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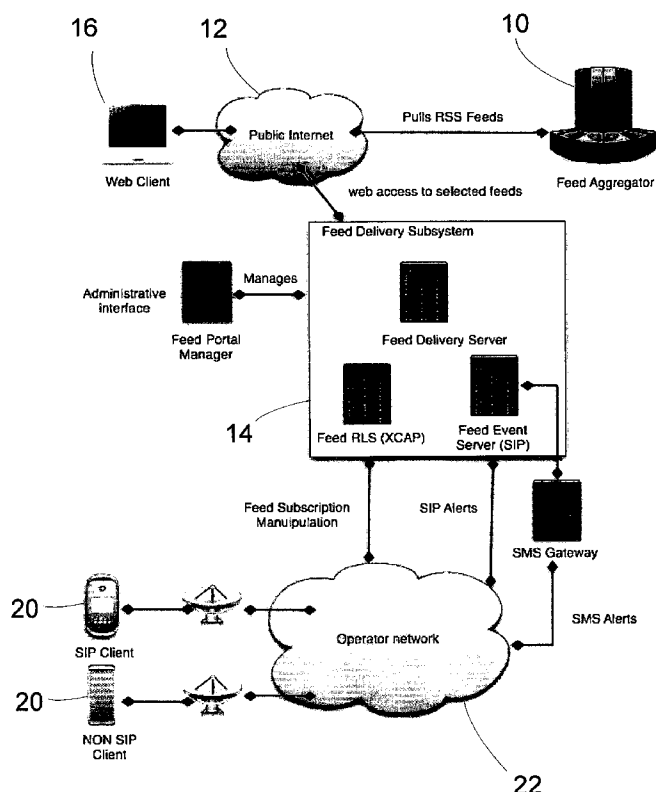
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(54) Title: SUBSCRIPTION-BASED DISTRIBUTION OF WEB CONTENT



(57) Abstract: A system comprising a server (14) for distribution of articles to and a plurality of clients (16, 20) is disclosed. The system operates by delivering article feeds to a client application, by a method comprising steps of: establishing a communication session between a client and a server over which the server can send data to the client, a feed of articles being associated with the session. The server, monitors the feed for the availability of new articles, and forwards to the client a notification message that contains data relating to one or more article that has become available. Thus, information about articles is "pushed" to the client, so that the client does not have to periodically monitor the feed.



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Subscription-based distribution of web content

5 This invention relates to subscription-based distribution of web content.

“Really Simple Syndication” (RSS) and Atom are systems that allows users to subscribe to a website and be notified of updates as they are posted by a webmaster. To use RSS, a webmaster puts a description of content into a standardised format using the extensible markup language (XML), which can
10 be viewed and organized through RSS-aware software. The XML description is made available from a web server. The list of content in the description is called a “feed”. A user can use a program known as a feed reader or aggregator to check a list of feeds to which they have subscribed and display any updated articles that it finds.

15 These systems have some limitations. Feed notification is not real-time; it is pull based. That is, feeds are updated when the feed reader fetches an update at the request of the user or periodically. Known feed readers do not handle updates. This means that if an item is modified (to correct a spelling mistake for example), then subscribers to the feed see the item
20 presented again as a new item which results in duplication. Feed readers do not provide any means of synchronization of feeds across multiple devices. This means that if a subscriber to a feed reads an item on one device, it will be presented again if read on another device.

An aim of this invention is to provide an improved mechanism by which a webmaster can provide and a user can subscribe to a feed, overcoming or at least ameliorating, the problems described above.

From a first aspect, this invention provides a 1.A method of delivering
5 article feeds to a client application, comprising: establishing a communication session between a client and a server over which the server can send data to the client, a feed of articles being associated with the session; at the server, monitoring the feed for the availability of new articles, and forwarding to the client a notification message that contains
10 data relating to one or more article that has become available.

This removes the requirement that the client poll the article feed periodically to receive new messages. Instead, the client is notified of the arrival of a new message by the server.

The data included in the notification message may include a title of an
15 article or of a plurality of articles. It may additionally include the text of a body of the article or articles and/or a link to the text of a body of the article.

The session may be established using the session initiation protocol (SIP), as defined in IETF RFC 3265.

20 The server may monitor the feed by polling the feed periodically. The feed monitored may be formatted in accordance with the RSS or the Atom standard.

The server may also monitor the feed for the amendment of existing articles, and forward to the client a notification message that contains data relating to one or more article that has been amended.

