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(51) INT CL:
H04W 4/33 (2018.01) ***G06Q 30/02*** (2012.01)
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H04W 4/00 (2018.01) *H04W 4/02* (2018.01)

(56) Documents Cited:
WO 2015/026862 A1 **US 20160275556 A1**
US 20160094946 A1 **US 20160094598 A1**
US 20100080163 A1 **US 20050095999 A1**
US 20010054180 A1

(58) Field of Search:
INT CL **G06Q, H04W**
Other: **WPI, EPODOC**

(54) Title of the Invention: **Tracker application for software and metadata discovery and interaction**
Abstract Title: **Method and Radio Frequency Tracker for Outputting Streaming Media and Tracker Information**

(57) A system for promoting third party content comprising: a radio frequency tracker located in an environment, such as a retail store or musical theatre, a player included in the tracker that outputs streaming media, such as video or music, to the environment; a mobile device which receives tracker information broadcast from the tracker; and a content provider providing content to the mobile device. The tracker information may contain a content provider identifier, and may contain a link to a module downloadable to the mobile device. The module may receive promotions in relation to content associated with the content provider. The user may receive content from the third party provider after confirming the promotions.

Figure 2

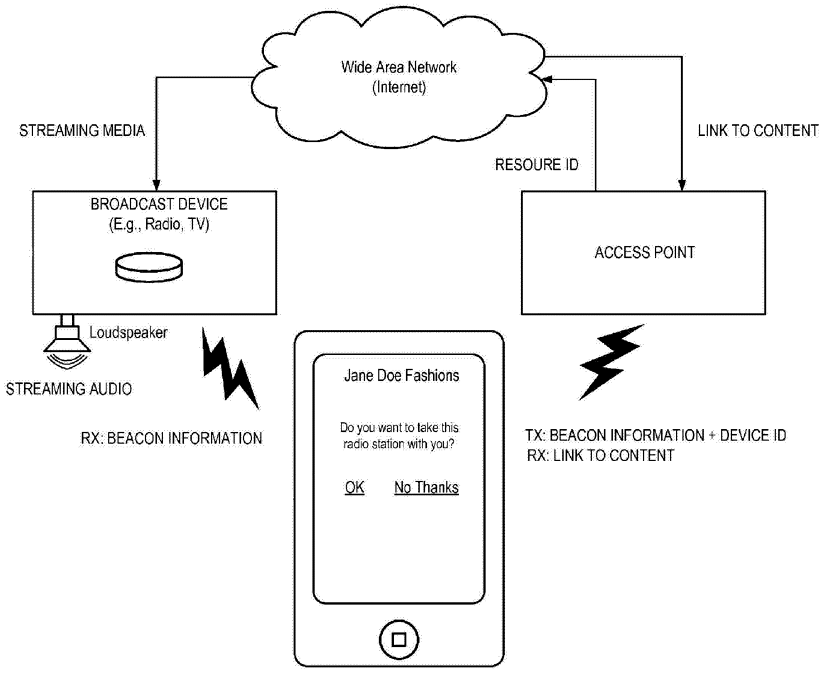

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Figure 1

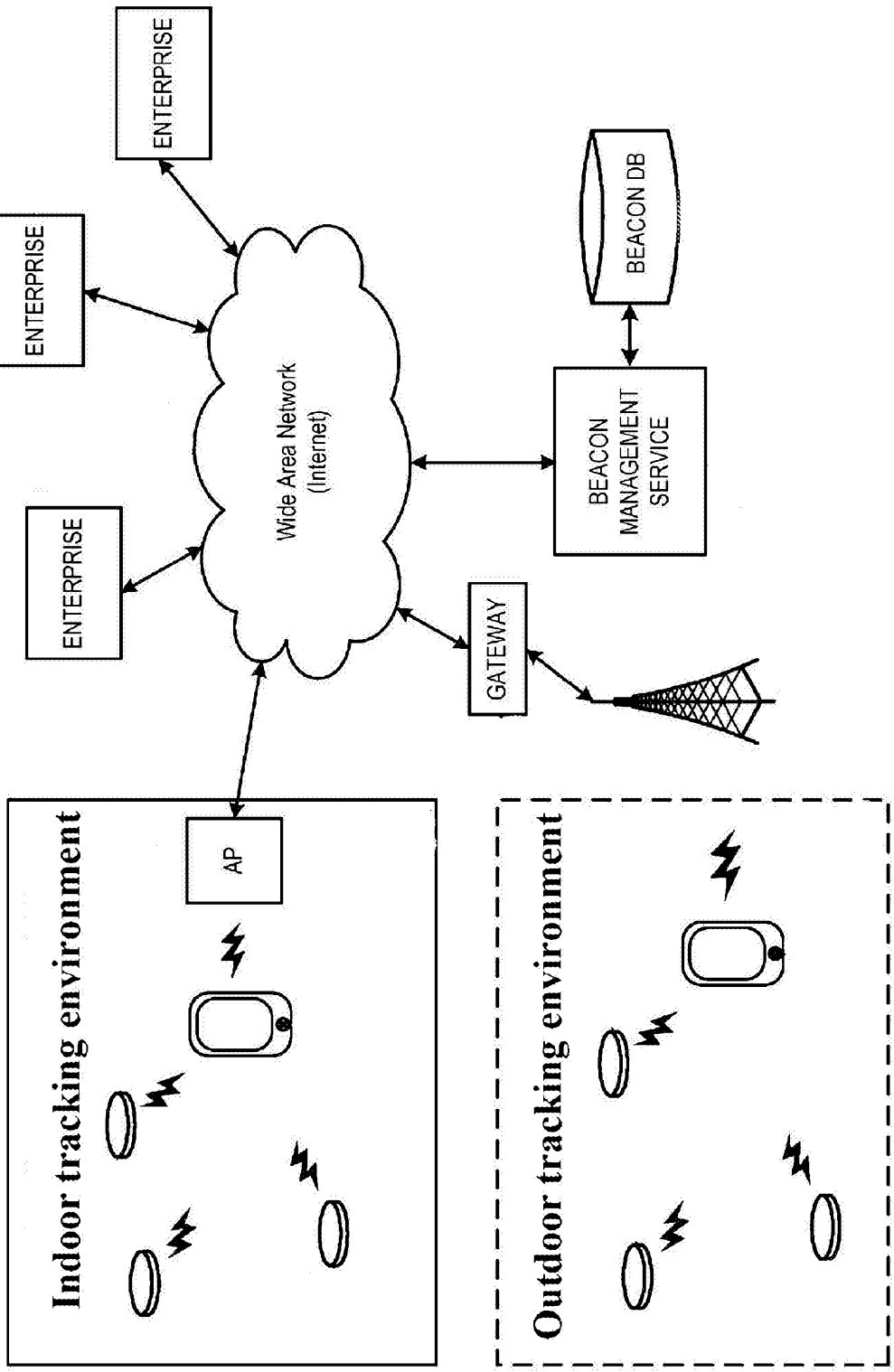
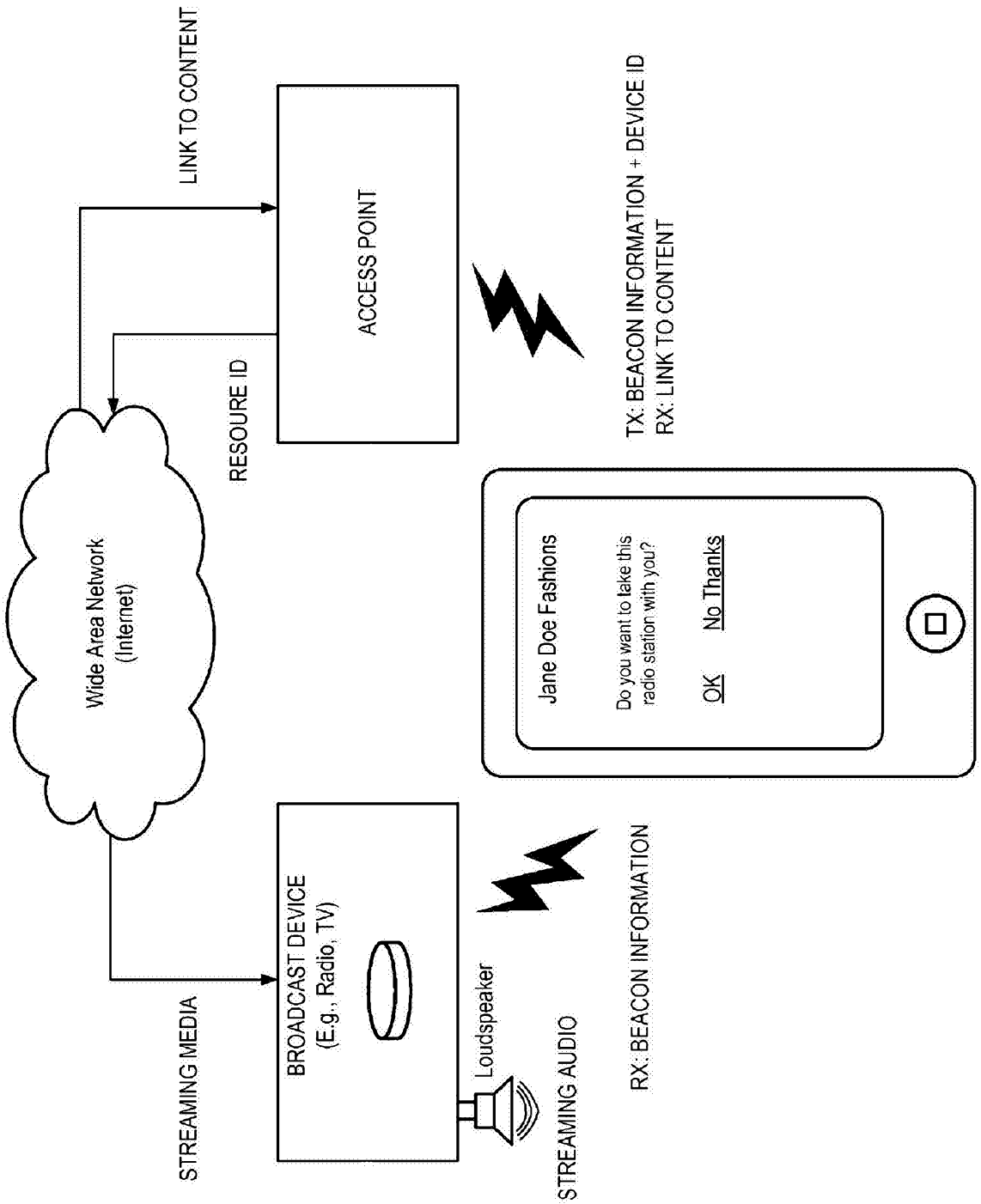

