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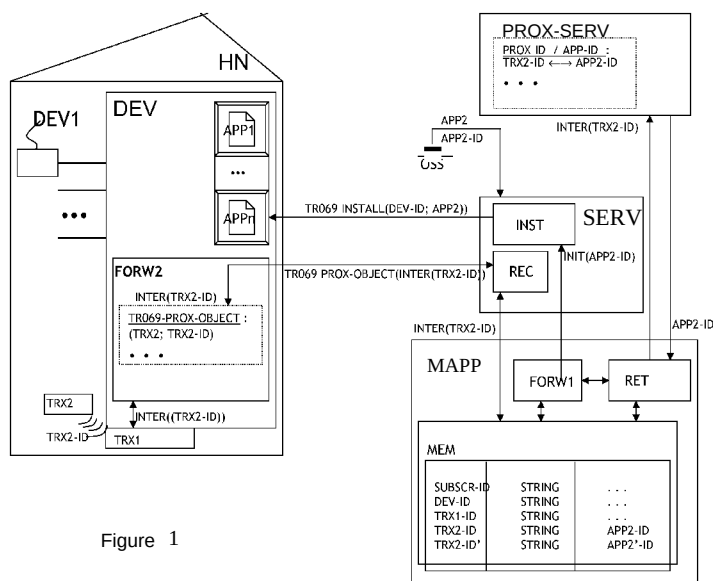


Figure 1

(57) Abstract: The method for installation of an application (APP2) at a customer device (DEV) by a server (SERV) in a remote procedure call protocol environment comprises: applying a proximity based interaction at the device and providing thereby interaction information (INTER); and retrieving by a retriever (RET), based upon the interaction information an application identification (APP2-ID) from a proximity server (PROX-SERV); and forwarding by a first forwarder (FORW1) an initiation message (INIT) towards the server that comprises the application identification for initiating the installation; and installing by the server, upon reception of the initiation message and according to the remote procedure call protocol, the application according to the application identification, on the customer device.

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METHOD FOR INSTALLATION OF AN APPLICATION

The present invention relates to a method for installation of an application and a customer device and server and mapping device realizing such
5 method.

Such method and network elements are already known in the art.

Indeed, it has to be explained that the DSL-Forum defines for example a Customer Premises Equipment Wide Area Network Management Protocol, shortly called the WAN Management Protocol in the Technical Report TR069.
10 This TR069 Management Protocol is intended for communication between Customer Premises Equipment and an Auto-configuration Server, shortly called an ACS i.e. such as an above mentioned server. An ACS is an auto-configuration server, as the component in a broadband network responsible for auto-configuration of the CPE for advance services. An CPE is the Customer
15 Premises Equipment i.e. the above mentioned customer device, which is capable of being managed by an ACS. A RPC is a Remote Procedure Call whereby a "parameter" defines a name-value pair representing a manageable CPE parameter that is made accessible to an ACS for reading/or writing. An Object defines a data-model that describes a number of related parameters i.e. a data-
20 structure consisting of data-fields; and related methods together with their interactions. In this way a data model supports data and computer systems by providing the definition and format of data-objects.

In such a remote procedure call environment downloading of a new service i.e. installation of a new application is possible by means of a user
25 interaction that uses e.g. a web-portal. Indeed, the solutions today make use of an application store i.e. an end-user has to use his computer to log-in on a web portal and by clicking on an icon, the desired application will be installed and activated. Such solutions make use of an application store i.e. an end-user has to use his computer to log-in on a web-portal and by clicking on an icon, the
30 desired application will be installed and activated. However, in many cases, there is no computer available or, for security reasons, the applications vendor doesn't provide a way to access new applications or to enable automatic

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application installation i.e. the installation of the application requires a number of interactions of the buyer/end-user.

