METHOD FOR ACCESSING A SERVICE OFFERED BY A TOKEN, CORRESPONDING TOKEN AND SYSTEM

Abstract: The invention relates to a method (20) for accessing a service offered by a token. The terminal cooperates with a terminal. The terminal comprises a display. According to the invention, the token sends (24) to the terminal a first command for displaying at least one menu item, the terminal sends (28) to the token a second command, as a response to the first command, the second command comprising a command for triggering an execution of an application relating to one selected menu item amongst the at least one menu item and stored and executed at least in part within the token. The invention relates also to a corresponding token and a corresponding system comprising a token and a terminal cooperating with the token.

Fig. 2

(5) Title: METHOD FOR ACCESSING A SERVICE OFFERED BY A TOKEN, CORRESPONDING TOKEN AND SYSTEM
Published: with international search report (Art. 21(3))
METHOD FOR ACCESSING A SERVICE OFFERED BY A TOKEN, CORRESPONDING TOKEN AND SYSTEM

Field of the invention:

The invention relates, in a general manner, to a method for accessing a service offered by a token (as a portable electronic object).

The invention also relates to a token for accessing a service that the token offers.

Moreover, the invention relates to a system for accessing a service offered by a token in which the system comprises the token and a terminal that cooperates with the token.

More particularly, the present invention applies to a system including a SIM (acronym for "Subscriber Identity Module") type smart card, as a token, in cooperation with a mobile phone, as a terminal.

State of the art:

Within the present description, an access to a service means to command a launch of a corresponding application.

As known per se, a user accesses a service or an application embedded within a SIM type smart card through a user selection of the considered application from a SIM menu that is displayed upon a display of the terminal.

However, such a known solution implies a disadvantage. As a matter of fact, the user has to browse a menu that is long and tiresome for the user, in order to find a service that she or he is not sure to find because the service may not be available within the SIM menu.

Furthermore, a document WO 2008/062090 describes another solution in which a sequence of keys provided by the terminal is to be depressed by the terminal user to activate a manager of applications, in order to access to a set of SIM type Toolkit applications.
Nevertheless, the latter known solution also has disadvantages. Firstly, the user has to remember the sequence of keys to be depressed. Secondly, even if the user knows the right sequence of keys to be depressed, she or he may depress a wrong sequence of keys that is not associated with a display of a SIM menu indeed with another undesired action.

Summary of the invention:

The invention eliminates such disadvantages by providing a method for accessing a service offered by a token. The token cooperates with a terminal that comprises a display.

According to the invention, the method comprises, as steps, the token sends to the terminal a first command for displaying at least one menu item, the terminal sends to the token a second command, as a response to the first command, the second command comprising a command for triggering an execution of an application relating to one selected menu item amongst the at least one menu item and stored and executed at least in part within the token.

The principle of the invention consists in that the token is active and provokes or triggers a sending of a command for displaying a token service menu or a token service, then the terminal responds by transmitting a command for launching an application associated with the selected service and run by at least the token.

The service(s) that is(are) proposed from the token are thus dynamically displayable, under the token control, and in an almost instantaneous manner.

The proposed invention solution is convenient for the user and user-friendly, since the terminal user is not involved to display the service or menu of services relating to the token.

The thus displayed service(s) can be the currently available one(s).

A launching of the transmitting of the service(s) to be displayed may be conditioned and the conditions to be satisfied may vary from time to time.

Due to the fact that the token knows what is or are the services that are currently available, the displayed service is most probably effectively present
and can be triggered. Thus, the user does not have to think about whether a service is available or not and whether the service is accessible or not.

Contrary to the first aforementioned known solution, the terminal user does not have to browse a menu to arrive at a list of service(s) relating to the token before realizing that the desired service is definitely not available.

Furthermore, contrary to the second aforementioned known solution, the user does not have to remember a sequence of keys to display a list of service(s) provided by the token.

According to another aspect, the invention is a token for accessing an offered service. The token is intended to cooperate with at least one external entity comprising a display. The token comprises data storing means, data processing means and communication means for communicating with the external entity.

According to the invention, the token is adapted to send to the external entity a first command for displaying at least one menu item and receive a second command, as a response to the first command, the second command comprising a command for triggering an execution of an application relating to one selected menu item amongst the at least one menu item and stored and executed at least in part within the token.