The client may send a message to the server when a user reads an article.

- 5 The server may then send a message to all clients of the subscriber to inform the clients that the article has been read.

The client is typically operative to generate a display that represents articles of which it has been notified. Preferably, articles that have been read by the subscriber are omitted from the display.

- 10 Most typically, the server monitors a plurality of feeds and, for each of these feeds, sends notification messages to each of a plurality of clients that have subscribed to the feed. This allows the server to distribute articles from multiple feeds to multiple clients.

- From a second aspect, the invention provides a server for delivering
15 article feeds to a client application, the server being operative: a. at the request of a client, to establish a communication session with the client over which data can be sent to the client, there being a feed of articles associated with each session; b. to monitor one or more feeds of articles; and c. to forward to the client a notification message that
20 contains data relating to one or more article that has become available.

Such a server can be used to implement a method embodying the first aspect of the invention.

A server embodying the invention may be further operative to forward to the client a notification message that contains data relating to one or more

articles that have been amended. Additionally, it may be further operative to receive from a client of a subscriber a notification that an article has been read, and to send a notification to other clients of the subscriber.

Most typically, the server monitors a feed of articles distributed over the
5 Internet using RSS or Atom.

From a third aspect, the invention provides a client for allowing a subscriber to access a feed of articles that is operative to: a. establish a communication session with a server, there being a feed of articles associated with the session; b. receive from the server a notification
10 message that contains data relating to one or more article that has become available from the feed; and c. displaying to the subscriber a list of articles that have been notified as being available from the feed.

The client may be operative to receive from the server a notification message that identifies that an article has been removed from the feed and
15 to omit that removed article from the list displayed to the subscriber. Likewise, it may be operative to receive from the server a notification message that identifies that an article has been amended and to amend the list displayed to the subscriber to reflect that amendment.

In order that a subscriber can use multiple clients, the client is
20 advantageously operative to receive from the server a notification message that identifies that an article has been read by the subscriber using another client and to omit that article from the list displayed to the user.

Most typically the client can display (or cause to be displayed) an article
25 to the user in response to a user input, such as a mouse click upon a

display of the title of an article. The client itself may display the article or cause it to be displayed in another component, such as a web browser.

Upon display of an article to a user, the client preferably sends a
5 notification message to the server to indicate that the article has been read.

The client is typically implemented as a software system executing on a personal computer or on a mobile communication device such as a cellular telephone or a personal digital assistant.

10 From a fourth aspect, the invention provides a system for delivering a feed of articles comprising a server according to the second aspect of the invention and a plurality of clients according to the third aspect of the invention.

An embodiment of the invention will now be described in detail, by way of
15 example, and with reference to the accompanying drawings, in which:

Figure 1 is an overview of a system embodying the invention;

Figure 2 is a diagram illustrating delivery of feed events using a method embodying the invention;

Figure 3 is a diagram illustrating update of feed events using a method
20 embodying the invention; and

Figure 4 is a diagram illustrating synchronisation of feed events using a method embodying the invention.

In the following, an individual or organisation authorised to use a system embodying the invention will be referred to as a "subscriber". A device used by a subscriber to access a feed will be referred to as a "client device". The embodiment serves to deliver articles from RSS or Atom feeds
5 to the client devices of a subscriber.

With reference to Figure 1, an embodiment of the invention comprises three main functional elements: a feed aggregator 10 that is responsible for collecting and storing feeds from the public internet 12; a SIP application server 14 that is responsible for handling subscription requests and for
10 delivering feed event notifications; and a client device 16 that can execute client software that is capable of responding to SIP event notification packages.

A feed portal manager provides operational support for the application server 14 allowing an administrator to set operational parameters such as
15 which feeds to include in the system, check frequency and system user profiles.

An SMS gateway is also provided to translate SIP notifications generated by the server 14 to SMS for legacy networks that do not support SIP.

The method by which this embodiment operates can be thought of as a feed
20 delivery mechanism on top of the session initiation protocol (SIP) to support the delivery and synchronization of RSS/Atom feeds in real time.

IETF RFC 3265 describes an extension to the Session Initiation Protocol (SIP) that can provide an extensible framework by which SIP nodes can request notification from remote nodes indicating that certain events have

occurred. RFC 3265 defines an abstract standard; any implementation must define so-called "event packages" .

This embodiment of the invention defines two distinct SIP event packages: the feed-event package and the feed-read-event package.