ENTERPRISE
ENTERPRISE
ENTERPRISE
Wide Area Network
(Internet)
BEACON DB
BEACON
MANAGEMENT
SERVICE
GATEWAY
Indoor tracking environment
AP
Outdoor tracking environment

Figure 2


Wide Area Network
(Internet)
LINK TO CONTENT
RESOURE ID
ACCESS POINT
TX: BEACON INFORMATION + DEVICE ID
RX: LINK TO CONTENT
Jane Doe Fashions
Do you want to take this radio station with you?
OK
No Thanks
STREAMING MEDIA
BROADCAST DEVICE
(E.g., Radio, TV)
Loudspeaker
STREAMING AUDIO
RX: BEACON INFORMATION

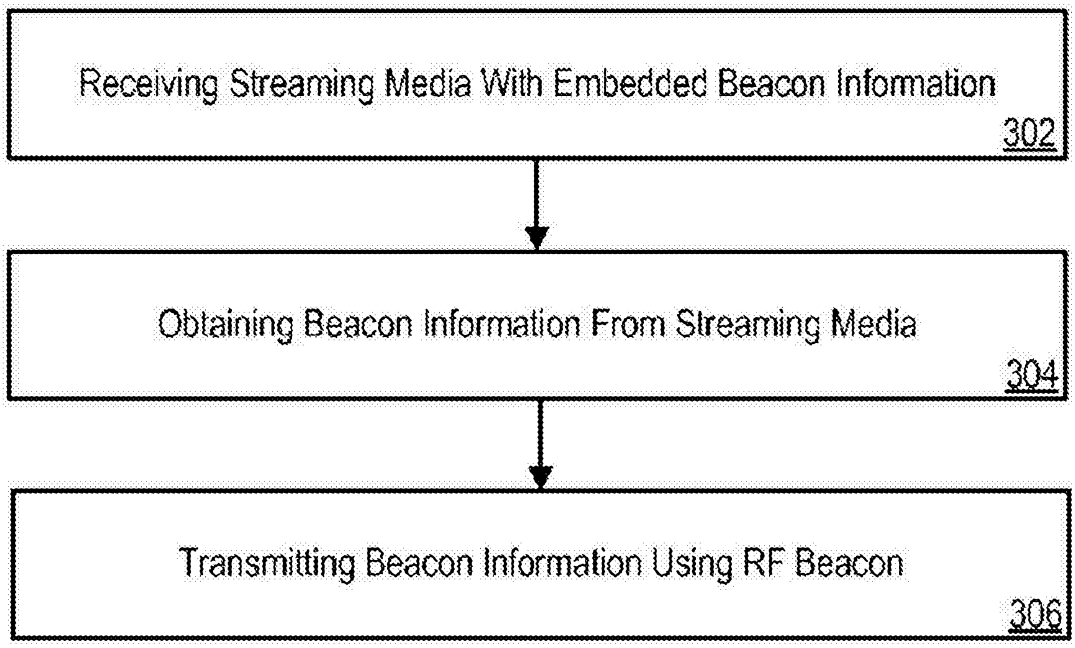

Receiving Streaming Media With Embedded Beacon Information
302
Obtaining Beacon Information From Streaming Media
304
Transmitting Beacon Information Using RF Beacon
306