Another solution to install new applications is by means of a plug-n-play-alike framework. The physically bought hardware is plugged-in hardware
5 might be automatically recognized by the system, which on its turn may trigger the download of the appropriate application. However, this method is based on an identifier which identifies the application and or the hardware device, but which does not identify the user i.e. the installation of the application is not providing a unique link with its buyer.

10 Since, today a lot of software and hardware is still sold via real stores and also more and more software is linked together with hardware-components, such as sensors and its appliances, the following problems when buying a new application via a real store can be listed:

- how can the software application or hardware application be linked
15 in a unique way with its buyer?

- how can the software application or hardware application be installed and managed in a way that the installation process does not cause too much interactions for the buyer and the service provider?

Since a lot of software applications and hardware applications are still
20 sold via such a real store, a solution is required to overcome the above indicated issues during the installation of such an application that is bought via a real store.

An object of the present invention is to provide a method for installation of an application and a customer device and server and mapping
25 device realizing such a method, of the above known type but wherein the above mentioned problems do not arise.

According to the invention, this object is achieved due to the fact that the method for installation of an application at a customer device by a server in a remote procedure call protocol environment comprises applying a proximity
30 based interaction at the device and providing thereby by the customer device interaction information; and by retrieving by means of a retriever, based upon this interaction information, an application identification, from a proximity server;

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and by forwarding by means of a first forwarder an initiation message towards the server that comprises the application identification for initiating the installation; and by finally installing by an installer of the server, upon reception of the initiation message, and according to the remote procedure call protocol, the application according to the application identification, on the customer device.

By combining the use of a proximity based interaction upon the device and the use of a remote procedure call protocol between the device and the server, the above mentioned problems are solved.

Indeed, a remote procedure call protocol, such as the TR-069 management protocol, is a protocol that allows for zero-touch activation and management of devices and life cycle management of applications. Via the TR-069 management protocol, a device and the end-user behind that device, including the references towards applications that are running on that device can be uniquely defined.

On the other hand, a proximity based interaction, is a very cost efficient way to uniquely identify an end-point such as a software component or a hardware component. In the event when a proximity transceiver is bought in a store and delivered and linked to such a component, as part of a sell to an end-user or subscriber, the proximity transceiver represent in fact that component by means of an unique serial number. By linking the proximity based interaction to the remote procedure call protocol environment, a link towards the end-user who bought the component is established.

It has to be explained that devices and methods for the activation of a service are already know in the art. This is e.g. described in the *European Patent Application with ref. EP 2 134 114 A I with short title "Method for providing to an end device access to a service, to an end device and to a mobile terminal realizing such a method"* with date of publication 16.12.2009. Therein, a method for communicating between a server device and a customer device in a proximity based interaction environment is described. The method comprises interacting between a first proximity transceiver being associated to the customer device and

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a second proximity transceiver. The two transceivers are thereby generating interaction information.

Such a customer device can be implemented by means of an end-user device, set-up box, Residential Gateway, Home Gateway, etc.

5 Such a proximity based interaction environment is described in paragraph 12 of that application i.e. it can be defined as all interaction means and method where physical closeness of objects, devices or persons are involved. Proximity-based interaction can be based on radio-frequency detection or communication, RFID, NFC, IR, computer-vision, capacitive detection, light
10 sensors, ... The also used terminology touch-based interaction should be regarded as a sub-set of Proximity based interaction. In addition RFID technology referred herein is intended to also include Near Field Communication, Electronic Product Code global and related technologies and that the tag and tag-reader mentioned for the implementation of this RFID
15 technology can be replaced by barcodes, IR communication, image recognition and the like.

In the referred application, the proximity technology is used to trigger, either via the first transceiver or either via the second transceiver, a transfer server that requests a service manager to provide to the customer device access
20 to a particular service. Different examples are described whereby a third example is given in paragraph 16 where a trigger in the proximity environment of a Residential Gateway instructs a Home Device Manager (i.e. an Auto configuration Server) to activate e.g. a user's firewall. According to this example, the "touched" Residential Gateway forwards this trigger to a Subscription
25 Transfer Server which contacts on its turn a User Subscription Database before instructing the Home Device Manager. According to this third example, it is clear that the method is enabled to activate/deactivate such a present service i.e. an installed application. However, that known method is not providing an automatic zero-touch and save installation of a new application on the respective
30 end-user device.

