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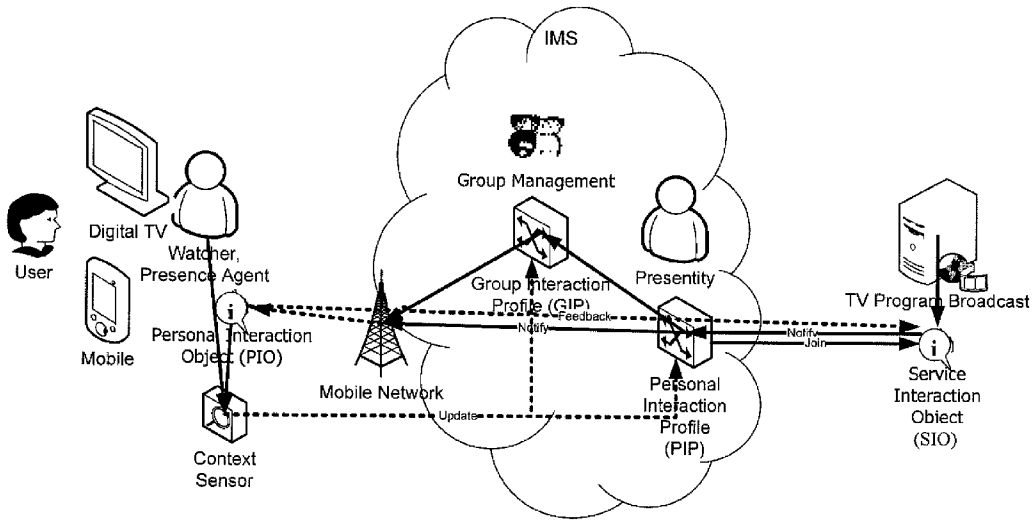
(54) **Title:** USER PREFERENCES IN INTERACTIVE PERSONAL TELEVISION



(57) **Abstract:** A method and apparatus for providing an Interactive Television service. The method comprises storing user preferences relating to the service and, at one of a Personal Interaction Profile function and a Group Interaction Profile function, receiving from a broadcast server information identifying an event relating to the interactive service. The received information is compared with the user preferences to determine whether a notification should be sent to the user and, if it is determined that the notification should 10 be sent to the user, the notification is sent to a user device.

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User Preferences in Interactive Personal Television

Technical field

The invention relates to the field of Interactive Personal Television.

Background

Interactive Personal Television programming requires feedback from its audience. One example of audience feedback is real-time voting, in which an audience member can influence the programme being watched. The influence may be, for example, taking part in a vote or choosing a camera angle from which to view a sports event. In order to provide this degree of interaction, the audience member must have a return path to transmit information to the programme broadcaster. This return path may use suitable media, for example, telephone, SMS messaging or cable (where a user who receives a cable broadcast can transmit information to the broadcaster using the same cable as a return path).

Interactive Personal Television requires interaction with individual users. For this purpose, OMA BCAST (OMA-TS-BCAST_Services-V1_0-20060419-D, section 5.3) has developed a set of interactivity triggers, which are sent by the broadcaster and can be used to render an "interactivity media object" message on the user's screen. These can trigger further interaction from the user, for example, ring tone ordering or voting. Interactivity media objects can be sent in-band (i.e., with the television signal), or out-of-band.

Referring to Figure 1, an example architecture of an Interactive Personal Television voting service is illustrated. An Interactive Personal Television programme is broadcast from a broadcast network and rendered on the user's television set. An "interactivity media object" document containing some or all of the interaction elements is sent from the broadcaster over the broadcast network to the user's mobile device.

When, for example, a vote is offered on the Interactive Personal Television programme, the interactivity media object displays an indication that voting is available on the screen of the end-user's device (for example a mobile telephone or a television set). The user may respond to the interaction object by sending an SMS message via the mobile network back to the Voting Management Server.

A user who wishes to use an Interactive Personal Television service must first activate the service, and can then choose to either check for available interaction services manually, or subscribe to notifications about available services, which are sent periodically. However, users cannot indicate what information about the service may be useful to them and thus receive only updates of relevant information. As a result, the entire "interactivity media object" document is downloaded to the user's device. When the service triggers updates, the user will receive information regardless of its importance or personal preferences and thus regardless of the user's current needs or situation. For example, a user may not wish to take part in an online vote, but may wish to send an opinion to the broadcaster for broadcasting as part of the programme. However, the "interactivity media object" does not discriminate which information may be useful or not to the user.

Another issue with current Interactive Personal Television is that, using existing communications means, it is not possible to notify individual users of the start of a TV programme or an event occurring during the program in an automated way. Any alerts required by the user must be triggered manually. In addition, users cannot join an interactive service spontaneously and must subscribe to the service in advance.

OMA BCAST triggers cannot be used as a means to dynamically generate associated interactivity media objects, since these triggers must be pre-programmed into the media stream.

Another problem with known systems is that user subscriptions are static and do not change over time. This means that the user will receive subscribed information

regardless of time and place and thus regardless of changing preferences. This can be a problem, for example, when a user accesses a broadcast using one of several pieces of equipment, which may have different capabilities. The only way to modify the subscription is to un-subscribe and re-subscribe (or update the subscriber profile).

Existing solutions to this problem include downloading content using HTTP/RTSP; pushing content using Multimedia messaging Services (MMS) technology; mobile TV triggering using HTTP; and H.324m dial-up to content server. These solutions do not allow for re-use of an IP Multimedia Subsystem (IMS) infrastructure, and have either plain or no triggering mechanisms. Furthermore, there is either no or poor consideration of interaction with other services running on an IMS based network.

Summary

The invention provides means to automatically gather user preferences, and enable Interactive Personal Television services to automatically take user preferences into account. This ensures that only services and interaction invitations relevant to the user preferences are sent to the user, reducing the signalling required to support Interactive Personal Television, and providing a better user experience.

The broadcaster inspects and detects events in the media stream, and sets a broadcast trigger automatically that when an event occurs that is of interest to an individual. The triggers cause the creation of an "interaction object" which is rendered on the screen on which the user is currently viewing the service. The interaction object triggers may be generated by employing either OMA BCAST triggers followed by rendering via an "interactivity media object" or by using a Presence enabler and subsequent visualization by a client that is subscribed to Presence data.