According to a further aspect, the invention is a system for accessing a service offered by a token. The system comprises a token and a terminal cooperating with the token. The token comprises first data storing means, first data processing means and first communication means for communicating with the terminal. The terminal comprises a display, second data storing means, second data processing means and second communication means for communicating with the token.

According to the invention, the token is adapted to send to the terminal a first command for displaying at least one menu item, the terminal is adapted to receive the first command and send to the token a second command, as a response to the first command, the token is adapted to receive the second command comprising a command for triggering an execution of an application
relating to one selected menu item amongst the at least one menu item and stored and executed at least in part within the token.

As a terminal, it can be, for example, a mobile telephone, a PDA (acronym for Personal Digital Assistant), a personal computer, or a mobile laptop.

As a token, it can be any electronic device comprising at least a microprocessor, at least one memory or being connected to one memory, and an Input/Output communication interface. For example, it can constitute a dongle of the USB (acronym for "Universal Serial Bus") type, a smart card or any other electronic support that may have different form factors.

**Brief description of the drawings:**

Additional features and advantages of the invention will be more clearly understandable after reading a detailed description of one single preferred embodiment, given as an indicative and not limitative example, in conjunction with the following drawings:

- Figure 1 illustrates a simplified diagram of an embodiment of an electronic system comprising a mobile terminal and a smart card of the SIM type and being adapted to access a service supported by the smart card according to the invention; and

- Figure 2 is a flow chart of an exemplifying method for accessing a service embedded within the smart card comprised within the system of figure 1.

**Detailed description of one embodiment:**

Herein under is considered a case in which the invention method for accessing a service proposed by a SIM type smart card, as a token, is implemented by the SIM type smart card in cooperation with a mobile telephone as terminal.

However, it is only for exemplifying purposes and is not considered to reduce the scope of the present invention.
Figure 1 shows an electronic system 10 comprising a mobile telephone 12, as an electronic user device, and a SIM type smart card 14 or the like, that is coupled to the mobile phone 12.

For simplicity, the SIM type smart card 14 is termed hereinafter the card 14 and, likewise, the mobile telephone 12 is termed hereinafter the phone 12.

The card 14 includes a chip 110. The chip 110 comprises a microprocessor, volatile and non volatile memories and an Input/Output communication interface linked together through a data and control internal bus (not shown). The microprocessor controls and communicates with all the components of the card 14, such as the memories to read them and possibly write into them.

The memories store data, in particular data relating to an Operating System and SIM Toolkit applications and data relating to a phone book, contacts, emails and/or a personal organizer. The memories also store data relating to at least one event-status is to be surveyed by the card 14. The event-status can be the time. The event-status is used to trigger a check by the card 14 whether a service is available.

The microprocessor executes notably any application stored within card memories. The Input/Output communication interface is used to exchange data with outside of the card 14.

The card 14 is inserted within the phone 12.

The chip 110 communicates with the phone 12, via a bi-directional way 13, through a contact interface (not shown) of the type ISO (acronym for « International Standard Organization ») 7816.

According to another embodiment, instead of the contact interface, the card 14 and the phone 12 are coupled through a short range radiofrequency link, as a contactless interface.

The phone 12 has also a contact interface of the type ISO 7816 to cooperate with the card 14.

The phone 12 includes a microprocessor, volatile and non volatile memories and an Input/Output communication interface linked together through a data and control internal bus (not shown). The microprocessor processes and
controls data within the phone 12 and/or with the exterior of the phone 12. The memories store data notably relating to an Operating System, and applications.

The phone 12 is adapted to communicate data with the card 14. The phone 12 has the capacity to interpret any proactive command originating from the card 14 involving a user interface operation, such as "Display text", "Set-up menu", "Select menu", "Get-inkey", and "Get-input".

The phone 12 has an antenna 11 to communicate, over the air (or OTA), with a long range radiofrequency link 15, through a telecommunication network 16, to a remote server 18.

The remote server 18 is integrated within an entity of a system that can be constituted by the system usually known as a back-end OTA system.

The server 18 is directly or indirectly controlled by a telecommunication operator.