When linking the two technologies together a link is established between the new application that needs to be installed, the device on which the

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new application should be deployed and the end-user that bought the application in a store by means of such a proximity transceiver.

The main basic idea of this automated installation and eventual activation of a new application on a device is using a proximity based interaction in a remote procedure call protocol environment. The result of a translation, which is executed at an association data-base i.e. the proximity server, of interaction information such as e.g. the proximity transceiver identification into the application identification, is pushed on the device. The network element that knows the association between the interaction information and the application issues the necessary commands to the auto-configuration server to install and to eventually activate the required application on the desired home device.

In stead of providing e.g. a CDROM with an application and a software-key, the interaction information allows for automatic download of the complete software bundle of the new application and for automatic licensing of the new application without any end-user or subscriber intervention.

As mentioned above, a possible implementation is realized by implementing the remote procedure call protocol with a version of the TR069 Management protocol.

Another characteristic feature of the present invention is that the method further comprises forwarding, the mentioned interaction information, by a second forwarder of the customer device towards a server receiver of the server, by means of interchanged values for parameters of a proximity-object which is defined according to the remote procedure call protocol for such interaction. Indeed, by defining such a proximity-object, customer device identification and interaction information is interchanged according to an efficient and secure way. By defining such a proximity-object the proximity based interaction is immediately integrated in the secure remote procedure call protocol.

A further implementation is realized when an association between the customer device identification, the interaction information and the application identification is stored in a mapping device. Such a mapping device is convenient for use during installation of an application at a customer device by a

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server in such remote procedure call protocol environment. Due to the present remote procedure call protocol, it is possible to comprise in the mapping device a memory for storing the customer device identification. However, such a mapping device can be further enabled, according to the present invention, to
5 store also in the memory an application identification that identifies the application, whereby the application identification was retrieved from the proximity server based upon the interaction information provided by the proximity based interaction at the device.

Furthermore, the mapping device can be equipped with a retriever to
10 retrieve by itself the application identification from the proximity server.

Also a first forwarder can be comprised in the mapping device to forward such an initiation message for the server for initiating the respective installation.

Alternatively, the mapping device can execute as well the step of
15 retrieving as the step of forwarding the initiation message. This is realized by comprising the retriever and the first forwarder in the mapping device. In this way the mapping device fulfills in fact a kind of role of application broker.

It has to be remarked that the above mentioned data to be stored in the memory can be stored in relation and correlation to subscriber identification.
20 Indeed, since subscriber identification can be learned by the server such as an auto configuration server from the Operation Support System, this subscriber identification can be stored as well in the memory in relation to the customer device identification and the interaction information.

A further characteristic feature of the present basic idea is that the
25 retriever is comprised in the server whereby the step of retrieving is executed by the server.

Finally, the above mentioned server can be implemented by comprising such above described mapping device.

It is to be noticed that the term 'comprising', used in the claims, should
30 not be interpreted as being limitative to the means listed thereafter. Thus, the scope of the expression 'a device comprising means A and B' should not be limited to

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devices consisting only of components A and B. It means that with respect to the present invention, the only relevant components of the device are A and B.

Similarly, it is to be noticed that the term 'coupled', used here below, should not be interpreted as being limitative to direct connections only. Thus, the scope of the expression 'a device A coupled to a device B' should not be limited to devices or systems wherein an output of device A is directly connected to an input of device B. It means that there exists a path between an output of A and an input of B which may be a path including other devices or means.

