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(54) Title: A METHOD AND SYSTEM FOR AN AUGMENTED REALITY INFORMATION ENGINE AND PRODUCT
MONETIZATION THEREFROM

(57) Abstract: The present invention is a method and system for monetizing real world goods and services in an augmented reali-
ty environment within a centralized data processing system having at least one remote node. The method associates a set of aug-
mentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of aug-
mented reality images which is representative of a third party interest. In return for making the association between the augmenta-
tion data and the image data, the third party is charged a fee so as effectively monetize the augmentation data.

A METHOD AND SYSTEM FOR AN AUGMENTED REALITY INFORMATION ENGINE AND PRODUCT MONETIZATION THEREFROM

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CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority from U.S. Provisional Patent Application Serial No. 61/287,695 for a SYSTEM AND METHOD FOR DETERMINING A

10 POSITION ON A LOCATION BASED AUGMENTED REALITY INFORMATION SEARCH RESULT LIST GENERATED BY A COMPUTER NETWORK MARKERLESS AUGMENTED REALITY INFORMATION ENGINE, filed December 17, 2009; and, U.S. Provisional Patent Application Serial No. 61/288,683 for a METHOD AND SYSTEM FOR CONTROLLING

15 ENERGY USE IN IDLE MOBILE DEVICE RAM, filed December 21, 2009 the entire contents of each of which is herein incorporated fully by reference.

FIGURE FOR PUBLICATION

20   FIG. 1.

BACKGROUND OF THE INVENTION

1.   Field of the Invention

The present invention relates to a method and system for monetizing real world goods and services in an augmented reality environment within a centralized data processing system. More specifically, the present invention relates to a method and system wherein the system, and its method steps, associates a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of augmented reality images which is representative of a third party interest. In return for making the association between the augmentation data and the image data, the third party is charged a fee so as effectively monetize the augmentation data. The system utilizes a centralized data processing system which, in turn, communicates with a set of one or more energy efficient remote nodes.

2.   Description of the Related Art

The related art involves the field of augmented reality which is the artful blend of real world and computer generated data and imagery so as to enhance a system user's perspective with respect to a location or environment.

Augmented reality generally utilizes video imaging to capture a particular location's real world image and then merges it with a computer generated image to create an augmented image. In contrast to virtual reality, which creates

computer-generated environments in which the user is completely immersed, augmented reality adds graphics, sounds, notes, etc. to a real world image to create a new image. The computer-simulated environment may be a simulation of the real world, or a virtual world. In an augmented reality system, graphics, audio

5   and other sense enhancements may be superimposed over a real-world environment in real-time. Thus, augmented reality is a merged user environment. Users may interact with the augmented environment by using standard input devices such as a keyboard and mouse, or through other devices.

10   What is not appreciated by the prior art is the need to place augmented reality within a standard business model, so as to create a monetizing revenue center. Further, the prior art does not appreciate the need to determining a position on a location based augmented reality result list so as to link a real-time, real world image in an efficient manner, that is energy efficient.

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Accordingly, there is a need for an improved method and system for monetizing augmented reality imaging within a real world context.

ASPECTS AND SUMMARY OF THE INVENTION

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An aspect of the present invention is to provide a an improved method and system for monetizing augmented reality imaging within a real world context

Another aspect of the present invention is to provide a method and system

25 which associate a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of augmented reality images which is representative of a third party interest.

The present invention relates to a method and system for monetizing real world goods and services in an augmented reality environment within a centralized data processing system. The method associates a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of augmented reality images which is representative of a third party interest. In return for making the association between the augmentation data and the image data, the third party is charged a fee so as effectively monetize the augmentation data.

According to an embodiment of the present invention there is provided a method and system for monetizing real world goods and services in an augmented reality environment within a centralized data processing system.

The method begins with associating a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of one or more augmented reality images. The set of augmentation data is representative of a third party interest and may include content such as: advertising; news; notes of interest; directions; or, purchasing links. In return for making the association between the augmentation data and the image data, the third party is charged a fee so as to effectively monetize the augmentation data.