Other remote server(s) (not shown) can be directly accessible from the card 14 through other links (not shown).

For instance, a server embedded within a Personal Computer is accessible from the card 14, through a short range radiofrequency link, like Bluetooth or Wifi, or through an infrared interface.

The telecommunication network 16 is adapted to implement a 2G (acronym for a second generation network, i.e. GSM for "Global System for Mobile communications") mode, 3G (acronym for a third generation network, i.e. UMTS for "Universal Mobile Telephone System") mode and/or CDMA (acronym for a "Code Division Multiple Access").

The telecommunication network 16 is, for example, linked, through a cable 17, to the server 18.

As known per se, the chip 110 allows to identify a carrier of the card 14 before the server 18, in order to be allowed to access some service(s) that an operator, or on its behalf, (possibly through another operator) proposes through the server 18.

A user accesses a man machine interface, in order to be able to exploit, at least in part, one or several services accessible from and/or through the card.
14. As to a man machine interface, the phone 12 includes a display 112 and a keyboard 19 to select a displayed service.

According to one important feature of the invention, the chip 110 of the card 14 is configured to use a command, such as a proactive command, to be transmitted to the phone 12, to propose, on the card's own authority, through a display, a list of service(s) supported at least in part by the card 14.

The command is preferably accompanied with the list of service(s) to be displayed.

Thus, an access to a service or services offered by the card 14 is rendered possible, in a direct manner, through a pop-up window displayed upon the phone display 112.

Such a display of the list of services, at the initiative of the card 14, can improve the user's perception of the service(s) offered by the card 14.

The microprocessor of the phone 12 is configured to receive the command for displaying the list of service(s) relating to the card 14.

The user can easily access a service offered from and/or through the card 14.

The user interacts with the man machine interface to select or order a service amongst the one(s) displayed through the menu.

The phone microprocessor is also configured to send back, once a displayed service has been selected among the displayed service(s), to the card 14 another command for launching the execution by the card 14 of the selected service. The selected service is identified.

The card 14 is further adapted to receive another command originating from the phone 12 and for triggering a running of an application relating to one selected service among the one(s) that has(have) been displayed. The card 14 executes the application associated by the identified service that has been selected.

As to an application relating to the card 14, it can be to make a phone call or send at least one Short Message Service (or SMS) message to a person registered within a phone book stored within the card 14.
The card 14 may involve the server 18 at least in part to completely execute the corresponding selected application. To involve the server 18, the card 14 sends, through the phone 12, to the server 18 a request allowing the server 18 to further execute the launched or triggered application.

When the server 18 is involved, a part of the application to be executed is lodged within the back-end OTA system.

The application lodged within the back-end OTA system can be developed with the Java Development Kit (or JDK) that is independent from an Operating System used by the back-end OTA system. A Java Remote Method Invocation (or RMI) can be used as an interface between different entities for performing an object equivalent to remote procedure calls.

As to the selected application, it can constitute any application embedded solely within the card 14. The selected application may have been previously loaded during a manufacturing process of the card 14 including its personalization process or downloaded from the server 18 to the card 14 that stores it.

The download of the selected application may have been performed by means of an exchange of SMS messages between the card 14 and the server 18.

The exchange of commands between the card 14 and the phone 12 provide an interoperable service enabler(s) working across countries and/or town(s) and/or territories, such as Hong-Kong and China, operators and mobile phones.

Such an exchange of commands between the card 14 and the phone 12 allows to update at least one service to be displayed.

It can be used for a back-end OTA system platform that provides at least one service to be defined.

The back-end OTA system generates some SMS messages including data corresponding to the definition for a triggering of a sending of the command from the card 14 to the phone 12. The addressees of the SMS messages are the cards belonging to a batch that are eligible, i.e. allowed to access to the defined services.
Such a back-end OTA system platform can include a service promotion module, in order to promote a service and/or a survey service module.

A service promotion module can be defined for example by a telecommunication operator or on its behalf.

Within the server 18 for the service promotion module, at least one of the following features can be set:
- a message for triggering a display of a list of service(s) to be displayed by means of a sending of the command from the card 14 to the phone 12;
- a definition of one or several conditions to be satisfied accompanied with a list of service(s) to be displayed by means of a sending of the command from the card 14 to the phone 12;
- an update of at least one condition to be satisfied accompanied with a list of service(s) to be displayed by means of a sending of the command from the card 14 to the phone 12; and/or
- a message for enabling or disabling a sending of the command from the card 14 to the phone 12.