The above and other objects and features of the invention will become more apparent and the invention itself will be best understood by referring to the following description of an embodiment taken in conjunction with the accompanying drawings wherein Figure 1 represents home network in an access telecommunication network.

The working of the device according to the present invention in accordance with its telecommunication environment that is shown in Figure 1 will be explained by means of a functional description of the different blocks shown therein. Based on this description, the practical implementation of the blocks will be obvious to a person skilled in the art and will therefore not be described in details. In parallel, the principle working of the method to for installation of an application will be described in further detail.

Referring to Figure 1 a Home Network in an Access Network is shown.

The Access Network comprises a Home Network HN, a server SERV, a proximity server PROX-SERV and a mapping device MAPP.

The server SERV is implemented by means of an Auto Configuration Server ACS.

The Home Network HN comprises a customer device DEV. According to this present embodiment the customer device is implemented by means of a Service Gateway which is coupled to a plurality of end-user devices such as DEVI (only one device DEVI is shown). As remarked above, the customer device can as well be implemented with one of the end-user devices such as a Personal Computer, a sensor or a Set-up box or a Home Gateway, etc.

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According to the present description of an embodiment it is preferred to implement the established remote procedure call protocol between the server SERV and the customer device DEV by means of a TR069 Management Protocol.

5 A first proximity transceiver TRX1 is associated to the customer device DEV. This means that the first proximity transceiver TRX1 is e.g. coupled to the customer device DEV or is inserted into the customer device DEV or is permanently integrated in it etc.

10 A second proximity transceiver TRX2 is brought in the interaction environment of the customer device DEV. Hereby a proximity based interaction is applied upon the device DEV i.e. communication is enabled between both receivers TRX1 and TRX2. As a consequence of this interaction, interaction information INTER such as e.g. identification information TRX2-ID of the second transceiver is generated. This is shown with INTER(TRX2-ID).

15 The device DEV further comprises a second forwarder FORW2. The second forwarder FORW2 is coupled to the first transceiver to receive and to eventually temporarily store the interaction information INTER. Furthermore is the second forwarder FORW2 enabled to forward towards the server SERV the interaction information INTER by means of interchanged values for parameters of a proximity-object being defined according to the TR-069 management protocol.
20 This is shown with the TR069-PROX-OBJECT table that comprises e.g. the name of the second transceiver TRX2 and the value of the transceiver identification TRX2-ID; and by means of the arrow between the second forwarder FORW2 and the server SERV with ref. TR069 PROX-OBJECT(INTER(TRX2-ID)).

25 The device DEV also shows some present applications such as APP1 and APPn.

The server SERV comprises an installer INST to install according to the remote procedure call protocol, the TR-069 management protocol, an application APP2 upon reception of an initiation message INIT. Such an initiation message comprises an application identification APP2-ID that identifies the
30 application APP2 that needs to be installed.

The server SERV also comprises a server receiver REC to receive from the customer device DEV the interaction information INTER by means of

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interchanged values for parameters of the proximity-object that is defined according to the TR-069 protocol.

It has to be remarked that, although the use of the proximity-object is not essential to realize the basic idea of the present application, it is an efficient
5 and secure way to gather all the data.

It also has to be remarked that according to the actual description of this embodiment, the actual mapping device is described as a stand-alone independent device. However, such a mapping device MAPP might as well be comprised in the server SERV itself or, when using the TR069 terminology, in the
10 Auto configuration Server or in an Application Life Cycle Manager.

The proximity server PROX-SERV is coupled to the mapping device MAPP and returns upon reception of interaction information that comprises an identification of the second transceiver INTER(TRX2-ID), an associated application identification APP2-ID i.e. the second transceiver identification TRX2-ID of the
15 proximity transceiver TRX2 identifies the application that is bought by the subscriber and that needs to be installed at the customer device DEV.