5 The feed-event package delivers notification on the following events:

- a new item is added to the feed;
- an item is removed from the feed; and
- existing item in the feed has been updated.

The feed-read-event package delivers notification on the following events:

- 10
- a feed item has been viewed;
 - a feed item has been marked as "un-viewed" ;
 - a feed item has been tagged; and
 - a feed item has been untagged.

The feed-event package provides efficient, real-time delivery of feed items
15 and update notification. The feed-read-event provides synchronized access to feeds across multiple devices.

The mechanism by which a client receives articles from the stream will now be described with reference to Figure 2.

Before a subscriber can receive any articles through the system embodying the invention, he or she must subscribe to a feed. To do so, the subscriber uses client software on the client device 16 to send a subscription request to the SIP application server 14. The SIP application
5 server 14 determines whether the subscriber may subscribe to the feed and that the feed is valid by querying the aggregator 10. If the query is successful, the SIP application server 14 notifies the client software that the subscription is now active.

The aggregator 10 monitors all subscribed feeds to obtain new feed items as
10 they become available and passes the feed items to the SIP application server 14.

Upon receipt of a new feed item from the aggregator 10, the SIP application server 14 notifies the client software that a new item is available, and the client software generates a display or other output to inform the
15 subscriber of the new items. The notification may contain just the title of the item or the full content.

The mechanism supports three delivery options. Using a first of the delivery options, the SIP application server 14 will deliver each item to the client software in a single notification and include an article title
20 and a full body of the item. This option can be used to provide real-time delivery of urgent feed items for example breaking new stories.

The second delivery option delivers each item to the client software individually but includes the title only; it does not include the full body of the article. This is used to inform the subscriber of new items, and
25 allow the the subscriber to later retrieve the full bodies of items of interest. The bodies will be received using another protocol, most usually

usually hypertext transport protocol. For example, the client application may display a list of titles to a user and allow the user to retrieve the body by activating an item on the list, for example, by a mouse click.

The third delivery option is to deliver notification of items to the client application in a group. That is, a single notification packet will deliver titles of multiple items. This is used to inform the subscriber of items that have a lower priority with efficient usage of network bandwidth.

The required optional delivery mechanism will be specified as part of the original subscription request.

10 The mechanism by which updates to items is managed will be described with reference to Figure 3.

The mechanism for feed item update handling is similar to that for feed delivery. However in this instance the SIP notification type is "update". This allows the client application to discriminate between new items and updates. The client application replaces an item for display to the end user of the system, in contrast to a known RSS system, in which the updated item would be presented as a new item.

The mechanism by which a client synchronises with an RSS feed will be described with reference to Figure 4.

20 A subscriber uses the client application to subscribe to a feed as described above. However, in this case, the client is subscribed on multiple devices, which might, for example, include a portable or desktop computer 16 or a cellular telephone 20. Desktop and portable computers will typically communicate with the SIP application server 14 using the

Internet 12. Other devices will typically communicate with the SIP application server using a specific network 22.

Some time after the subscription is active, a subscriber executing client software on one of these devices reads a feed item that has already been notified the the client software executing on another client device. This causes a second notification (from the feed-read-event package) to be dispatched to all of the subscriber's other devices from which the subscriber has subscribed to the feed in question. This event is interpreted by the client software to mark the item in question as having been read. This may result in the client software dropping the item or marking it as already read in its user interface.

Claims

1. A method of delivering article feeds to a client application,
5 comprising: establishing a communication session between a client and
a server over which the server can send data to the client, a feed of
articles being associated with the session; at the server, monitoring
the feed for the availability of new articles, and forwarding to the
client a notification message that contains data relating to one or
10 more article that has become available.
2. A method according to claim 1 in which the data included in the
notification message includes a title of an article.
3. A method according to claim 1 or claim 2 in which data included in
the notification message includes a title of a plurality of articles.
- 15 4. A method according to any preceding claim in which the data included
in the notification message includes the text of a body of the
article.
5. A method according to any preceding claim in which the data included
in the notification message includes a link to the text of a body of
20 the article.
6. A method according to any preceding claim in which the session is
established using the session initiation protocol (SIP).