An augmented reality image corresponding to the set of image data is created and hosted by the centralized data processing system. It may be stored locally, or may be stored within a server cloud. After the augmented reality image has been created and associated with a particular set of geographic coordinates, a

set of geographic coordinates associated with a real-time location of a remote node (such as a smart phone or similar communications device) are determined. The remote node is operatively linked to the centralized data processing system.

5   A real world image is received from the device and transmitted to the centralized data processing system where the real world image is converted into a virtual reality object image to be displayed, to a system user, on a monitor of the remote node. At least one set of augmentation data associated with the object is transmitted to the remote node to be overlayed on the virtual reality image to
10   create an augmented reality image. The augmented reality image is displayed on the monitor of the remote node.

The at least one set of augmentation data further comprises at least one data set selected from the group comprising: an image file; an animation file; a
15   text file; an audio file; a geographic mapping (cartographic) file; and, a software routine associated with an action to be performed relative to said augmented reality image.

As the device of the remote node is moved about with its user, the
20   geographic coordinates of the device are updated each time the device is activated. The geographic coordinates of the device are indicative of a content set of the augmented reality image to be applied at each geographic location.

The augmented reality image is indicative of a good or service which can
25   be purchased through a proxy bidding routine associated with the centralized data processing system. The proxy bidding system is a set of routines that link an offer

to buy with an offer to sell and then provides the means for facilitating the monetary exchange.

5   The content of each augmented reality image is entered as content in the form of a set of parameters, and wherein the set of parameters conveys a description. Additionally, the content can provide a means of interfacing with an advertiser of goods or services; the advertiser thus providing a value added to the geographic location being viewed at the remote node.

10   The set of parameters is selected from the group comprising a value associated with a geographic location which is further associated with the augmented reality image. Additionally, the group can include: a value associated with a service, wherein the service is graphically linked to the augmented reality image; a location associated with a store or delivery point for the service or the
15   location; a value associated with a product and/or a service; and, a note pertaining to the augmented reality image.

The system of the present invention comprises a centralized data processing system on the one hand, and at least one remote node on the other
20   hand.

The centralized data processing system further comprises communication means for transferring data between the centralized data processing system and a set of one or more remote nodes. In addition, the system comprises data storage
25   means for storing data corresponding to an image, wherein the image is associated with a geographic location wthin a pre-determined distance from a set of

geographic coordinates associated with a real-time location of the remote node. The data storage means stores data relative to at least one set of augmentation data associated with the set of geographic coordinates.

5   The data storage means, under control of the centralized data processing system, can be located within a server cloud, locally at the centralized data processing system, or within a combination of both.

The system additionally comprises a merging routine for merging the at
10   least one set of image data with the at least one set of augmentation data so as to create a set of one or more augmented reality images.

The remote nodes are linked to the centralized data processing system via the communication means for transferring a set of data from each one of the set of
15   remote nodes. Each one of the set of one or more remote nodes further comprises a micro-controller; a memory for storing a set of parameters associated with said remote device; and, a display for viewing images communicated to the remote device and for displaying at least one set of image data representative of at least one object in a vicinity of the user. In addition, there are provided communication
20   means for communicating with the centralized data processing system, and for receiving, via the communication means, at least one set of augmentation data associated with the at least one object.

The remote node further comprises data entry means for entering data in
25   response to viewing the augmentation data; and, geographic location determining means (such as a GPS system) for communicating a location of the remote node

to the centralized data processing system. The data entry means further can be in the form of: a keypad; a scanner; a camera; and/or a USB port, though these examples are by no means limited to those listed.

5   According to another embodiment of the present invention, the remote node further comprises a random access memory (RAM) memory for use with a central processing unit of the remote. The RAM further comprises a plurality of banks, which in turn comprise a plurality of address blocks. Additionally, the system comprises a circuit for turning power on or off to each one of the

10   plurality of banks in response to a manual or to an automated request. The device has a first routine for scanning the plurality of banks at each instance of an application releasing RAM after a use to determine whether or not any one of the plurality of banks is unused; and, if a bank is empty, then the system removes the empty bank from a list of available banks (free list), and powers off the empty

15   bank. There is also a second routine for repacking used RAM within any bank that is less than fully engaged, so that the RAM is allocated to the address blocks of the individual bank in accordance with capacity and timing requirements.