Furthermore, according to this actual described example of the basic idea of the present application, the access network comprises a stand-alone mapping device MAPP which is coupled to the server SERV. The mapping device
20 MAPP comprises the retriever RET and the first forwarder FORW1. As it is made clear above, it has to be remarked that the inclusion in the mapping device MAPP is not the only possible location for these two functional blocks. Indeed the retriever RET and the first forwarder FORWS might as well be comprises in the server itself SERV or in the proximity server PROX-SERV.

25 The retriever RET is included to retrieve from the proximity server PROX-SERV, based upon interaction information INTER(TRX2-ID), the application identification APP2-ID of the concerned application APP2.

The first forwarder FORW1 is included to forward an initiation message INIT towards the server SERV. The initiation message INIT(APP2-ID)
30 comprises an application identification APP2-ID i.e. the identification of the application that needs to be installed by the server SERV at the device DEV.

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The mapping device MAPP also comprises a memory MEM to store an association between the customer device identification DEV-ID, the interaction information INTER and the application identification APP2-ID. Indeed, according to the TR-069 communication between the customer device DEV and the server
5 SERV, the server SERV receives the customer device identification DEV-ID according to the TR-069 protocol and forwards this to the mapping device MAPP to store it in its memory MEM.

According to the present example embodiment it is known that the server SERV also retrieves from the Operating Support System OSS the subscriber
10 identification SUBSCR-ID and that this subscriber identification SUBSCR-ID is also stored in the memory MEM in relation to the customer device identification.

Furthermore, it has to be remarked here that the mapping device MAPP might as well be enabled to store, eventually only temporarily basis, the interaction information INTER that was received by the server SERV from the
15 device DEV and that was forwarded by the server SERV towards the mapping device MAPP. The stored interaction information INTER (See Figure 1 e.g. TRX1 - ID and TRX2-ID) is also stored in relation to the customer device DEV identification and/or to the subscriber identification SUBSCR-ID.

It has to be remarked that the identification of the first transceiver
20 TRX1-ID can be further checked upon its correlation with the corresponding customer device identification DEV-ID. Hereby the mapping device MAPP might abort or reject the further proceeding of the installation process.

Finally, also the identification of the second transceiver TRX2-ID can be checked upon its presence in the memory from a previous storage. This
25 additional control check is an extra security check to avoid that the same application will be installed a second time at another customer device.

Furthermore, the memory MEM is enabled to store, in relation to the previous identifications, also an application identification APP2-ID that identifies an application APP2. This application identification APP2-ID was retrieved by the
30 retriever RET from the proximity server PROX-SERV. The retrieved and stored application identification APP2-ID is also stored in relation to the customer device DEV identification and/or to the subscriber identification

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A description of the basic scenario will now be provided.

Presume a user/subscriber who buys from a store a software application package, or a package containing a new hardware application. The package is delivered to the end-user as an RF-id card i.e. the second transceiver
5 TRX2, or the hardware package contains an RF-id card that also comprise the hardware activation. The application installation procedure goes as follows.

The user establishes a contact between the RF-ID i.e. the second transceiver TRX2 and the RF-READER i.e. the first transceiver TRX1. This means a proximity based interaction is applied to the device DEV and that interaction
10 information INTER is generated.

An authentication of the interaction information INTER might be executed at this stage. Hereby the device DEV will retrieve by itself from the proximity server PROX-SERV the application identification APP2-ID i.e. the retriever RET is comprised in the device DEV. Hereby it has to be remarked that
15 the interaction information INTER might comprise the second transceiver identification TRX2-ID as well as an identification for the first transceiver TRX1.

However it is preferred to execute this authentication step at a later stage whereby the complete procedure becomes more efficient for maintenance and diagnostic reasons.

20 The interaction information INTER is inserted in a TR-069 proximity-object data i.e. TR069-PROX-OBJECT and the server SERV i.e. the Auto Configuration Server is informed of the new interaction information INTER according to interchanged values for parameters of the proximity-object.