FIG. 3

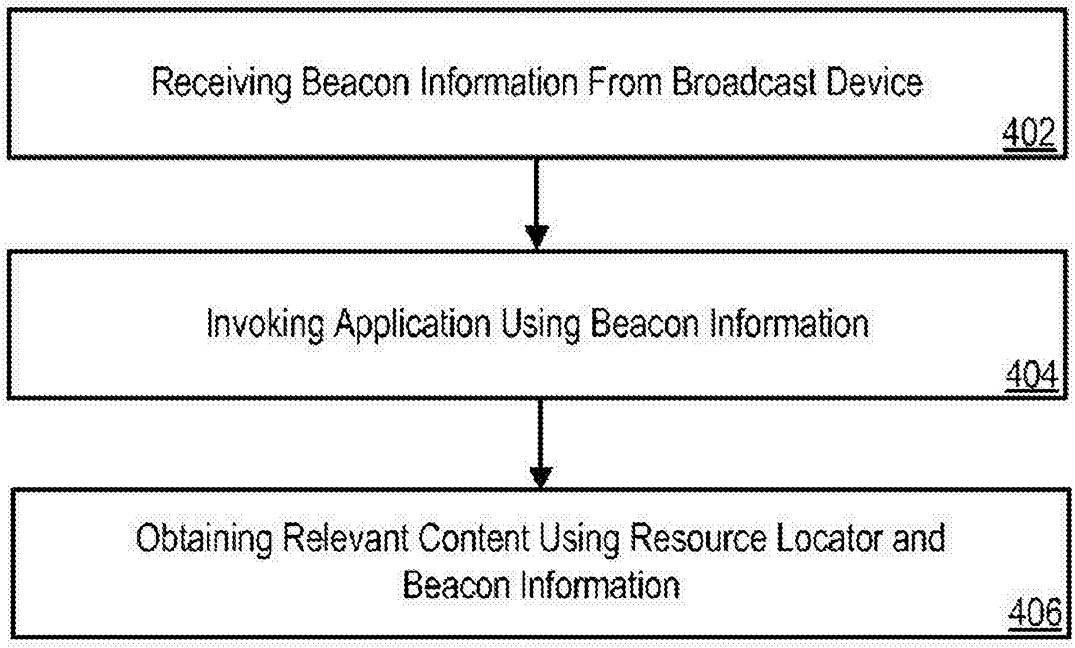

Receiving Beacon Information From Broadcast Device
402
Invoking Application Using Beacon Information
404
Obtaining Relevant Content Using Resource Locator and Beacon Information
406

FIG. 4

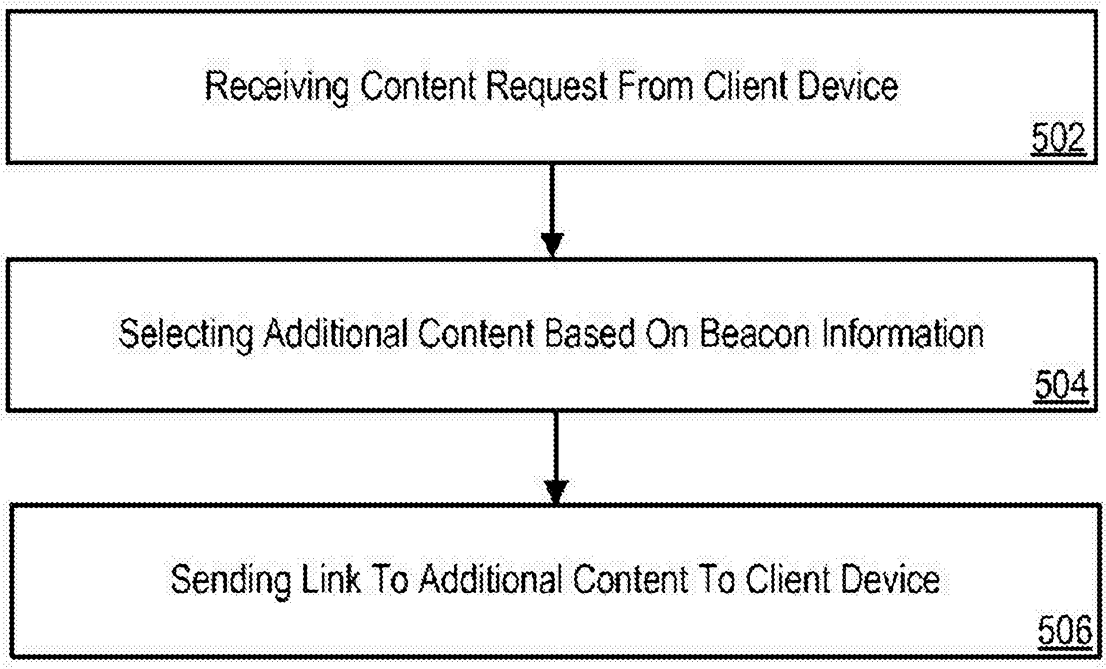

Receiving Content Request From Client Device
502
Selecting Additional Content Based On Beacon Information
504
Sending Link To Additional Content To Client Device
506