An aspect of the present invention is to provide a method of reducing

20   energy consumption within a mobile device by optimizing the use of the device random access memory.

Another aspect of the present invention is to provide a structured random access memory that will allow the memory to be sub-divided first into a plurality

25   of banks and then into a series of data address blocks.

The centralized data processing system further comprises a mapping function, wherein the mapping function is for recording a real world image, set of geographic coordinates associated with the real world image, and mapping the real world image relative to a set of images previously stored in the system. The recording of the real world image can be stored at the centralized data processing system, or within a server cloud, or both.

The above, and other aspects, features and advantages of the present invention will become apparent from the following description read in conjunction with the accompanying drawings, in which like reference numerals designate the same elements.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictographic representation of the proposed system and method shown without perspective, or interconnective, communication pathways.

5   FIG. 2 is an exemplary data processing and operative flow of the proposed system and method.

FIG. 3 is a pictorial representation of a user of the proposed system repositioning the displayed augmented reality information in a different recognized urban position.

10   FIG. 4 is a pictorial example of a proposed media pricing placement having location information, distance restriction, variable pricing requirements, and an alternative three-dimensional advertisement with tagged and updatable price and location information.

FIG. 5 is a pictorial example of an urban environment showing a plurality

15   of recognized location tags each lined with an interoperative markerless augmented reality information engine.

FIG. 6 is a block diagram of the remote node and its constituent assembly.

FIG. 7 is a flowchart of the method of the present invention wherein the system is initialized prior to running a start test for optimizing allocation of RAM

20   space.

FIG. 8 is a flowchart of the method of the present invention wherein the system determines the allocation of space based on the free list for optimizing allocation of RAM space.

FIG. 9 is a flowchart of the method of the present invention wherein the

25   system packs RAM in order to be able to optimize allocation of RAM space while shutting down banks of RAM that are not in use.

FIG. 10 is a flowchart of the method of the present invention wherein the method for monetizing real world goods and services in an augmented reality environment within a centralized data processing system is illustrated.

5   **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Reference will now be made in detail to several embodiments of the invention that are illustrated in the accompanying drawings. Wherever possible, same or similar reference numerals are used in the drawings and the description to

10   refer to the same or like parts or steps. The drawings are in simplified form and are not to precise scale. For purposes of convenience and clarity only, directional terms, such as top, bottom, up, down, over, above, and below may be used with respect to the drawings. These and similar directional terms should not be construed to limit the scope of the invention in any manner. The words

15   "connect," "couple," and similar terms with their inflectional morphemes do not necessarily denote direct and immediate connections, but also include connections through mediate elements or devices.

Referring now to **FIG. 1**, an illustrative pictorial view the proposed

20   system 20and method. An illustrative global positioning system (GPS) 1 is illustrated as a satellite graphic but shall be understood to include also links to controlled data processing center 10 and other receiver and transmitter matters to function in a manner known to those of skill in the GPS arts. A data gateway 2 is illustrative of the plurality of known or future developed wireless data

25   transmission systems including 2G, 2.5G, 3G, WiMax, WiFi, Bluetooth, LTE, and any other known wireless data communication gateway. An urban environment

11 is presented with a wall portion of a building façade 8and a floor portion (shown).   An individual user 12 is pictorially represented in the urban environment 11 and is to be understood to possess a mobile computing device 6, optionally in the form of a personal digital assistant having a video or image
5   display function and wireless data communication function.   A plurality of WiFi Routers 3 is presented in urban environment 11 and may be used in the manner below to determine a location of mobile device 6 and an orientation (facing direction) of the device, optionally in combination with GPS system 1 and environmental recognition as will be discussed.