It has to be remarked here that also an Application Life Cycle
25 Manager in the network will normally be informed of the new interaction information INTER.

This means that at the network side a unique relationship becomes available between the subscriber identification (retrieved from the OSS), the first transceiver TRX1, the second transceiver TRX2 and the customer device DEV on
30 which the new application needs to be installed.

This unique relationship is stored in the memory MEM of the mapping device MAPP.

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The retriever RET of the mapping device MAPP will now retrieve from the proximity server PROX-SERV based upon the second transceiver identification in the interaction information INTER(TRX2-ID) the application identification APP2-ID. In this way the second transceiver identification in the interaction information
5 INTER(TRX2-ID) is authenticated.

Upon reception of the second transceiver identification in the interaction information INTER(TRX2-ID) the proximity server PROX-SERV checks the validity of the second transceiver identification in the interaction information INTER(TRX2-ID) and returns the corresponding application identification APP2-ID.

10 In order to obtain a higher level of security also the first transceiver identification can be checked upon its validity at the proximity server. Indeed, the association of the first proximity transceiver to the customer device may not be changed as such. This means the first proximity transceiver should not be detached from the customer device for attachment to another one. In order to
15 control this, the first identification of the first proximity transceiver might also be checked by the proximity server PROX-SERV.

The mapping device MAPP stores the application identification APP2-ID also in the memory MEM.

This application identification APP2-ID is used as a unique application
20 reference towards the server SERV.

It is worthwhile to note that this application identification APP2-ID is operator-specific. This allows an operator or a service provider to control which hardware / software application can be installed on their platforms.

The mapping device MAPP informs now the Operation Support System
25 (shown in Figure 1 with OSS) of the fact of a new application installation.

The first forwarder FORW1 of the mapping device MAPP forwards an initiation message INIT(APP2-ID) towards the server SERV whereby the server SERV installs, by using the TR-069 management protocol, the application APP2 according to the application identification APP2-ID.

30 It can be remarked that in order to support the server SERV i.e. the Auto Configuration Server, the initiation message INIT(APP2-ID) is forwarded towards the server SERV via an Application Life Cycle Manager.

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A final remark is that embodiments of the present invention are described above in terms of functional blocks. From the functional description of these blocks, given above, it will be apparent for a person skilled in the art of designing electronic devices how embodiments of these blocks can be
5 manufactured with well-known electronic components. A detailed architecture of the contents of the functional blocks hence is not given.

While the principles of the invention have been described above in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation on the scope
10 of the invention, as defined in the appended claims.

CLAIMS

1. Method for installation of an application (APP2) at a customer device (DEV) by a server (SERV) in a remote procedure call protocol environment

5 **characterized by** that said method comprises:

- applying a proximity based interaction at said device (DEV) and providing thereby interaction information (INTER); and

- retrieving by a retriever (RET), based upon said interaction information (INTER), an application identification (APP2-ID), from a proximity

10 server (PROX-SERV); and

- forwarding by a first forwarder (FORW1) an initiation message (INIT) towards said server (SERV) that comprises said application identification (APP2-ID) for initiating said installation; and

- installing by said server (SERV), upon reception of said initiation
15 message (INIT), and according to said remote procedure call protocol, said application (APP2) according to said application identification (APP2-ID), on said customer device (DEV).

2. The method for installation of an application (APP2) according to
20 claim 1, **characterized in that** said method comprises

forwarding by a second forwarder (FORW2) of said customer device (DEV) towards said server (SERV) said interaction information (INTER) by means of interchanged values for parameters of a proximity-object being defined according to said remote procedure call protocol for such interaction.

25

3. The method for installation of an application (APP2) according to claim 1, **characterized in that** said method comprises storing by a mapping device (MAPP) an association between said customer device identification (DEV-ID), said interaction information (INTER) and said application identification

30 (APP2-ID).

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4. The method for installation of an application (APP2) according to claim 2, **characterized in that** said step of retrieving being executed by said server (SERV).