FIG. 5

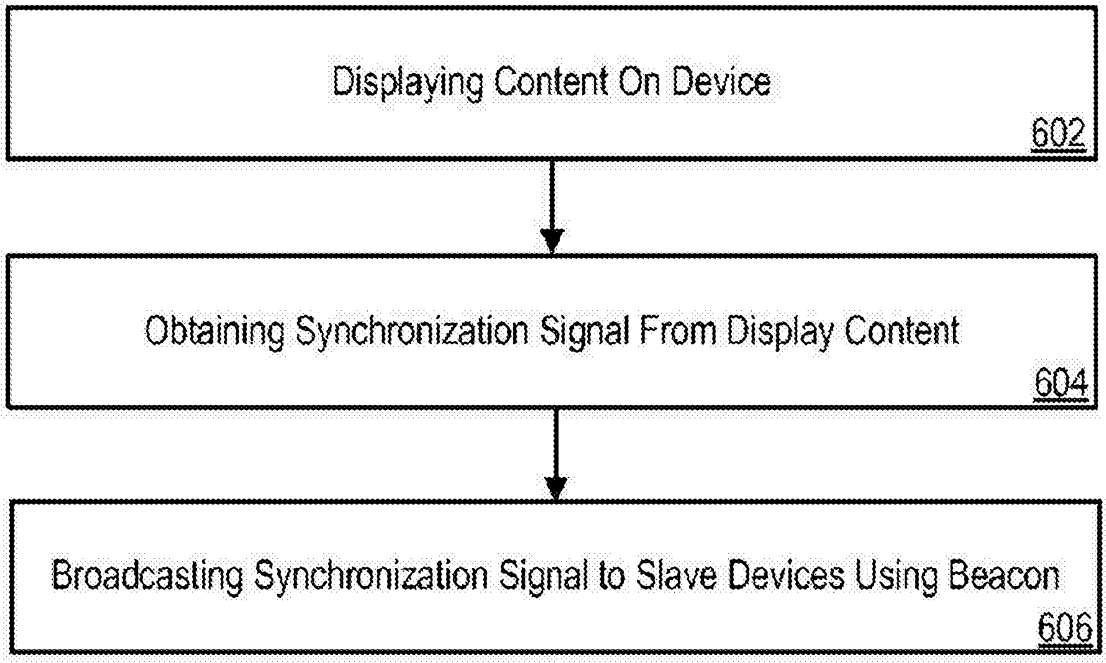

Displaying Content On Device
602
Obtaining Synchronization Signal From Display Content
604
Broadcasting Synchronization Signal to Slave Devices Using Beacon
606

FIG. 6

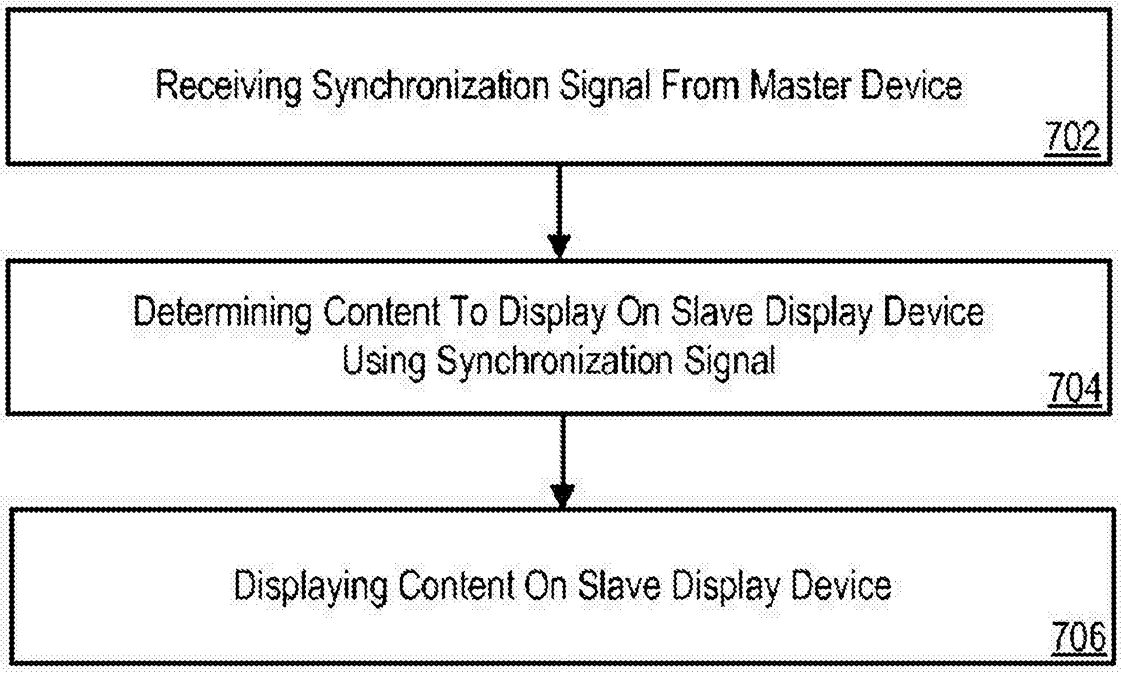

Receiving Synchronization Signal From Master Device
702
Determining Content To Display On Slave Display Device Using Synchronization Signal
704
Displaying Content On Slave Display Device
706