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A camera lens or a plurality of lenses illustrated at 7 is to be understood to be on or associated with mobile device 6 and operates to allow imagery of between a 10 degree to a 360 degree image retrieval of building facades 8 and urban environments 11 (architectural and other features) via a recognition of
15   patches or portions of images 9 of such facades when checked relative to a pre-recorded library of such images 9 stored in an electronic memory center either on mobile device 6 or in controlled data processing center 10.

Based upon recognition of such images as well as imagery analysis a
20   perspective 4 relative to user 12 is generated, and imagery video 5 is recognized relative to images such that an additional 3 dimensional animation feature 5' may be established and integrated in the display on mobile device 6.   It will be additionally understood that mobile device may also display text and project audio tones, and may via interaction with controlled data processing center (or
25   plural centers) 10 may place animation 5' in a real world imagery environment on mobile device 6.

As an alternative embodiment (not shown), mobile device 6 includes a video projection function via a separate projection lens and projection generation system, and the integrated display may be projected.

Additionally, referring now to **FIG. 2**, adaptive steps of the proposed system are discussed. In a first step (A) the location of mobile device 6 is determined by an optional interoperative combination GPS system 1, WiFi router system 3, a cellular system (not shown), camera lens image recognition 7 (discussed above) including building façade recognition 8 and patch recognition 9. It will be understood for example, that WiFi system 3 may be employed in an enclosed building that would otherwise block GPS system 1. Thereafter, in a second step B a step or multiple steps of data transfer occurs via data gateway 2 (single or multiple gateways are to be understood) and thereafter links with controlled data processing centers containing computerized processors, and other data analysis equipment including memory devices.

In a third step C, the location is recognized and the proposed interactive augmented reality information system is initiated, and in a fourth step D the display of the real time video images 5 are displayed in perspective and in a fifth step E a virtual plane 4 in the real image space is established on video images 5, and thereafter in a sixth step F an integrated real time augmented reality information display is presented. Thereafter, during use by operator 12, an interoperative communication system that operates with multiple markerless communications and display systems is maintained during a use phase in a seventh step G. As a result of the proposed system 20, it will be understood by

those of skill in the art that data communication gateway(s) 2 and mobile device 6, WIFI Router systems 3, and each of the other integrated systems continues to communicate and update in real or near-real time, such that data is passed from and to controlled data processing center(s) 10 to support proposed system 20.

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Referring now to **FIG. 3**, an illustrative pictorial view is presented wherein user 12 maintaining a mobile video device 6 operates within a system 20 as discussed earlier, such that, while viewing video image on an established virtual plane in real space on an integrated display, user 12 perceives an animation

10   or video or text presentation 21 that is tagged to the particular place in the real world identified by the recognition process. In such a manner, user 12 may decide to pivot about a direction X such that camera lens 7 on device 6 retrieves a different patch of a new building façade 8 at a new location and thereafter prepares and transmits a new integrated display for user interaction.

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Similarly considering **FIGs. 4 and 5**, alternative uses of the proposed system 20 are pictorially discussed. In Fig. 4, the projected animation, medial, text or video established and placed in an integrated display may have been paid for by a particular media pricing plan at the particular geographic location, and

20   visible (projected) when device 6 is within a set distance of 200 meters. In a different location a consumer beverage product is presented in real time in a real-world integrated image and contains advertising language should user 12 face in that direction.

25   In this manner, the entire integrated system 20 may actually have reference to a wide plurality of markerless tags designated within an urban

environment 11 (see the small squares as representative of reserved tagged locations in buildings, on geographic locations (sidewalks), or at designated tagged locations (such as a vendor cart, particular food provider, etc.).

Additionally, referring now to optional features and specific functional alternatives of the present invention, there is developed for multiple mobile computerized (PDA's) devices different feature sets namely, as follws:

Key differentiator(s): A key differentiator of the proposed system and method is its support for Advertisers. With a key tool, the potential advertisers can have control on their tags such as updating content as often as they want. Advertisers and paying customers also have the exclusive option to upload additional media such as videos and photos. (Common users are limited only to posting text base Space Tags).