5 5. The method for installation of an application (APP2) according to claim 2 and claim 3, **characterized in that** said step of retrieving and said step of forwarding said initiation message being executed by said mapping device (MAPP).

10 6. The method for installation of an application (APP2) according to any previous claim, **characterized in that** said remote procedure call protocol being implemented by a TR069 Management protocol.

15 7. A customer device (DEV) for installation of an application (APP2) being imposed by a server (SERV) by means of a remote procedure call protocol, **characterized by** that a proximity based interaction being applied upon said customer device (DEV) whereby said customer device provides interaction information (INTER), said interaction information (INTER) thereby identifies said application (APP2) for said server (SERV) to impose said installation according to
20 said remote procedure call protocol.

8. The customer device (DEV) according to claim 7, **characterized in that** said device comprises a second forwarder (FORW2) to forward towards said server (SERV) said second interaction information (INTER) by means of
25 interchanged values for parameters of a proximity-object being defined according to said remote procedure call protocol for such interaction.

9. A mapping device (MAPP) for use during installation of an application (APP2) at a customer device (DEV) by a server (SERV), said customer
30 device and said server communicating according to a remote procedure call protocol, said mapping device comprises a memory (MEM) to store customer device identification according to said remote procedure call, **characterized in**

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that said memory (MEM) is further enabled to store an application identification (APP2-ID) which identifies said application (APP2), said application identification (APP2-ID) being retrieved, from a proximity server (PROX-SERV), based upon interaction information (INTER) provided by a proximity based interaction at said device (DEV).

10. The mapping device (MAPP) of claim 9, **characterized in that** said mapping device (MAPP) comprises a retriever (RET) to retrieve said application identification (APP2-ID).

11. The mapping device (MAPP) of claim 9, **characterized in that** said mapping device (MAPP) comprises a first forwarder (FORW1) to forward an initiation message (INIT(APP2-ID)) that comprises said application identification (APP2-ID), to said server for initiating said installation.

12. A server (SERV) for installation of an application (APP2) at a customer device (DEV) according to a remote procedure call protocol,

characterized by that said server comprises an installer (INST) to install according to said remote procedure call protocol said application (APP2) upon reception of an initiation message (INIT) that comprises an application identification (APP2-ID) which identifies said application (APP2), said application identification (APP2-ID) being retrieved, from a proximity server (PROX-SERV), based upon interaction information (INTER) provided by a proximity based interaction at said device (DEV).

13. The server for installation of an application (APP2) of claim 9, **characterized in that** said server (SERV) comprises a server receiver (REC) to receive from said customer device (DEV) said interaction information (INTER) by means of interchanged values for parameters of a proximity-object being defined according to said remote procedure call protocol for such interaction.

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14. The server for installation of an application (APP2) according to 12, **characterized in that** said server comprises a mapping device (MAPP) according to anyone of said claim 9, 10 and 11.