Where the invention is used with an IP Multimedia Subsystem network, interactivity media documents embedded in the media stream may be combined with interactivity media documents sent using SI(M)P(LE) NOTIFY as a separate interaction channel via

either mobile or fixed network access. SI(M)P(LE) SUBSCRIBE/NOTIFY messages are used in order to achieve personalization of delivery of the interactivity media document for the individual user. The user can set or change his or her preferences manually. Preferences may include parameters related to data sources, which may have default values that are set by the owner of the information source.

Where the invention is used without an IP Multimedia Subsystem network, interactivity media documents embedded in the media stream may be combined with dynamically created interactivity media documents. The interactivity media documents may be obtained cia a web service, and employ suitable technologies in order to push the information to the end user. Examples of such technologies include WAP push, OMA BCAST, HTTP persistence, SMS and MMS. This allows a user to change preferences manually.

According to a first aspect of the invention, there is provided a method of providing an Interactive Television service. The method comprises storing user preferences relating to the service and, at one of a Personal Interaction Profile function and a Group Interaction Profile function, receiving from a broadcast server information identifying an event relating to the interactive service A comparison is made between the received information with the user preferences to determine whether a notification should be sent to the user, and if it is determined that the notification should be sent to the user, the notification is sent to a user device.

The method may further comprise, at the user device, in response to receiving the notification, sending a response message to the broadcast server.

Preferably, the method further comprises, at the user device, alerting the user to the presence of the notification;

inviting the user to respond to the notification;

receiving the user's response to the notification; and

sending a response message based on the user's response to the broadcast server.

The method may comprise the step of sending a subscribe message to a Service Interaction Object function of an Interactive Television broadcast, the subscribe message containing information relating to user preferences.

The subscribe message may be sent from any one of a user device, a user's Presence Agent and a user's Group Management server, and the subscribe message may be a Session Initiation Protocol SUBSCRIBE message.

In a preferred embodiment of the invention, the Personal Interaction Profile and/or the Group Interaction Profile is located at an IP Multimedia Subsystem network.

The notification may be sent to a user device using a Push message. Where the invention is implemented in a non-IMS network, the Push message may be of a type selected from a Wireless Application Protocol push message, an OMA BCAST message, an HTTP persistence message, a Short Message Service message and a Multimedia Message Service.

In the case where the invention is implemented in a non-IMS network, the method may require, prior to the step of storing user preferences relating to the service, the user to register with a web based presence service.

According to a second aspect of the invention, there is provided a Personal Interaction Profile function comprising a receiver for receiving from an Interactive Television broadcast server information identifying an event relating to an Interactive Television service. A processor is provided for comparing the received information with user preferences to determine whether a notification should be sent to the user, and a transmitter is also provided for, if it is determined that the notification should be sent to the user, transmitting the notification to a user device.

The Personal Interaction Profile function may comprise a memory for storing the user preferences, or may comprise means to receive user preferences transmitted from a remote node.

According to a third aspect of the invention, there is provided a Group Interaction Profile function comprising a receiver for receiving from an Interactive Television broadcast server information identifying an event relating to an Interactive Television service. A processor is also provided for comparing the received information with group user preferences to determine whether a notification should be sent to a group of users, and a transmitter is provided for, if it is determined that the notification should be sent to the user, transmitting the notification to all user devices belonging to the group.

According to a fourth aspect of the invention, there is provided a Service Interaction Object function comprising a receiver for receiving a subscribe message, the subscribe message containing information relating to user preferences, and a processor for comparing the received user preferences with Interactive Television services to determine whether information identifying services should be sent to one of a user's Personal Interaction Profile function or Group Interaction Profile function. A transmitter is also provided for, if it is determined that information identifying services should be sent to the user's Personal Interaction Profile function or Group Interaction Profile function, transmitting information identifying the services to the user's Personal Interaction Profile function or Group Interaction Profile function.

According to a fifth aspect of the invention, there is provided a user device for allowing a user to receive an Interactive Television service, the user device comprising a receiver for receiving a notification of an event relating to the Interactive Television service, means for alerting the user to the presence of the notification, means for inviting the user to respond to the notification, means for allowing the user to input a response to the notification, and means for sending a response message based on the user's input response.

Brief Description of the Drawings

Figure 1 illustrates schematically an example of Interactive Personal Television architecture for a broadcast having an associated voting service;

Figure 2 illustrates schematically an Interactive Personal Television architecture according to an embodiment of the invention using an IP Multimedia Subsystem network;

Figure 3 illustrates schematically the signalling required for a user interaction with an Interactive Personal Television service according to an embodiment of the invention using an IP Multimedia Subsystem network;

Figure 4 is a flow diagram illustrating the basic steps of the invention;

Figure 5 illustrates schematically an Interactive Personal Television architecture according to a further embodiment of the invention using a non- IP Multimedia Subsystem network; and

Figure 6 illustrates schematically the signalling required for a user interaction with an Interactive Personal Television service according to an embodiment of the invention using a non- IP Multimedia Subsystem network.

Detailed Description

Referring to Figure 2, there is illustrated a user having a digital television set and a mobile device. There is also provided at the User end a Watcher, a Presence Agent, and a Personal Interaction Object (PIO). A Context Sensor is also provided at the User end.

The User device connects to a Personal Interaction Profile and/or a Group Interaction profile and a Presentity via an IP network. The Personal Interaction Profile, Group

Interaction Profile and Presentity are provided within an IP Multimedia subsystem (IMS) network.

Interactive Personal Television services are broadcast from a Content Provider Server. At the Server end there is also provided a Service Interaction Object (SIO).

A PIO is created either as a result of notification sent by a Presentity and Personal Interaction Profile (PIP) joining a Service Interaction Object (SIO), or as a result of an OMA BCAST trigger.

The Watcher subscribes with the Presence Agent and monitors notifications from the Presence Agent, and the Presence Agent sends notifications to the Watcher based on changes in the Presentity/PIP. The Presence Agent also updates the Presentity/PIP.