7. A method according to any preceding claim in which the server monitors the feed by polling the feed periodically.
8. A method according to any preceding claim in which the feed uses one of the RSS or the Atom standard.
- 5 9. A method according to any preceding claim in which the server monitors the feed for the amendment of existing articles, and forwarding to the client a notification message that contains data relating to one or more articles that have been amended.
- 10 10. A method according to any preceding claim in which the client sends a message to the server when a user reads an article, and the server sends a message to all clients of the subscriber to inform the clients that the article has been read.
- 15 11. A method according to any preceding claim in which the client is operative to generate a display that represents articles of which it has been notified.
12. A method according to claim 11 in which the articles that have been read by the subscriber are omitted from the display.
- 20 13. A method according to any preceding claim in which the server monitors a plurality of feeds and, for each of these feeds, sends notification messages to each of a plurality of clients that have subscribed to the feed.
14. A server for delivering article feeds to a client application, the server being operative:

a. at the request of a client, to establish a communication session with the client over which data can be sent to the client, there being a feed of articles associated with each session;

b. to monitor one or more feeds of articles; and

5 c. to forward to the client a notification message that contains data relating to one or more article that has become available.

15.A server according to claim 14 that is further operative to forward to the client a notification message that contains data relating to one or more article that has been amended.

10 16.A server according to claim 14 or claim 15 that is further operative to receive from a client of a subscriber a notification that an article has been read, and to send a notification to other clients of the subscriber.

15 17.A server according to any one of claims 14 to 16 that monitors a feed of articles distributed over the Internet using RSS or Atom.

18.A client for allowing a subscriber to access a feed of articles that is operative to:

a. establish a communication session with a server, there being a feed of articles associated with the session;

20 b. receive from the server a notification message that contains data relating to one or more article that has become available from the feed; and

c. displaying to the subscriber a list of articles that have been notified as being available from the feed.

19. A client according to claim 18 that is operative to receive from the server a notification message that identifies that an article has been removed from the feed and to omit that removed article from the list displayed to the subscriber.

20. A client according to claim 18 or claim 19 that is operative to receive from the server a notification message that identifies that an article has been amended and to amend the list displayed to the subscriber to reflect that amendment.

21. A client according to any one of claims 18 to 20 that is operative to receive from the server a notification message that identifies that an article has been read by the subscriber and to omit that article from the list displayed to the user.

22. A client according to any one of claims 18 to 21 that is operative to display an article to the user in response to a user input.

23. A client according to claim 22 that is operative, upon display of an article to the subscriber, to send a notification message to the server to indicate that the article has been read.

24. A client according to any one of claims 18 to 23 that is a software system executing on a personal computer.

25. A client according to any one of claims 18 to 23 that is a software system executing on a mobile communication device.

26.A system for delivering a feed of articles comprising a server according to any one of claims 15 to 17 and a plurality of clients according to any one of claims 18 to 23.

5 27.A system according to claim 26 in which the server communicates with clients over the Internet.

28.A system according to claim 26 in which the server communicates with clients over a mobile telephony network.