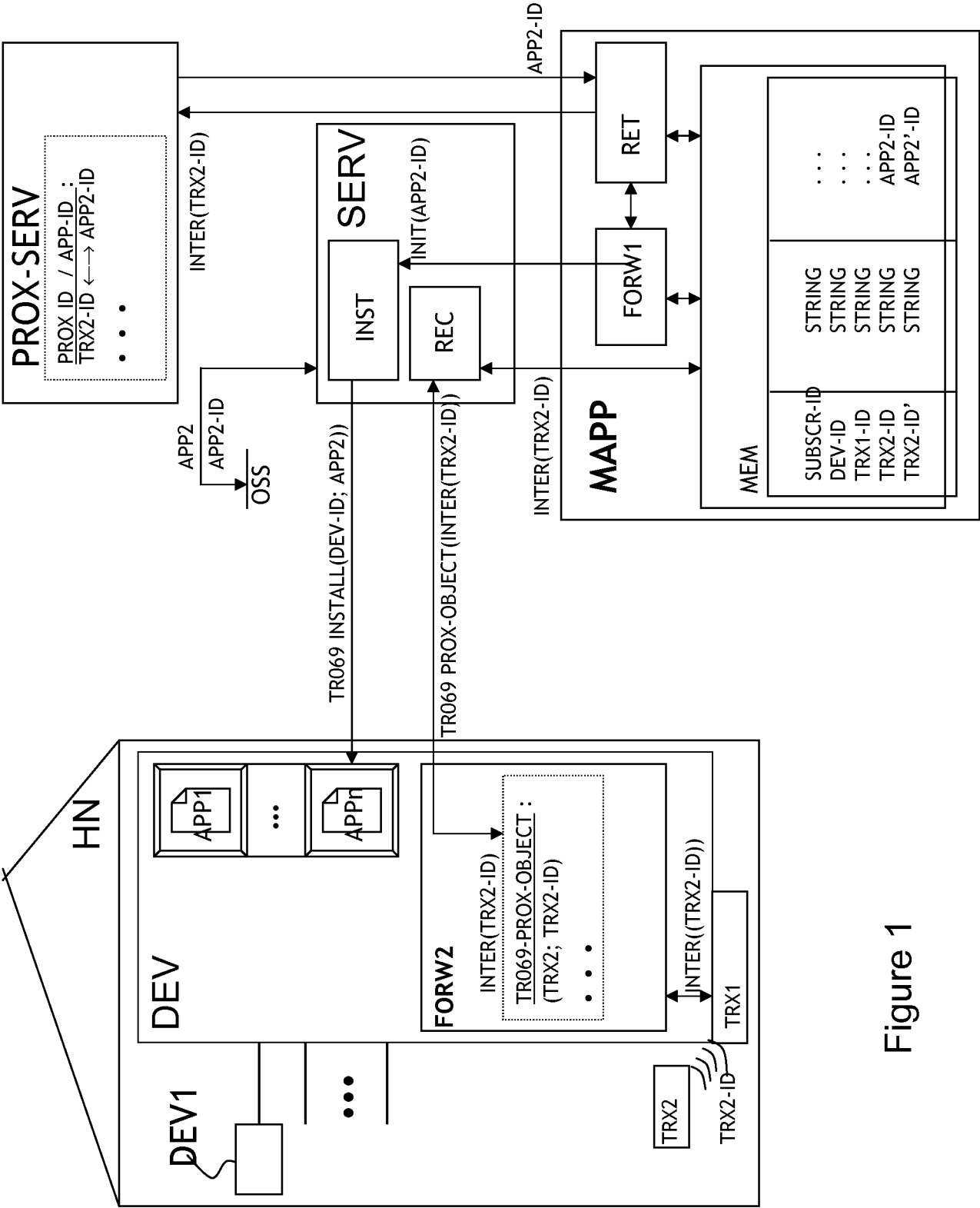


Figure 1

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/060272

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/08 H04L12/28
ADD. H04L29/06

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)
H04L

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 practical, search terms used)

EPO-Internal , WPI Data, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	wo 2009/049325 AI (PI E DIGITAL INC [US] ; BARNHILL JOHN A [US]) 16 April 2009 (2009-04-16) abstract page 10, last paragraph - page 12, line 6 page 13, lines 13-20 page 15, last paragraph - page 16, line 2 page 21, lines 15-31 figures 1,2,6	1-14
X	EP 1 850 527 AI (KONINKL KPN NV [NL]) 31 October 2007 (2007-10-31) abstract paragraphs [0012] - [0014] paragraphs [0019] , [0021] figures la, lb, 2 ----- -/-	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2011/060272

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	EP 2 184 903 A1 (ALCATEL LUCENT [FR]) 12 May 2010 (2010-05-12) qbStr0ct paragraphs [0041], [0046] - [0057] figures 2-4 -----	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2011/060272

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