FIG. 7

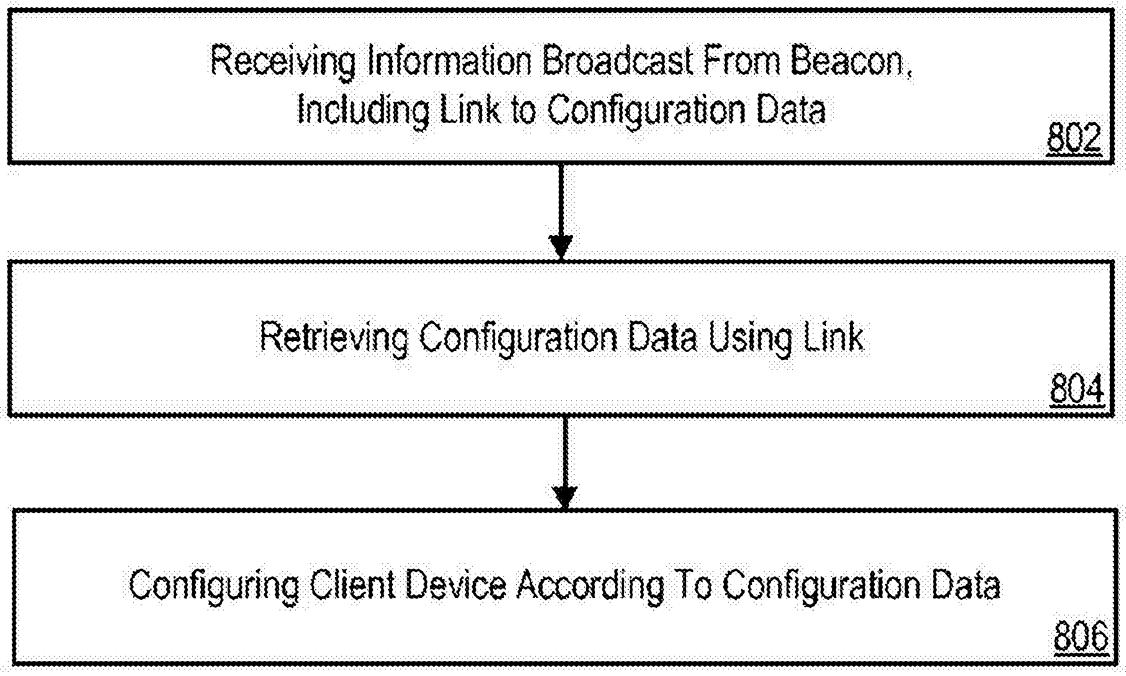

Receiving Information Broadcast From Beacon, Including Link to Configuration Data
802
Retrieving Configuration Data Using Link
804
Configuring Client Device According To Configuration Data
806

FIG. 8

TRACKER APPLICATIONS FOR SOFTWARE AND METADATA DISCOVERY AND INTERACTION

FIELD OF THE INVENTION

This present disclosure is generally related to applications for software and metadata discovery and interaction. Specifically, this disclosure relates to embedding tracker information in stream media, synchronizing the presentation of software and metadata on mobile devices.

BACKGROUND OF THE DISCLOSED TECHNOLOGY

Wireless personalized area network technology that can be used for a variety of client device applications and is intended to provide reduced power consumption and cost while maintaining a similar communication range as short term emission technologies. Many mobile operating systems for short term emission technologies, tablet computers and wearable devices support.

One potential application provided by short term emission technologies is proximity sensing. Tracking devices by employing the technologies broadcast a universally unique identifier, which can be detected by a compatible application or operating system running on a client device and used to determine the physical location of the client device or trigger an action on the client device.

SUMMARY OF THE INVENTION

According to certain embodiments there may be provided a system for promoting third party content or services. In one embodiment, an inventive system comprises a radio frequency tracker located in an environment. The environment may comprise of any environments including a shop, retailer, and a movie theatre. The system also includes a multimedia player included in the radio frequency tracker that outputs streaming media to the environment. The multimedia player included in the radio frequency tracker may be a music player or a video player. The embodied system further includes a mobile device, wherein the mobile device receives tracker information broadcasting from the radio frequency tracker. In the embodiment, the tracker information contains a third party content provider identifier, which contains a link to a module downloadable to the mobile device. After installed to the mobile device, the module may be configured to receive promotions in relation to content associated with the third party content provider.

Consistent with embodiments of the present invention, a method is provided. Steps include outputting streaming media to an environment, prompting a mobile device if a user of the mobile device would like to receive promotions regarding the received streaming media; and contacting a third party content provider to deliver the promotions to the mobile device, after confirming the promotions with the user.

Additionally, another embodiment is provided. A method is provided to promote third party content that comprises outputting streaming media, via a radio

frequency tracker, to an environment. A user is further prompted via a mobile device via the radio frequency from its emitting tracker information download a user application associated with the environment. The radio frequency tracker sends promotions regarding the received streaming media to the downloaded user application, followed by contacting a third party content provider to deliver the promotions to the mobile device. If a user of the mobile device would like to receive said promotions, the mobile device would receive content by the third party content provider to the mobile device.

BRIEF DESCRIPTION OF THE DRAWINGS

Many aspects of the present disclosure can be better understood with reference to the following drawings. The components in the drawings are not necessarily to scale, with emphasis instead being placed upon clearly illustrating the principles of the disclosure. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

Figure 1 illustrates an example centralized tracker management system that includes a centralized tracker management service that provides beacon applications for content discovery and interaction.

Figure 2 illustrates broadcasting tracker information through broadcast devices to facilitate software and metadata discovery and interaction.

Figure 3 is a flow diagram of an example process performed by a broadcast device.

Figure 4 is a flow diagram of an example process performed by a client device.

Figure 5 is a flow diagram of an example process performed by a content provider server computer.

Figure 6 is a flow diagram of an example process performed by a master device communicating with slave devices to synchronize the presentation of content on the slave devices.

Figure 7 is a flow diagram of an example process performed by slave devices communicating with a master device to synchronize the presentation of content on the slave devices.