Within the server 18 for the survey service module, the server 18 sends to several cards including the card 14, one or several SMS messages including data relating to one or several questionnaires of survey to be displayed by means of a sending of the command from the card 14 to the phone 12.

One or several conditions can be configured or set and supplied to the card 14, in order that the card 14 sends to the phone 12 a command for displaying one or several card services upon the display 112.

Thus, as soon as the configured conditions, when any, are satisfied, the card 14 sends to the phone 12 a command for displaying one or several card services upon the display 112.

Figure 2 shows an exemplary embodiment of the invention method 20 for accessing a service offered from the card 14.

This invention method 20 includes different steps that are further described in one embodiment in which the proactive mechanism is used to trigger a display of the available service(s) at the initiative of the card 14. As known per
se, the proactive mechanism allows to use STK commands initiated by the card 14, in order to manage at least one STK application.

Firstly, the phone 12 is 21 powered up and the card 14 is also powered up (by using a power originating from the phone 12). The phone 12 indicates its capabilities, notably in terms of the proactive commands the phone 12 supports, by sending to the card 14 a message called "Terminal profile" accompanied with its capabilities. The card 14 is thus able to interact with the phone 12 while using STK commands.

The card 14 sends to the phone 12 a message for confirming a time period within which the phone 12 can inform the card about the status relating to the event.

Then, periodically, the phone 12 sends to the card 14 a status command for triggering the card to check 22 whether at least one condition is satisfied, like whether a service is available, in order to inform the user of the availability of the service.

For example, a service is an announcement about the beginning of a rugby match that the user can select in order to follow in live the progress of the score.

As soon as the condition(s) is(are) satisfied, once the service is available, i.e. the rugby match has just began for the given example, then the card 14 uses the mechanism of the proactive commands to implement the invention method. More exactly, the card sends to the phone a message for informing that a proactive command is waiting to be transferred. Then, the phone transmits a command called "Fetch", in order to indicate that the phone is ready to receive a proactive command.

Then, according to one important feature of the invention, the card 14 sends 24 to the phone 12 a proactive command for displaying at least one proposed service, such as "Select item".

On the contrary, i.e. when the condition(s) is(are) not satisfied, then the card is waiting until they are satisfied before launching a display of at least one service offered to the user.
When the phone receives and interprets the proactive command for displaying at least one proposed service, the phone displays the proposed service(s), namely for example a corresponding pop-up window that displays a message "A rugby match England-France has just began, do you desire to follow it?".

When the phone displays the proposed service(s), a previous existing window is still displayed but under the displayed pop-up window. Thus, such a display of the corresponding pop-up window does not disrupt the display of the window currently open.

The phone verifies whether the user selects a proposed service displayed upon its display. For example, the phone triggers, as soon as the pop-up window is displayed, a timer. When the timer reaches a predetermined time period, such as some seconds like 3 or 4 s, the phone has enough waited and interprets that the user does not desire to select any of the proposed services. Then, the displayed pop-up window with the proposed service(s) disappears.

Then, the method goes back to the step 22 in which the card analyses whether the condition(s) is(are) satisfied before requesting the phone to display a pop-up window listing the proposed service(s).

The user selects, through a phone man machine interface, one of the proposed service(s), by browsing the displayed menu, pointing a cursor in front of the desired proposed service and validating it, for example by pressing a button, e.g. the user desires to follow the rugby match.

Once the user has selected the proposed service, then the phone sends, as a phone response, a command for triggering an execution of an application relating to the selected service, namely the desire to follow the rugby match.

Optionally, the command for triggering an execution of an application relating to the selected service is accompanied with data relating to a service identifier.

The card receives the latter command and triggers an execution of the application stored within the card.
The execution can also involve the server 18 by means of a sending of a corresponding request, through the phone, to the server, which sends back, through the phone, a corresponding result response.

The described invention method allows to improve an interactivity from the card with the phone user which becomes more direct, since no user action has been required to display one or several services proposed by the card.