The Context Sensor updates Personal- and Group Interaction Profiles (PIP and GIP) either via co-located Presence Agents, or directly via other means such as HTTP/SOAP. Any suitable means may be used for the Context Sensors to send updates to the PIP and GIP.

Service Interaction Objects (SIO) are specific to a particular service at the broadcast Server end, and send notifications to the PIP when relevant events are detected in media streams. An index file for recordings is provided at the broadcast Server.

A Presence Server is located at the IMS network, the Presence Server having Presentities. The Presence server is co-located with a Personal Interaction Profile (PIP), which filters requests from the SIO for relevance to the user based on the user's settings and preferences.

Group Management is co-located with Group Interaction Profile (GIP) at the IMS network. The GIP filters requests from the SIO for relevance and forwards them to the associated subscribed Presentity's PIP.

The system works as follows, with the numbered steps corresponding to the numbers shown in Figure 3:

1. The user's Presentity on the IMS network or Group (Management) that the user is subscribed to identifies at least one service that may be of interest to the user. The identification is made when the service passes GIP/PIP filtering. By filtering out services that are not of interest to the user, irrelevant invitations to the user are avoided.

2. The user, or the user's Presence Agent, or the Group Management that the user is subscribed to, or an external entity allocated this task and triggered by any of the aforementioned entities, subscribes to the service. This enables automatic user participation and user feedback such as voting. A SIP subscribe message to subscribe to the service is sent to the service's SIO. The subscribe message contains parameters that relate to user preferences, which could be preferences set by the user regarding the type of service of interest, and/or parameters relating to the capabilities of the device that the user using to view the broadcast; or other parameters valid for the process of delivering the service to the user.

3. The identified service's SIO in the application server receives the SIP subscribe from the user or Presence Agent or from the Group Management on the user's behalf. When the SIO detects a service of interest, taking into account relevant parameters that were received in the subscription request, it sends a notification to the user's PIP.

4. The user may manually select context sources and trigger conditions and link these to parameters in the Presentity/PIP. This allows the user to control which services are offered, and what alerts are required to be sent. Alternatively the system may do this automatically on the basis of configuration information that has been received from the service provider and the network operator.

Figure 3 also illustrates how, during a SETUP phase, the user registers with the Presence service. Thereafter the Group Management invokes the GIP, and the Presence Server invokes the PIP from the Presentity, both of which may be subsequently updated with (sensor) context information. The Service Provider's broadcast Server invokes the SIO. Event detection, as described in the next paragraph, leads to a filtered notification and invocation of a PIO on the user's device, enabling the user to provide feedback.

When an event is detected in a media stream, the SIO triggers a SIP notification, which is directed to a group of users. The group of users is either held by the Application Server or identified as the Group (Management) co-located with the Presence System in the IMS network. The media-stream related event may occur in a live-feed or in a recorded media. The event triggers the notification as a result of an agent monitoring the media stream for events that match its configuration on the basis of the user preferences. Any suitable configuration method may be used and may, for example, employ meta-data descriptions such as found in MPEG-7 or similar technologies.

The detection agent sends a notification using a Push Application Engine (for example, PPG or similar), which retrieves the capabilities of available terminals for the user from the Presence server (PGM) and uses the information to adapt pushed content to the receiving terminal(s).

Notifications may be one of two types:

a. Automatically configured notification, which is directed to a pre-selected group of users for continued processing (the configuration of the notification, including the user group etc, can be fetched from the user's profile), or

b. Manually configured notification, which can use a script language to initiate actions (such as triggering different notifications to different groups when different events occur).

Cost control may be built into the scripts. For example, if a user chooses to accept advertising then the notification may be sent at no cost to the user.

In the case of automatically configured notifications, the group to which the notification is to be pushed to can be obtained from other applications, such as a Push to Talk over Cellular (PoC) group, a presence enabled phone book, etc. The group will have its own profile information documents, typically PDF and XDM.

An automatic notification may be triggered when, for example, all members of a group have performed an action, such as watching a video stream past a certain point.

In the case of manually configured notifications, the user creates a set of instructions (a script), which is downloaded to a push provider and executed. The user can either choose (in his configuration) to defer the notification (i.e. watch it later); or allow the reception of the notification to trigger the start of a video client. This type of event can be a secondary condition to the automatic flow.

It is possible for the user to select a manual notification configuration which has been pre-set e.g. by a content provider. This notification configuration can have instructions for how the notification should be handled, for example what applications it should trigger etc. as described in the previous paragraph.

Where a notification is triggered by a real-time event, the notification may trigger a special-purpose client, which records the event on behalf of the user. Multiple users can use the same recording, and the information about the recording can be stored in an index file, which can be sent to the receiver (multiple receivers) as part of the notification.

In one embodiment of the invention, the system is implemented as follows:

1. When the user registers, the user preferences are recorded.

2. The user preferences are noted in an index file (part of the PIP), where the preferences for notifications are marked.

3. When the preferred point occurs, a notification is triggered, and the index file is transmitted.

4. The notification is sent to the push initiator, who triggers a push event.

The invention can be summarized as shown in the flow diagram of Figure 4. User preferences are stored 5 when the user registers with a Presentity. When the user is subsequently receiving a media stream, and an event occurs relating to an interactive service, the user's Personal Interaction Profile function or a Group Interaction Profile function receives 6 information identifying the event. The information identifying the event is compared 7 with the user preferences, and a decision is made 8 on whether to send a notification to the user. If it is determined that a notification should be sent, then the notification is sent 9 to the user's device.

The above description describes the invention as it works using an IMS network. However, in a further embodiment, the invention can also be implemented in a non-IMS network. The architecture of the invention in a non-IMS network is illustrated in Figure 5.

The invention can be implemented in a non-IMS environment by using web service protocols and notification mechanism based on push or fake push technologies. Examples of such technologies include WAP push, OMA BCAST, HTTP persistence, SMS or MMS. Any of these mechanisms may be used to send notifications to a user device.

By way of example, and referring to Figure 6, a user logs in 11 to a web based presence system by using a Web page using a log in password. The web based presence system updates the user's status. Note that any other type of presence system may be used. For example, an instant messaging application may be used to log in with a presence system.