Figure 8 is a flow diagram of an example mobile device management process performed by a client device to configure the client device.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE DISCLOSED TECHNOLOGY

References will now be made in detail to the present exemplary embodiments, examples of which are illustrated in the accompanying drawings. Certain examples are shown in the above-identified figures and described in detail below. In describing these examples, like or identical reference numbers are used to identify common or similar elements. The figures are not necessarily to scale and certain features and certain views of the figures may be shown exaggerated in scale or in schematic for clarity and/or conciseness.

The present disclosure relates to tracking and verifying authorization for visitors. There is an increasing demand by facilities for information about the visitors that they invite. The compliance movement, in particular, has raised awareness about the ultimate source of visitor that they invite. On site visiting visitors are becoming more desirable than visitors remote accessed from far away, at least for the visitors escorted by employees. Further, facilities have become more fickle about how media access is provided to visitors. Visitors with good credit ratings may be more desirable than visitors that have bad credit ratings. facilities are also more conscious of privacy and security, while data breach victims, identity theft victims, and so on, are perceived negatives. Also, there is a rising awareness of trustworthiness and authorization levels, making it important for facilities to identify the credentials used in their visitors. Visitors whose connection accounts have been compromised may be disfavored. Issues relating to facility preferences apply to trade secret and other categories of confidential data as well.

Tracker device applications for software and metadata discovery and interaction include triggering features in applications, application discovery, embedding Tracker device information in streaming media, synchronizing the presentation of software and metadata on mobile devices and automatic configuration of mobile devices.

In some implementations, a method comprises: receiving, by a device, streaming media; obtaining, by the device, tracker device information embedded in the streaming media, the tracker device information including at least a tracker device identifier and a software and metadata identifier, the Tracker device identifier identifying a radio frequency Tracker device in the environment; broadcasting, by the device, the streaming media into the environment; and concurrently with the broadcasting of the streaming media, broadcasting, by the radio frequency tracker device, the tracker device information into the environment.

In some implementations, a method comprises: receiving, by a device, tracker device information broadcast from a radio frequency tracker device into an environment, the tracker device information obtained from streaming media that is broadcast into the environment concurrently with the Tracker device information, the tracker device information including at least a tracker device identifier identifying the radio frequency tracker device and a software and metadata identifier identifying the streaming media; displaying a text message on a display of the device, where the text message is associated with the received tracker device information; receiving, by the device, user input related to the text message, the user input

requesting delivery of software and metadata associated with the received Tracker device information; sending, by the device, a request for the software and metadata to a software and metadata provider, the request including the Tracker device identifier and the software and metadata identifier; and receiving, by the device, access to the requested software and metadata.

In some implementations, a method comprises: receiving, by a server computer configured for delivering software and metadata, a request for software and metadata from a client device in communication with the server computer, the request including a tracker device identifier and a software and metadata identifier, the tracker device identifier identifying a radio frequency tracker device in an environment and the software and metadata identifier identifying streaming media broadcast into the environment; identifying, by the server computer, a location of the streaming media broadcast based on the Tracker device identifier; identifying, by the server computer, the streaming media based on the software and metadata identifier; aggregating, by the server computer, additional software and metadata based on the identified location and streaming media; combining, by the server computer, the requested software and metadata and additional software and metadata; and providing, by the server computer, the client device access to the combined software and metadata.

In some implementations, a method comprises: receiving, by a master device, information obtained from software and metadata presented on the master device, the information including a synchronization signal associated with the

presentation of the software and metadata on the master device; and broadcasting, by the master device, the synchronization signal.

In some implementations, a method comprises: receiving, by a slave device over a wireless communication link, information obtained from software and metadata presented on a master device, the information including a synchronization signal associated with the presentation of the software and metadata on a master display device; and changing, by the slave device, the presentation of the software and metadata on a slave display device based on the synchronization signal.

In some implementations, a method comprises: receiving, by a mobile device operating in an environment, Tracker device information broadcast from a radio frequency Tracker device in the environment, the Tracker device information including a link to configuration data for the mobile device; and retrieving, by the mobile device, the configuration data; and configuring the mobile device according to the configuration data.

Other implementations are directed to systems, apparatuses and non-transitory, computer-readable storage mediums. Particular implementations disclosed herein provide one or more of the following advantages. The Tracker device applications for software and metadata discovery and interaction disclosed herein allow client devices to discover new software and metadata associated with an environment or event occurring in the environment, and allow the users of the client devices to interact with the software and metadata on the client devices.

Software and metadata providers can use Tracker device applications to target software and metadata (e.g., advertising) to the users of the client devices.

The details of the disclosed implementations are set forth in the accompanying drawings and the description below. Other features, objects and advantages are apparent from the description, drawings and claims.

In some implementations, trackers such as implemented as beacons broadcast beacon information to client devices when client devices, are operating in beacon environments. The beacon information can include content that is relevant to beacon environments and/or an event associated with beacon environments. In some implementations, beacons can be used to trigger notifications that activate features of an application that is running on client devices.

For example, client device can be operating in a retail store and running a shopping application related to the retail store. When a beacon broadcast is received by client device, an advertising page with coupons and/or other information (e.g., a map) can be presented on a display of client device.