A-1. User sign up (in device sign up and registration)

Users are able to sign up and register for access via their mobile device. Information is stored in a central database of a controlled data processing center. Information collected are preferably at least the minimum below:
- Username
- Password
- Email address
- Age group
- Male female

There is also a security check routine to avoid 'bots and spammers.

A-2. Create and share Virtual Posts (Space Tags)

By tapping on a designated virtual linked space on the screen a user can create a personal virtual post (VP). This VP is presented in textual form and in a limited number of characters. After creating this VP a user encouraged to attach meta tags to the form. ie. Food, place of interest, shopping etc some meta tags can be created as well. It should be marked private or public as well.

Private tags or posts are limited to a specific user's mobile device and/or within their social network. Public tags or posts are uploaded to a central database in a controlled data processing center and are queued for approval. Approval is necessary to filter any inappropriate words, or grammar. Once approved, all users are able to view these posts, the author of the linked tag, and other details.

A-3. Intuitive User Experience

The system utilizes bespoke UI elements.

A-4. Filtering

The system includes extensive filtering mechanisms to avoid clutter in a mobile device's small screen. Filters are turned on by default and only display macro defined points of interest and recorded personal tags, unless the system user changes these settings. The main objective of these filters is to avoid an

unpleasant user experience where people are overwhelmed with a lot of content on a small screen.

Filters include at least the following :

- Points of interest: these include public places such as: Big Ben; the Statue of Liberty; hospitals; schools; etc.

- Shopping: includes places that sell commercial goods: ie. clothes, electronics; furniture; etc.

- Food: includes: cafes; pastry shops; drink stations; bars; etc.

In addition to the above filters, there is also a filter in terms of distance. Distance is measured at system designated intervals such as: 10 meters; 25 meters; 50 meters; and, 100 meters. When toggled at a specific distance, this filter will only show tags available in the determined given distance region.

A-5. Language

Multiple language capability is available within the system by selecting a program mode during initialization.

A-6. Tracking

The system application supports tracking which is measured by user clicks of a specific tag. Generally, tags that are categorized in the initial 3 classifications which are: Points of Interest (POI), Shopping (SHP), and Food (FD) are included. Tracking is vital for advertisers to decide where to place their communication materials.

As a user taps or initiates a post, this will register a "user click" that will automatically be uploaded to a central server that handles tracking.

A-7. Content Management System (CMS) Tool

This is a web based tool that collects all types of data from the System application. The CMS tool is our interface on everything the System app uploads to our controlled central data processing server ie. Tracking, User profiles etc. The controlled data processing center will also contain electronic memory code sufficient to operate as an interface for editing tags and moderation. With this computer interaction tool we can remove existing tags/posts that contain inappropriate content or anything as such.

A client side version of the application will empower clients to instantly update their posts on the fly (i.e., 'John' can update his post on daily specials at his bistro by logging on to this tool. John can also upload specific amounts of images for users to see).

B-1. Wifi Triangulation

WIFI triangulation is a core technology that enables a device equipped with WIFI (such as a smart phone) to determine its current location without the assistance of GPS. This technology uses WIFI information sent from WIFI access points, enabling a device to determine its location even indoors or underground, where it might normally not be possible with GPS.

This technology in addition with other technologies will enable System to know where your location regardless if you are indoors or outdoors.

B-2. Navigation

This feature enables the system to guide users to specific locations via the Mobile Internet Device's GPS and digital compass modules. It gives users basic instructions - such as remaining distance and directional assistance. The purpose of this feature is to provide users with an approximate direction.

B-3. Animated Space Tags

Animated Space Tags are special icons used for paying customers. This can either be limited for aesthetic use, or could serve as a call to action. Though the system will provide multiple icon sets, animated icons are limited to customers who subscribe to the System service. This will differentiate them for the multiple tags that populate the system.