The user manages his or her interests profile using, for example, a SOAP request from a client or a simple HTTP interaction with a web browser. The client may be , for example, the same web browser that the user has used to log in with the presence system, or may be a separate profile management client. The separate profile management client may be embedded in the presence application, or may be a stand-alone client.

The user's Presentity or group management behaves in the same way as the Presentity or group management does in the IMS embodiment described above. It filters relevant services and triggers bases on the PIP or the GIP.

When a service of interest, or a notification is identified, a Push Application Engine is used to send a Push message 16 to the user's client. The Push message is sent from the Application Server that is used to deliver the media content, and the Push message is sent to the user or a list of users. The Push Application engine identifies the best channel to deliver the notification to the watcher at the user client. The best channel may be determined by user preferences.

Examples of ways in which the notification may be delivered to the watcher at the user client include the following:

a. An open HTTP persistent session with the Presence Server can be used to deliver a notification to the client and trigger an HTTP GET message, the content of which will be delivered to the watcher (embedded in the browser in this case). The HTTP GET message allows the notification to be received at the user device;

b. an instant message to the presence and messaging applications can be automatically triggered, which is interpreted by the application as a control message and triggers the watcher to receive the pushed content; or

c. An SMS is automatically delivered to a mobile client, which triggers a notification client to open a connection to the notification server and download the content.

Once the watcher at the user device has received the notification, it then acts upon the notification by obtaining the required data relating to the event (if it has not included in the notification itself) and delivering it to the appropriate client in the user device. The data is then displayed to the user or acted upon by the client in an appropriate manner.

It is important to note that the mechanism requires a trigger handling service to run at the device. The trigger handling service must understands the triggers to be received by different push or fake-push mechanisms. The trigger handling service receives the triggers from different transport mechanisms and delivers the content to the appropriate watcher. It then acts as an enabler for other services (or an enabler for the watchers).

The invention reduces the amount of updates required and optimises network usage by limiting the number of irrelevant messages sent to a user. Further advantages of the invention include the following:

- Personalized subscriptions/requests
- Increased control / Added value
- Context awareness
- Intelligent concatenation and management of composite triggering events of content delivery.
- Dynamic business relationship establishment between a Push Initiator and a Push Enabler.
- Reuse of the communication infrastructure for content delivery.
- Intelligent selection of supporting enablers.
- Management of interaction with other services.
- Improved user experience

It will be appreciated by a person skilled in the art that various modifications may be made to the above-described embodiments without departing from the scope of the present invention.

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Claims:

1. A method of providing an Interactive Television service, the method comprising:

storing user preferences relating to the service;

at one of a Personal Interaction Profile function and a Group Interaction Profile function, receiving from a broadcast server information identifying an event relating to the interactive service;

comparing the received information with the user preferences to determine whether a notification should be sent to the user; and

if it is determined that the notification should be sent to the user, sending the notification to a user device.

2. A method according to claim 1, further comprising, at the user device, in response to receiving the notification, sending a response message to the broadcast server.

3. A method according to claim 1, further comprising, at the user device, alerting the user to the presence of the notification;

inviting the user to respond to the notification;

receiving the user's response to the notification; and

sending a response message based on the user's response to the broadcast server.

4. A method according to any one claims 1, 2 or 3, comprising the step of sending a subscribe message to a Service Interaction Object function of an Interactive Television broadcast, the subscribe message containing information relating to user preferences.

5. A method according to claim 4, wherein the subscribe message is sent from any one of a user device, a user's Presence Agent and a user's Group Management server.

6. A method according to claim 4 or 5, wherein the subscribe message is a Session Initiation Protocol SUBSCRIBE message.

7. A method according to any one of the preceding claims, wherein the Personal Interaction Profile is located at an IP Multimedia Subsystem network.

8. A method according to any one of the preceding claims, wherein the Group Interaction Profile is located at an IP Multimedia Subsystem network.

9. A method according to any one of claims 1 to 3, comprising sending the notification to a user device using a Push message.

10. A method according to claim 9, wherein the Push message is sent using one of a Wireless Application Protocol push message, an OMA BCAST message, an HTTP persistence message, a Short Message Service message and a Multimedia Message Service.

11. A method according claim 9 or 10, wherein prior to storing user preferences relating to the service, a user registers with a web based presence service.

12. A Personal Interaction Profile function, comprising:

a receiver for receiving from an Interactive Television broadcast server information identifying an event relating to an Interactive Television service;

a processor for comparing the received information with user preferences to determine whether a notification should be sent to the user; and

a transmitter for, if it is determined that the notification should be sent to the user, transmitting the notification to a user device.

13. A Personal Interaction Profile function according to claim 12, further comprising a memory for storing the user preferences.

14. A Personal Interaction Profile function according to claim 12, further comprising means to receive user preferences transmitted from a remote node.

15. A Group Interaction Profile function, comprising:

a receiver for receiving from an Interactive Television broadcast server information identifying an event relating to an Interactive Television service;

a processor for comparing the received information with group user preferences to determine whether a notification should be sent to a group of users; and

a transmitter for, if it is determined that the notification should be sent to the user, transmitting the notification to all user devices belonging to the group.

16. A Service Interaction Object function, comprising:

a receiver for receiving a subscribe message, the subscribe message containing information relating to user preferences;

a processor for comparing the received user preferences with Interactive Television services to determine whether information identifying services should be sent to one of a user's Personal Interaction Profile function or Group Interaction Profile function;

a transmitter for, if it is determined that information identifying services should be sent to the user's Personal Interaction Profile function or Group Interaction Profile function, transmitting information identifying the services to the user's Personal Interaction Profile function or Group Interaction Profile function.

17. A user device for allowing a user to receive an Interactive Television service, the user device comprising:

a receiver for receiving a notification of an event relating to the Interactive Television service;

means for alerting the user to the presence of the notification;

means for inviting the user to respond to the notification;

means for allowing the user to input a response to the notification; and

means for sending a response message based on the user's input response.