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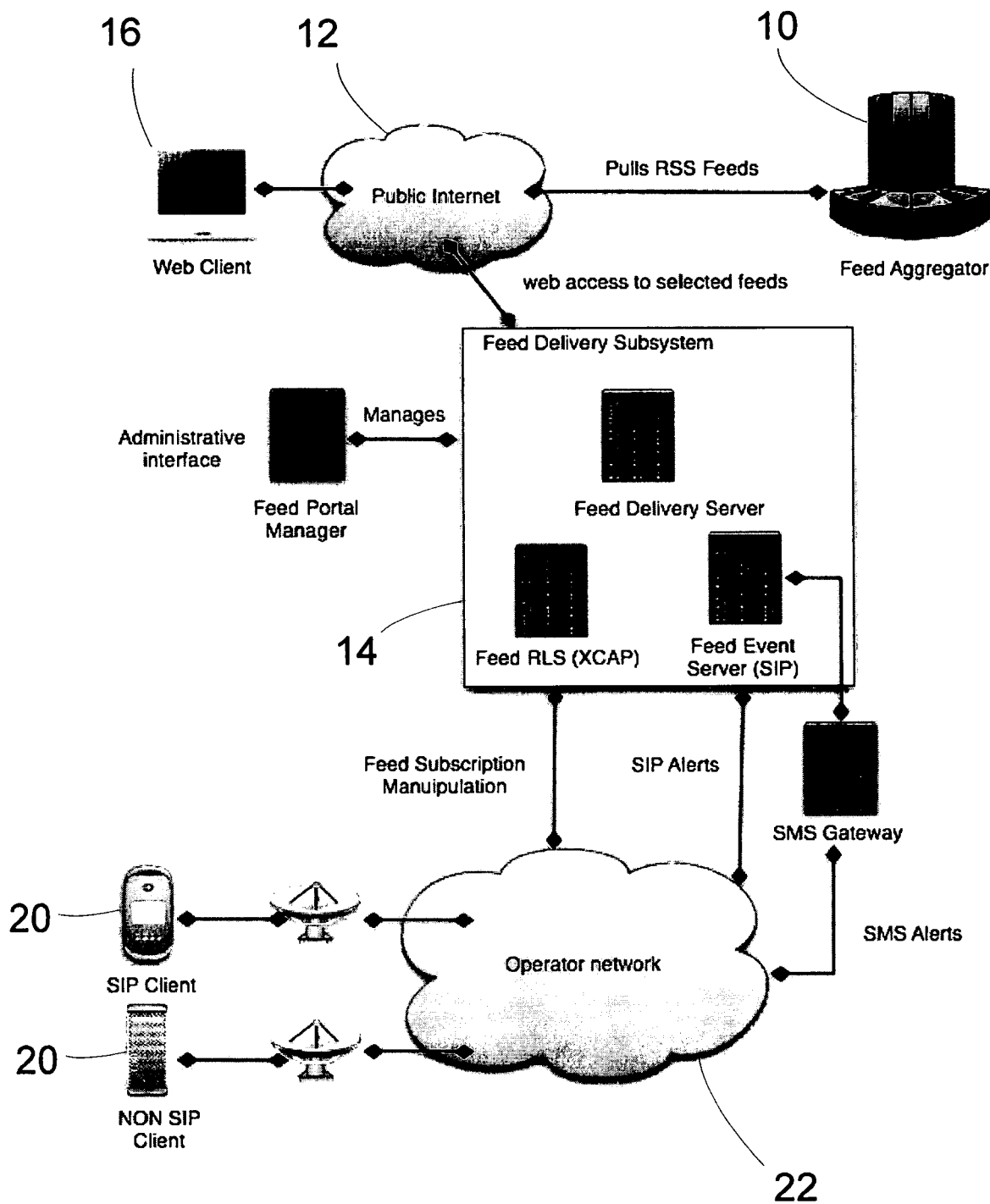


Fig 1

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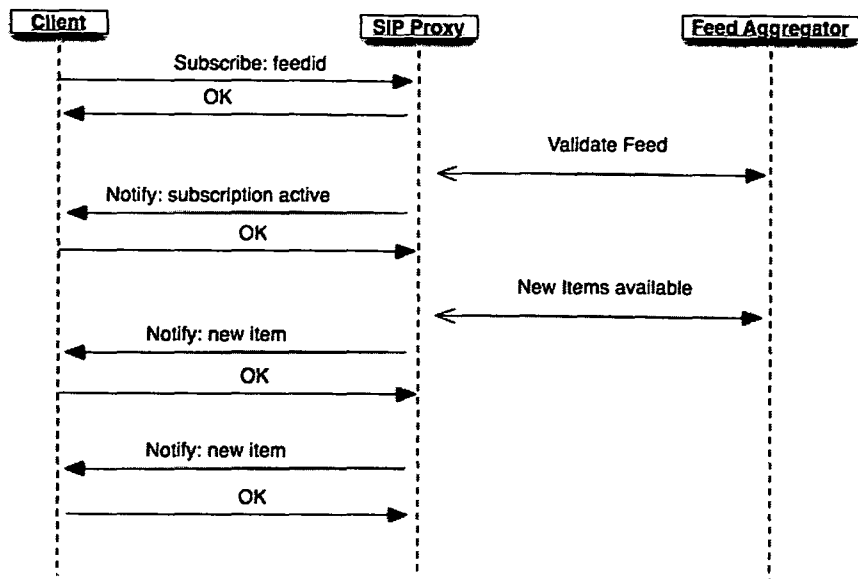