B-3. Location Sensitive Announcements

"In vicinity" announcements or location sensitive announcements are displayed via dialog boxes that will first be in a form of a notification on the top part of System. Upon user interaction a pop-up dialog box will appear that can display announcement and/or information.

Technology behind this will be a combination of GPS data, WIFI triangulation and/or Bluetooth or other wireless signals.

B-4. Social Networking Service

This feature will enable the system to perform a low level basic SNS. SNS in the system will enable users to:

- Share tags/virtual posts
- Comment on other users virtual posts
- Share/send places of interests
- Create a rendezvous post where it can be sent to multiple participants.

B-5. Location Sensitive Mode:

The system features two modes: a standard GPS Map mode and a location sensitive mode (LSM).

Map mode is where the system relies heavily on the mobile device's built in sensors to display where the POIs (points of interest) are. This mode is less accurate but can cover wide area. In this mode System using the Mobile Internet Device's (mobile internet device/mobile device) sensors will be able to detect certain POIs that might not be visible to the naked eye (for example, ABC pizza -20 meters from your location). While it can be said that it is not accurate because it cannot be seen, a user will have the ability to 'scout' the given area of places he might be interested in with this type of mode display.

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An LSM is where the system technology maps a given space detecting its spatial patterns and shape to distinctly display the tags and posts. It does not rely solely on the Mobile Internet Device's sensors; but, rather it uses spatial recognition in addition to the available hardware sensors. As a result, tags are displayed accurately where they should be.

B-6. Marker Ads support:

The system has the ability to augment 3D objects, videos, or additional information from physical spaces such as posters, magazine ads, or other print collaterals. By detecting 3D markers on various print collaterals, the system can pull data from the central server and augment objects to the urban space with the use of a Mobile Internet Device such as a smart phone.

The current invention supports a plurality of modes for monetizing the proposed system and method, including the use of bidding by advertisers and other forms of product placement and/or automated purchasing,

Client Management Tool:

To make the platform attractive to potential advertisers, a smart client management system (CMS) is employed for the proposed platform system. As with most Web 2.0 websites, a CMS allows companies to update their own websites' content without the help of the web developer. Simple tasks such as

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adding image assets or changing content can easily be achieved with no expense by the client, although a charge may be optionally applied.

This approach could be beneficial for the proposed platform system. By employing a robust, easy to use CMS, clients will be attracted to advertise with this platform. Monetization could come from a monthly (time based) subscription, or on a "per click" basis.

Messaging Tool: There will be a native messaging tool inside the proposed system and platform. This will act as a viral trigger, with a messaging tool natively embedded users will be able to share information that they have discovered directly to their network. For example: "Joe's pizza is having a buy 1 get 1 promo" — users can share this info directly with friends as an SMS, email, or as a SS message alert.

Monetization Method

1.   Augmented tags/augmented adverts where clients can post geographic or architecturally sensitive tags or posts near their business establishments (restaurants, cafes, small shops, e.g., actually install trigger tags or recognized by the proposed reorganization process, etc) that can be easily updated through the CMS. A scenario would be: with a restaurant owner. The owner can place a tag on the vicinity of establishment that features daily specials and promotions. When a user is within the vicinity, through a "My Lens" feature, a public user will be presented with the tag and the user can click on the tag and see the daily lunch specials that the owner has available. Information can be updated "on the fly" via

the CMS tool and the controlled data processing center. Where the owner simply needs to go to a secure private address, the owner enters their credentials and updates the post.

5   Because information is updated regularly, users will have the novelty of checking it often resulting in a true way for the client to communicate to the customers through AR

2.   Augmented 3D objects from adverts/print: This is similar to the standard AR practice proposed. The system would 3D product renditions or short movie clips to printed collaterals (posters, magazine pages, billboards etc.) and users are informed that the print material is AR enabled. Users point mobile device and can instantly interact with the augmented object. Optionally, a call to action can be embedded that will direct users to a website and for this method CMS tool is non-applicable.