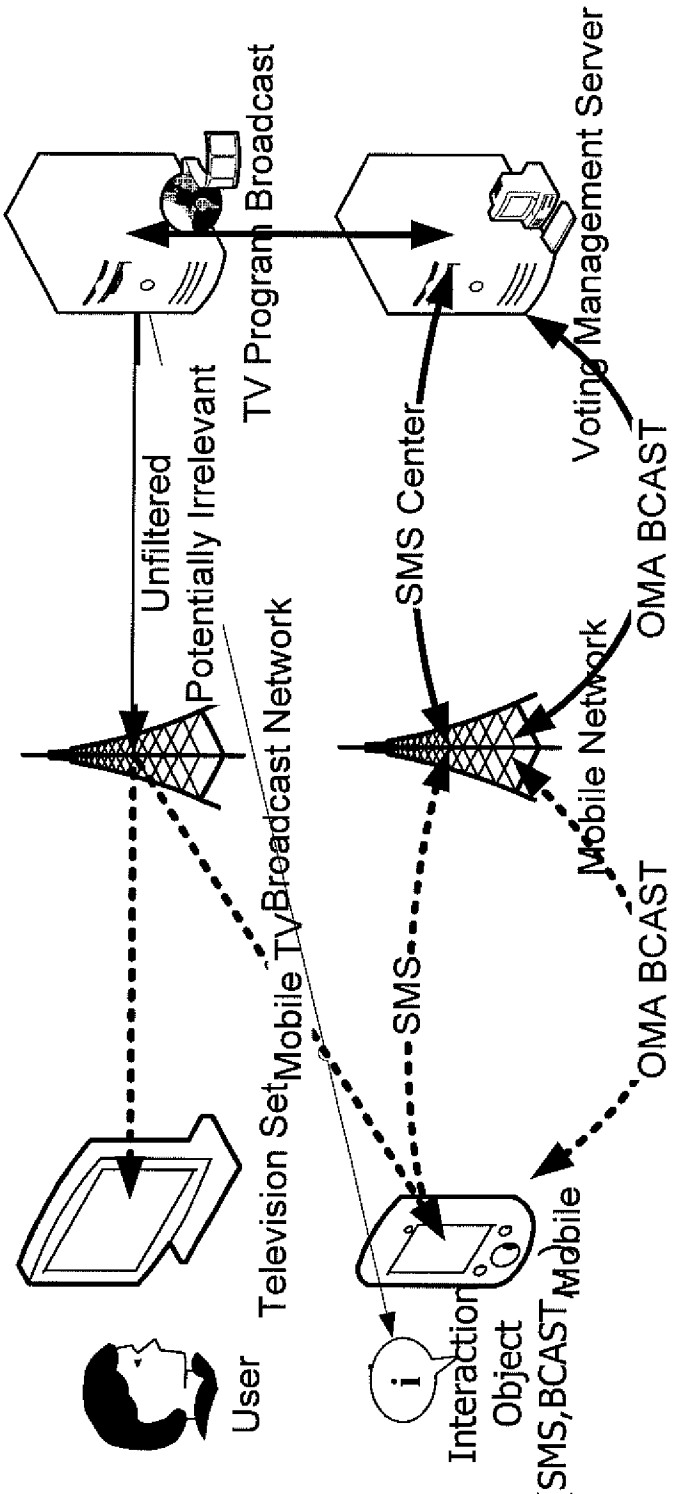
TV Program Broadcast
Unfiltered
Potentially Irrelevant
SMS Center
Voting Management Server
OMA BCAST
Mobile TV Broadcast Network
Mobile Network
SMS
OMA BCAST
Television Set
User
Interaction Object (SMS,BCAST
Mobile

Figure 1

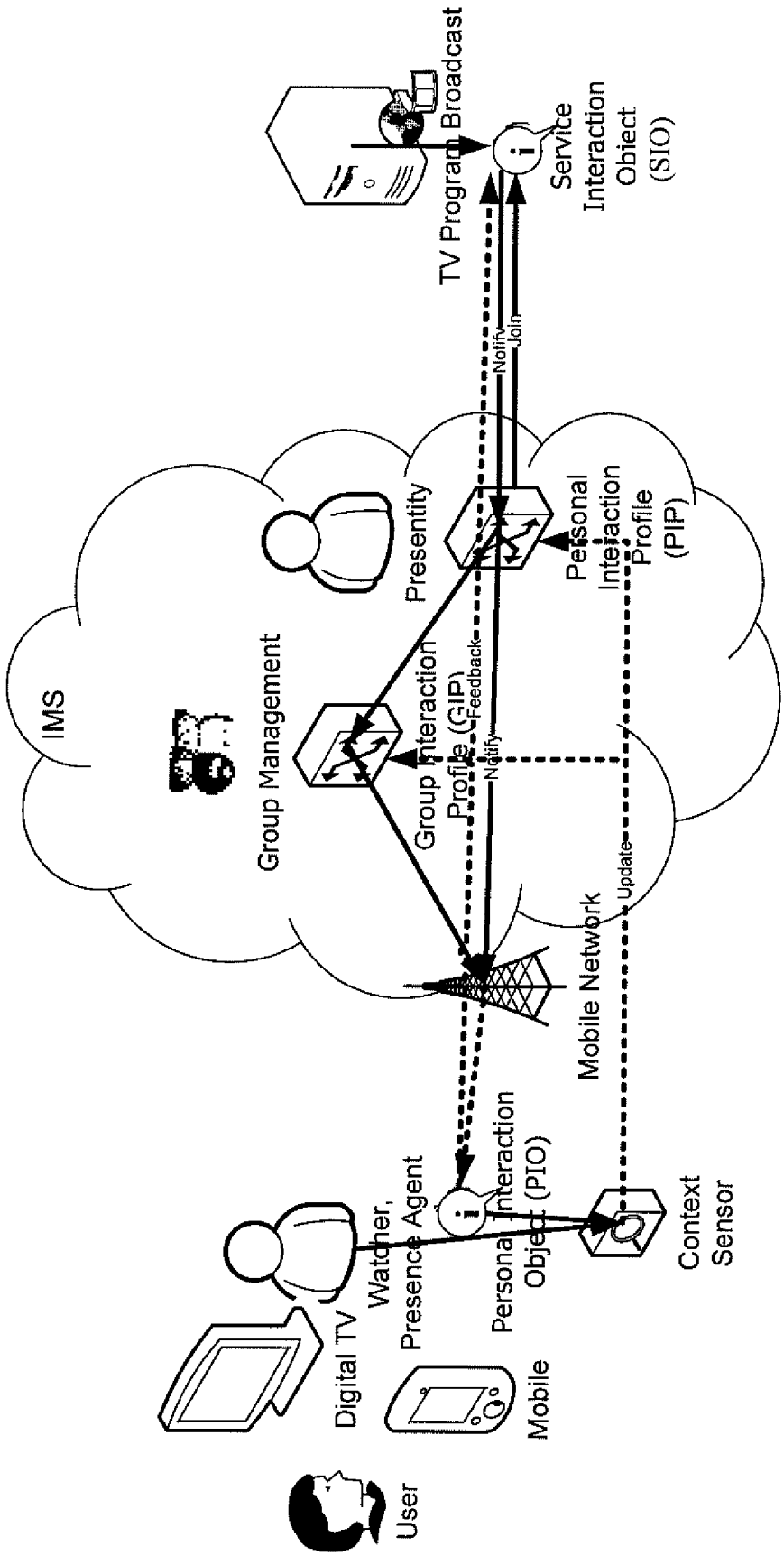
TV Program Broadcast
Service Interaction Object (SIO)
Notify
Join
IMS
Presentity
Personal Interaction Profile (PIP)
Group Management
Group Interaction Profile (GIP)
Feedback
Notify
Update
Mobile Network
Watcher, Presence Agent
Personal Interaction Object (PIO)
Context Sensor
Digital TV
Mobile
User