Optionally, the card sends to the phone another proactive command for displaying at least one piece of information relating to a success, a non-success and/or a result of the execution of the application, for example an intermediary result of the rugby game after each new try of any of the two teams.
CLAIMS

1. A method (20) for accessing a service offered by a token (14), the token cooperating with a terminal (12), the terminal comprising a display (112), characterized in that the method comprises the following steps:

   - the token sends (24) to the terminal a first command for displaying at least one menu item,
   - the terminal sends (28) to the token a second command, as a response to the first command, the second command comprising a command for triggering an execution of an application relating to one selected menu item amongst the at least one menu item and stored and executed at least in part within the token.

2. Method according to claim 1, wherein the terminal executes the first command for displaying at least one menu item by displaying a window listing at least one menu item to be selected by a terminal user.

3. Method according to any of claims 1 or 2, wherein the method further comprises a step in which a user selects, through a user terminal interface (19), a menu item amongst the at least one menu item before the terminal sends to the token the second command.

4. Method according to any of claims 1 to 3, wherein the token executes the second command by running an application relating to one selected menu item amongst the at least one menu item and stored and executed in part within the token and in part within a server (18) connected to the terminal.

5. Method according to claim 4, wherein the token sends, through the terminal, to the server a request that allows the server to further execute the triggered application.
6. Method according to claim 5, wherein the server executes a part of
the application based upon the request and sends back, through the terminal, to
the token a corresponding resulting response.

7. Method according to any of claims 1 to 6, wherein the token sends to
the terminal a third command for displaying at least one piece of information
relating to a success or a non-success of the execution of the application and/or
a result of the execution of the application.

8. A token (14) for accessing an offered service, the token being
intended to cooperate with at least one external entity, the token comprising
data storing means, data processing means and communication means for
communicating with the external entity,

characterized in that the token is adapted to send to the external entity a first
command for displaying at least one menu item and receive a second
command, as a response to the first command, the second command
comprising a command for triggering an execution of an application relating to
one selected menu item amongst at least one menu item and stored and
executed at least in part within the token.

9. A system (10) for accessing a service offered by a token, the system
comprising a token (14) and a terminal (2) cooperating with the token, the token
comprising first data storing means, first data processing means and first
communication means for communicating with the terminal, the terminal
comprising a display, second data storing means, second data processing
means and second communication means for communicating with the token,

characterized in that the token is adapted to send to the terminal a first
command for displaying at least one menu item,

in that the terminal is adapted to receive the first command and send to the
token a second command, as a response to the first command,

and in that the token is adapted to receive the second command comprising
a command for triggering an execution of an application relating to one selected
menu item amongst the at least one menu item and stored and executed at least in part within the token.

10. System according to claim 9, wherein the terminal is a mobile phone and the token is a smart card of the SIM type.
POWER ON 21

CONDITIONS SATISFIED?

YES

CARD SENDS TO PHONE A COMMAND FOR DISPLAYING SERVICE(S) 24

SELECTION OF ONE SERVICE?

NO

YES

PHONE SENDS TO CARD A COMMAND FOR EXECUTING THE SELECTED SERVICE 28

Fig. 2
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

H04L29/08 (2006.01) i

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)

IPC: H04L29/00.29/08, H04Q7/00.7/32, G06F9/00

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)

WPI; EPDOC; PAJ; CNKI; CRS: smart w card, SIM, token, phone, mobile, terminal, menu?, trigger+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>EP1924053A1, (AXAL-N) AXALTO SA, 21 May 2008 (21.05.2008), paragraphs [0016], [0017], [0035]; figures 1-4</td>
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<td>A</td>
<td>WO2008062090A1, (GYDI-N) GYD IBERICA SA &amp; (VODA-N) VODAFONE ESPAN SA, 29 May 2008 (29.05.2008), the whole document</td>
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□ Further documents are listed in the continuation of Box C.  ❑ See patent family annex.

* Special categories of cited documents:
  "A" document defining the general state of the art which is not considered to be of particular relevance
  "E" earlier application or patent but published on or after the international filing date
  "L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)
  "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 18 July 2008 (18.07.2008)

Date of mailing of the international search report 21 Aug. 2008 (21.08.2008)

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