Fig 2

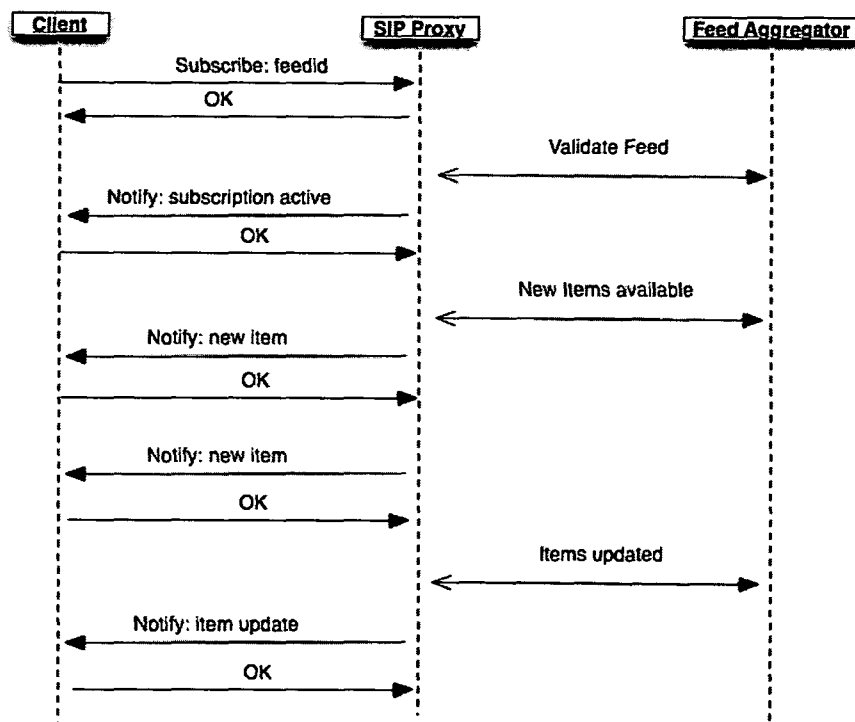


Fig 3

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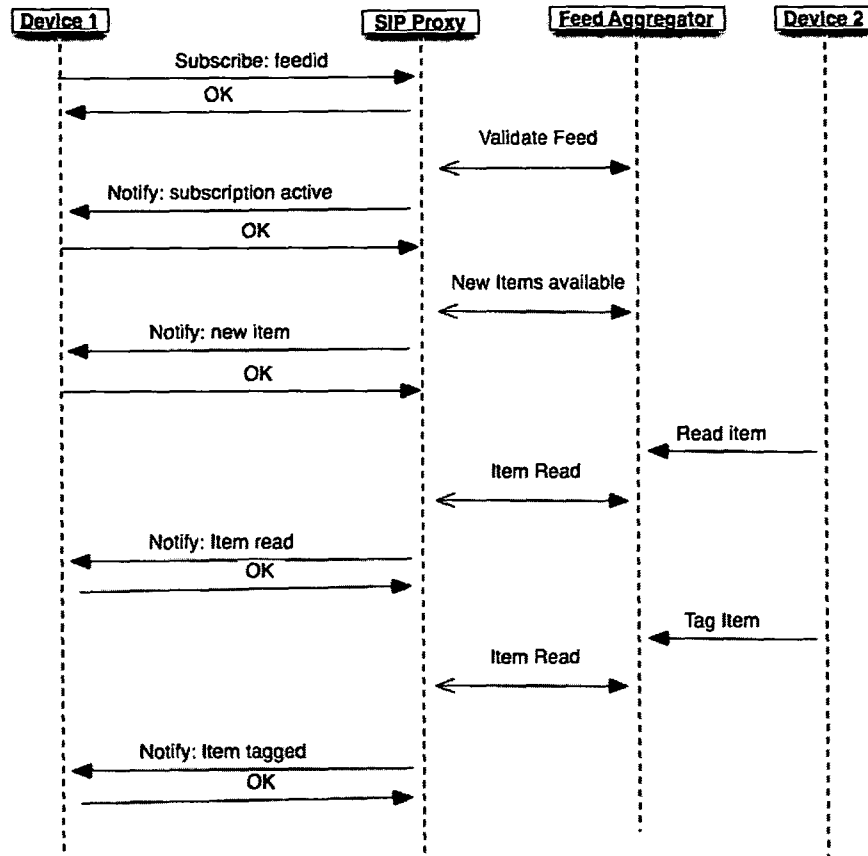


Fig 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2007/007946

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/08 G06F17/30

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 G06F

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, 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 2006/034384 A (NETOMAT INC [US]; WISNIEWSKI MACIEJ [US]) 30 March 2006 (2006-03-30) paragraphs [0039], [0040], [0108], [0113]; figures 1,9	1-28
X	US 2005/289468 A1 (KAHN JESSICA [US] ET AL) 29 December 2005 (2005-12-29) abstract paragraphs [0010] - [0017], [0035] - [0037], [0075], [0099], [0100]	1-28

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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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

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- *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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2007/007946

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
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