
30 purchasing (56) one or more admission tickets related to the location and

event associated with said virtual demarcation line.

11. The method for access control based on geolocation according to claim 10, characterized in that it further comprises the step of paying (58) said one or more purchased admission tickets.

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*Fig. 1*

*Fig. 2*

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2015/059161

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06Q10/06 G06Q10/10 G06Q20/00
ADD.

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)
G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EP0-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 568 422 A1 (AIRTICKET S L [ES]) 13 March 2013 (2013-03-13) the whole document -----	1-11
X	US 2015/082459 A1 (KELLY CHRISTOPHER W [US] ET AL) 19 March 2015 (2015-03-19) the whole document -----	1-11
X	US 2002/115444 A1 (YU PHILIP S [US] ET AL) 22 August 2002 (2002-08-22) the whole document -----	1-11
X	WO 2011/009208 A1 (FAIR TICKET SOLUTIONS INC [CA]; GELFAND ALAN [CA]; ORTMAYR MARTIN [CA]) 27 January 2011 (2011-01-27) the whole document -----	1-11



Further documents are listed in the continuation of Box C.



See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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