Figure 2

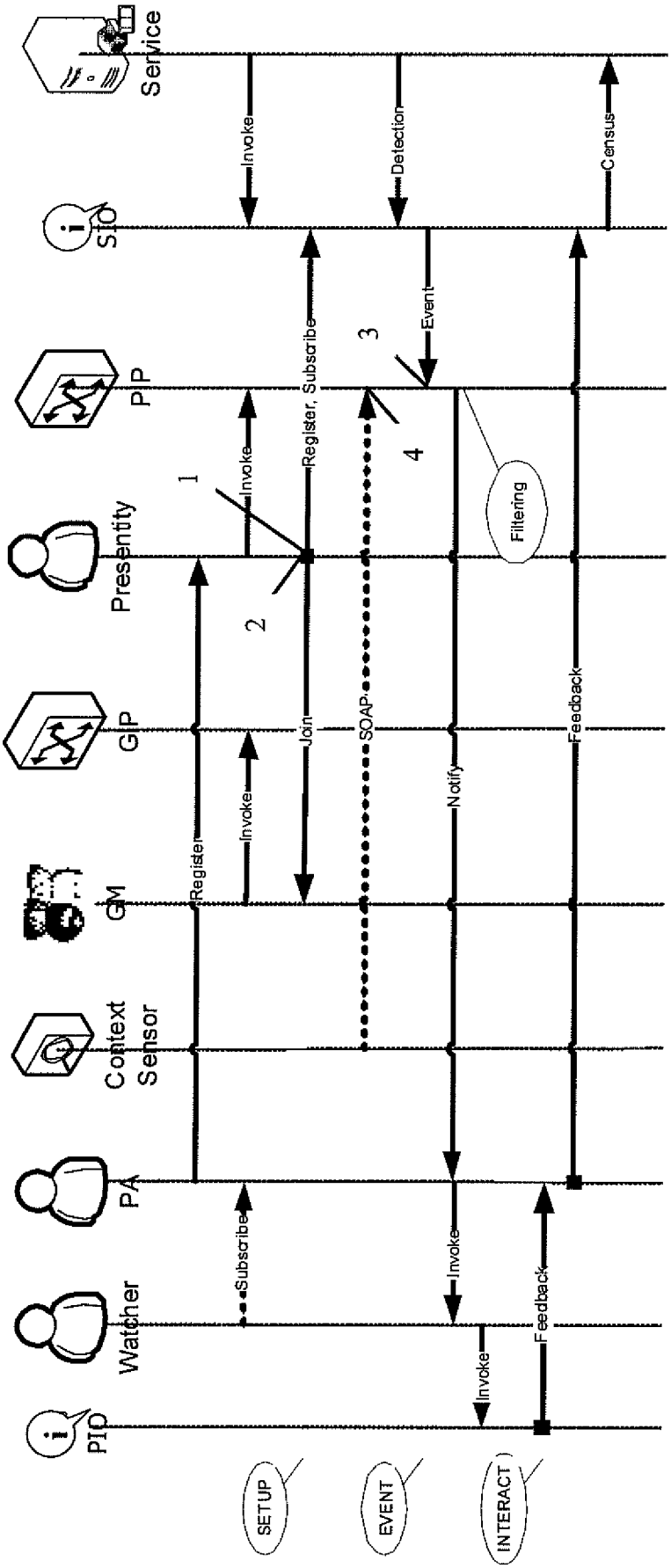
Service
SIP
PIP
Presentity
GIP
GM
Context Sensor
PA
Watcher
PIP
Invoke
Detection
Census
Register, Subscribe
Event
Invoke
Filtering
Register
Invoke
Join
SOAP
Notify
Feedback
Subscribe
Invoke
Feedback
Invoke
1
2
3
4
SETUP
EVENT
INTERACT