In another example application, in response to receipt of a beacon broadcast a social application running on client device can prompt a user of client device (e.g., using a text notification) to "check-in" with their social network.

In yet another example application, in response to receipt of a beacon broadcast, a concert application running on client device operating at a concert venue can display a map of the concert venue.

In some implementations, if an application is not installed on client device, the beacon information can include a resource locator or link (e.g., web address) to a content provider's online store or web site where the application can be downloaded from one or more server computers to client device. The link (e.g., a URL) can include information that directs a browser application running on client device to a specific content page related to the beacon environment. For example, a user at a concert venue can be directed to an "artist page" of an online music store for an artist performing at the concert venue.

In another example application, a user of client device in a movie theatre can be directed by beacon information (e.g., resource locator included in the beacon information) to a content provider (e.g., ticket broker website) where the user can use client device to pre-order tickets for a movie after watching the movie trailer in the theatre. The beacon information can also prompt the user of client device (e.g., with a text notification, vibration) to place client device in silent mode (e.g., "airplane mode") when the feature presentation begins.

In yet another example application, a user at a book reading event or book club meeting can be directed by beacon information to a content provider (e.g., book store website) where the user can purchase a copy of a book and other information related to the book or author.

In some implementations, beacon management service can include a push notification service for pushing notifications to client devices, in response to trigger events. The trigger event can be a beacon discovery or interaction by the client

device. For example, when the trigger event occurs, the beacon (if operating in bi-directional communication mode) or the client device through a different communication channel (e.g., WiFi, cellular service) can send beacon proximity event data to the push notification service. Upon receipt of the beacon proximity event data, the push notification service can send a text message to the client device that includes a link to content and/or informs the user of the client device that an application related to the beacon environment is available. The trigger event could be, for example, detection of a broadcast signal from a beacon by a client device.

In some implementations, client devices can determine their estimated range from a given beacon based on a received signal strength indicator (RSSI) for "Range Class Estimation for Radio Frequency Devices." The type of notification and/or content sent to the client device in response to a trigger event may be different based on the estimated range class (e.g., Immediate, Near, Far) determined by the client device.

CLAIMS:

1. A system for promoting third party content, comprising:

a radio frequency tracker located in an environment;

a player included in the radio frequency tracker that outputs streaming media to the environment;

a mobile device, wherein the mobile device receives tracker information broadcasting from the radio frequency tracker; and

a third party content provider providing third party content to the mobile device.

2. The system of claim 1, wherein the radio frequency is located in a retailed store or musical theater.

3. The system of claim 2, wherein the player included in the radio frequency tracker is a music player or a video player.

4. The system of claim 3, wherein the outputting streaming media is either music or video.

5. The system of claim 4, wherein the tracker information contains a third party content provider identifier.

6. The system of claim 5, wherein the tracker information contains a link to a module downloadable to the mobile device.

7. The system of claim 6, wherein the module, after installed to the mobile device, receives promotions in relation to content associated with the third party content provider.

8. The system of claim 7, wherein the module of the mobile device receives the content from the third party content provider after confirming the promotions.

9. A method of promoting third party content comprising:

outputting streaming media to an environment;

prompting a mobile device if a user of the mobile device would like to receive promotions regarding the received streaming media; and

contacting a third party content provider to deliver the promotions to the mobile device, after confirming the promotions with the user.

10. A method of promoting third party content comprising:

outputting streaming media, via a radio frequency tracker, to an environment;

prompting a user of a mobile device, via the radio frequency from its emitting tracker information, download a user application associated with the environment;

sending promotions regarding the received streaming media to the downloaded user application;

contacting a third party content provider to deliver the promotions to the mobile device, if a user of the mobile device would like to receive said promotions; and

receiving content by the third party content provider to the mobile device.

Intellectual Property Office

Application No:	GB1712485.0	**Examiner:**	Mr Owen Cundy
Claims searched:	1-8	**Date of search:**	19 December 2017

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-8	US 2016/094598 A1 (GEDIKIAN) See whole document.
X	1-8	US 2010/080163 A1 (KRISHNAMOORTHI et al.) See abstract and paragraphs 21-24, 71-73, 84-85, 190-193, 223 & 312-318.
X	1-8	US 2001/054180 A1 (ATKINSON) See abstract, figures and paragraphs 14-17 and 46-64.
X	1-8	US 2016/275556 A1 (VERIZON) See abstract, figures and paragraphs 10-21 & 44-47.
X	1-8	US 2005/095999 A1 (HABERMAN) See abstract, figure 1, and paragraphs 57-75 in particular.
X	1-8	WO 2015/026862 A1 (ESTIMOTE) See abstract, figure 2 and paragraphs 21-33.
X	1-8	US 2016/094946 A1 (KEITHLEY) See abstract and figures, figure 5 in particular, and paragraphs 4-9.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

G06Q; H04W

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
H04W	0004/04	01/01/2009
G06Q	0030/02	01/01/2012
H04N	0021/81	01/01/2011
H04W	0004/02	01/01/2009
H04W	0004/00	01/01/2009
H04W	0004/02	01/01/2009