3.   AR games: AR games can be simple but engaging with a high frequency of   replay-ability   and   long   shelf   life   (see   for   example: http://geishatokyo.com/jp/ar-figure/figure.html the entire contents of which are incorporated herein by reference). AR geisha is a simple example. Point the Mobile internet device (MID) in the marker in front of you and pops out a virtual geisha on the image screen. The proposed system uniquely enables interaction with an enabled virtual object (VO) via multi touch from the MID screen. Thereafter, users can have additional interactivity when they are provided with an "add-on" marker. (in the case of an exemplary AR geisha, the additional markers project a "hand" that can interact with the geisha).

4.   Interactive AR objects: Employing this type of system users and system managers can virtually place interactive AR objects wherever the clients want, i.e. Is ad space too expensive in Times Square? Not to worry, we can provide a more cost efficient alternative. Through the proposed system, advertisers can place their product inside the augmented version of Times Square, at a particular recognized location, height location, or other placement. AR objects can include a call to action function routing users to a website. Alternatively, or additionally, a CMS tool can be use to add/update information upon interacting with the VO

5.   Tourism/Government: Another avenue of revenue generation would be to receive contracts from a government entity. For example, the system could include electronic tags to public toilets, train stops, tourist spots accompanied by informative notes, police stations, hospitals, or other public details. The CMS tool would be used here.

Alternatively a proposed social interaction system is a Client Management System (CMS) tool that is proposed to allow users to connect themselves into a social network. Here, system users could sign up, update their profile, add friends, show where they have put their air tags, share these air tags with friends, save places where they have been, create avatars, see information that advertisers post, receive updates, or take other actions as may be desired, either via the user's PCs at home or their Mobile Internet Device (MIDs).

As an additional feature which may generate a revenue stream, the proposed social system may be used with AL Pro clients to provide access to so-

called professional or 'high level' features that allow a user to add or edit your own air posts or air ads limited to your registered location. QP can charge a monthly rate for this. With AR Pro clients can also track click rates and traffic of their post. Clients can see how many people has stopped and took interest in

5   his/her post. AL pro will give clients the power to measure if their investment are well utilized.

The proposed professional level service would also enable clients to turn on the comment feature for their air posts. With this the public can comment on

10   the restaurant etc., what the client can not do is to edit out comments from the public.

The proposed optional system and method is the world's first automated advertising platform for augmented reality (augmented actual 3-dimensionally

15   identified object-type imagery) on the mobile platform. In one optional embodiment, a mobile data processing platform comprises a Linux operating system and user interface with recognized APIs for 3rd party application developers to create augmented reality applications running on any one of the conventionally known mobile platform. One specific point of novelty for the

20   proposed invention is the system operating to determine where the exact position of advertisement or information inserts in the real world urban environment based upon how a camera lens or a plurality of lenses on a mobile device recognize a respective architectural reference such as a building or sign, streets, people and in turn convert the imaged and acquired data (via the lens) patterns into patches of

25   images, saved on the mobile, transmitted to the controlled central data processing center or server for processing before the server sends back corresponding content

(video, text, music, 3D object...etc) sourced from an electronic storage memory location back to the mobile device to be placed into the displayed electronic scene.

5   Another proposed process, system, or method in determining the exact position and importantly orientation (direct facing) for a 3D/video content to be placed in perspective is to map out the scene through a computer pattern recognizing process which recognizes designated architectural features or building features that are pre-stored in a digitized pattern manner and accessed. 10   Based upon this pattern recognition the proposed system and method determines via accessing a computer accessible memory storage media the exact location of content placement in the panoramic world initially imaged and depicted on the display.   The integrated system of GPS, Digital Compass, Accelerometer, and WiFi signal location methods are used to determine (i) the physical location of the 15   mobile device/user, and optionally (ii) an orientation as a prerequisite prior to content placement.   Once a physical location is determined for the mobile device/user on both the street and in the panoramic view, the mobile device would send back a signal to the central server (controlled data processing center) asking for further display content, then the central server would go through its index of 20   information and advertisement to determine appropriate content related to the location and then post and display the content relative to a predetermined virtual plane in the display reality.