Figure 3

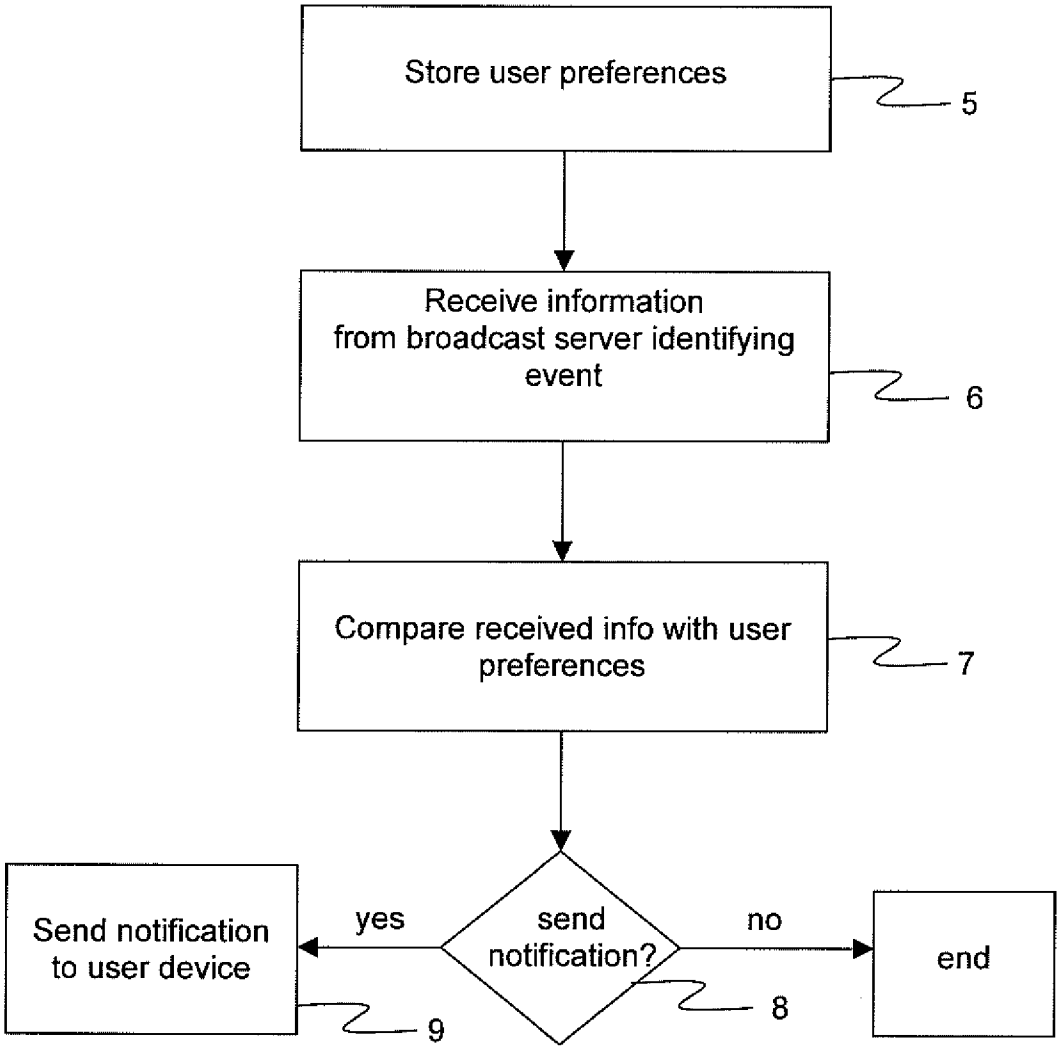
Store user preferences
5
Receive information from broadcast server identifying event
6
Compare received info with user preferences
7
send notification?
8
yes
no
Send notification to user device
9
end

Figure 4

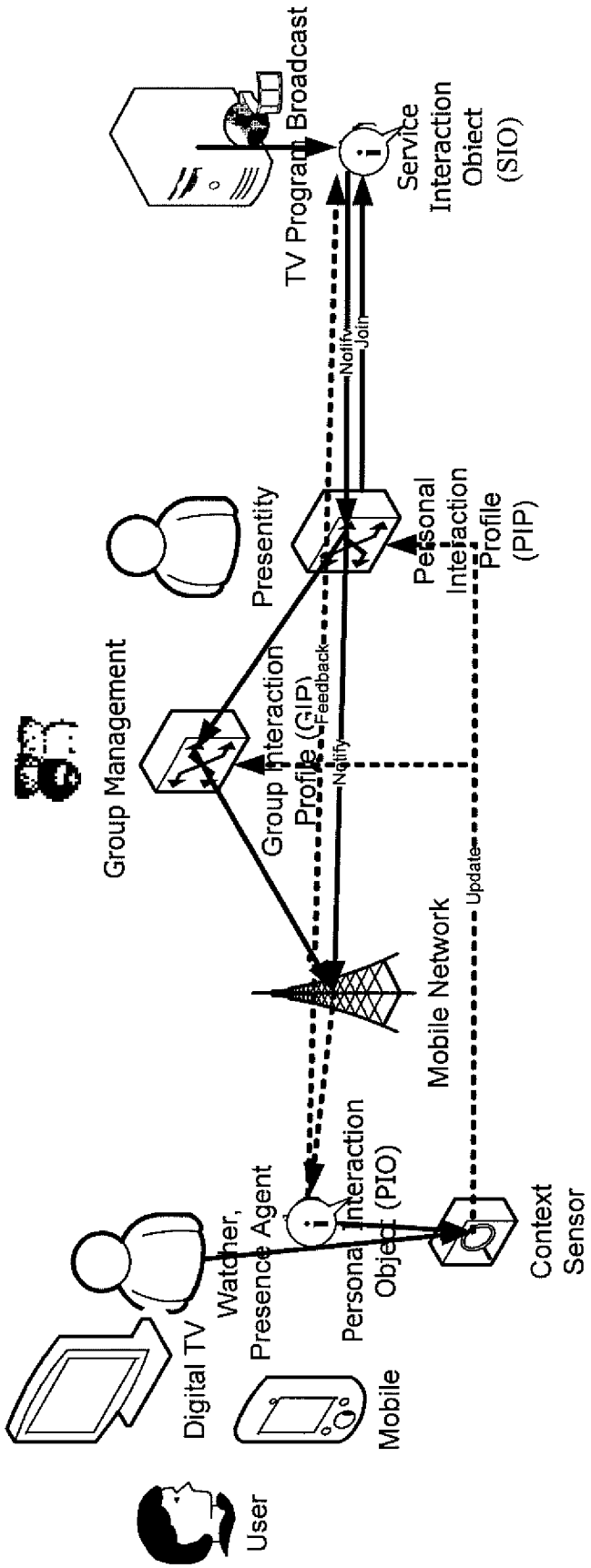
TV Program Broadcast
Service Interaction Object (SIO)
Notify
Join
Presentity
Personal Interaction Profile (PIP)
Feedback
Notify
Group Management
Group Interaction Profile (GIP)
Update
Mobile Network
Watcher, Presence Agent
Personal Interaction Object (PIO)
Context Sensor
Digital TV
Mobile
User

Figure 5

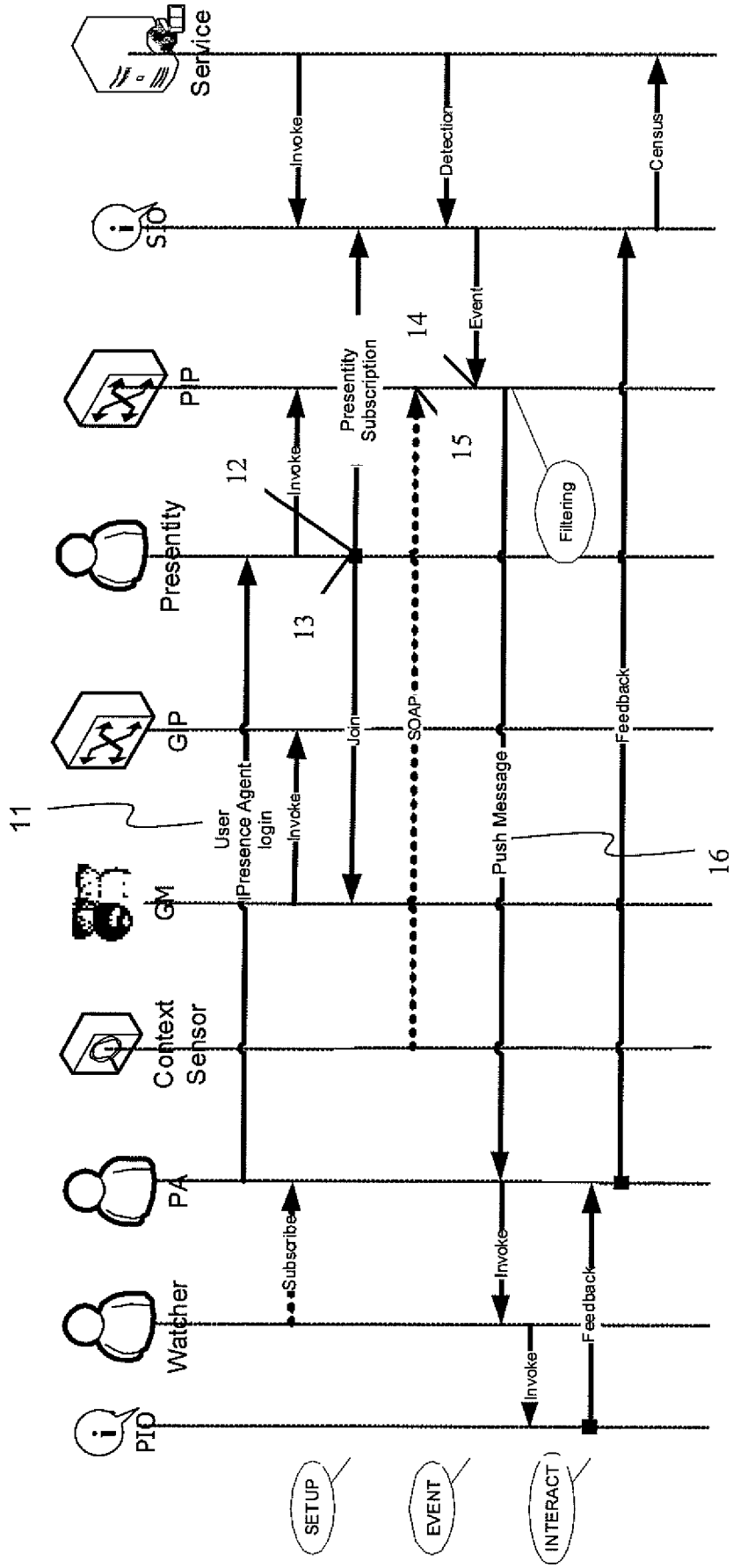
Service
SIP
PIP
Presentity
GIP
GM
Context Sensor
PA
Watcher
PID
Invoke
Detection
Census
Event
Presentity Subscription
Invoke
Filtering
Join
SOAP
Feedback
User Presence Agent login
Invoke
Push Message
Subscribe
Invoke
Feedback
Invoke
11
12
13
14
15
16
SETUP
EVENT
INTERACT

Figure 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/057831

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04N7/173

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)
H04N

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/034873 A1 (ZENONI IAN [US]) 19 February 2004 (2004-02-19) abstract paragraph [0007] - paragraph [0010] paragraph [0018] - paragraph [0049] figures 1-7	1-17
X	US 2002/010922 A1 (DARIN SHAI [IL] ET AL) 24 January 2002 (2002-01-24) paragraph [0002] paragraph [0007] - paragraph [0011] paragraphs [0026], [0027] paragraph [0030] - paragraph [0037] figures 1-4	1-17

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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 document but published on or after the international filing date

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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	Date of mailing of the international search report
12 September 2007	20/09/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Ricardo, Paulo

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/057831

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 394 862 A (NOKIA CORP [FI]) 5 May 2004 (2004-05-05) abstract page 1, line 22 - page 4, line 29	1-17
A	US 2005/262145 A1 (KAWANO MIHO [JP]) 24 November 2005 (2005-11-24) paragraph [0007] - paragraph [0016] paragraph [0038] - paragraph [0048] figures 7-10	1-17
A	WO 2004/114109 A (YAHOO INC [US]; EICHSTAEDT MATTHIAS [US]; RAMAKRISHNAN THYAGARAJAPURAM) 29 December 2004 (2004-12-29) abstract page 2, line 21 - page 3, line 20 figures 1-7	1-17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2007/057831

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