          This system allows advertisers to login to an account, have the credit card 25   on file for automated payment, determining the location of advertisement placement in a 3D computer generated environment on the PC, creating an

Advertising campaign and then activate the campaign or a portion of the campaign online. Certain locations may have multiple advertisers bidding against each other, the system allows such process to take place via proxy bidding model.

5   Augmented Reality in the proposed context is to be interpreted broadly and inclusively to mean an accurate overlay of digital content (3D object, video, music, text) on a live stream of video data displayed.

          The pattern matching part of the process signified the term "Markerless".

10

          Optional technologies that may be optionally employed in a development of the proposed system and method; and, include optionally a PTAM (Parallel Tracking and Mapping for Augmented Reality platform system), or a PlaceEngine (WiFi Triangulation). For a non-limiting example, a panoramic Tracking for

15   Mobile Phones (image pattern matching) may be utilized; or, a natural feature tracking system may be employed as well.

          Those of skill in the related arts, including the arts of advertising, multimedia, wireless communications including blue-tooth® type or other

20   standard related communications, computer programming, device application writing, and related technologies shall understand, having studied the enclosed discussion, that the phrase augment reality (or markerless automated reality) is broadly descriptive of the proposed systems or methods and can be understood by the non-technical reader to indicate the resultant product (image) appreciated by

25   an end user when operating the proposed system or method. In a simplified example, a hand held display may indicate both a background camera-sourced

image and further may include an additional visual image to 'augment' the image, so that the user can appreciate both in a combined manner. Additional examples may add moving visual images that may also optionally link or string to executable tasks in the manner suggested herein. This phrase is to be interpreted

5   inclusively and not in an excluding manner.

As further understood by those of skill in the various arts the use of the phrase data gateway or communication cloud is used broadly as a communication technology including hardware such as receivers and transmitters as well as

10   individual data processing centers, such that any manners of communication (2G, 3G, Bluetooth, WiFi, WiMax, LTE, 2.5G, and any others communication technologies known to those of skill in the art) shall be inclusive as to purpose even if types of data transmission, compression, code, standards, or other differences exist. This phrase is to be interpreted inclusively and not in an

15   excluding manner.

As will be further understood by those of skill in the various arts having read and understood the entire disclosure, the broad descriptor phrases mobile device or mobile signaling device shall be interpreted broadly to include all

20   communication-capable devices having a computerized data processor or data signaler of any type, including without limitation currently known RFID devices, mobile or static wireless signal identifiers, hand held personal digital assistants (PDA's), video phones, mobile phones, and wrist-based or hand-based wireless communication units. This phrase is to be interpreted inclusively and not in an

25   excluding manner.

FIG. 6 is a block diagram of the mobile device 10 and its constituent assembly. The mobile device 10 has a central processing unit (CPU) 15 which in turn has random access memory (RAM) storage 17 that is subdivided into a plurality of banks (a though n). These banks in turn are subdivided into data

5   address blocks. The blocks accept data as allocated by routines 19(a through n) through the CPU 15.

Turning then to **FIG. 7**, there is shown a flowchart of the method of the present invention wherein the system is initialized prior to running a start test for

10   optimizing allocation of RAM space.

The flow begins with initialization at step 100 before advancing to step 102 where all RAM within the system of banks is placed in an "on" state. A testing routine tests the RAM for continuity and possible corruption at step 104

15   before turning the RAM off at step 106.

When the RAM has been placed in an "off" state, a first individual bank comprising the RAM is then activated at step 108 prior to boot-up of the system at step 110. From step 110, the system moves into a post start-up state at step 112.

20

In **FIG. 8**, there is shown a flowchart of the method of the present invention wherein the system 10 determines the allocation of space based on the free list for optimizing allocation of RAM space.

25   The flow begins in the post-start-up phase at step 120 before advancing to step 122 where the system requests RAM allocation from the system operating

system. From step 122, the flow advances to a query at step 124 which asks if the system is requesting the "free list" which is a listing of the available banks of space reserved for the use of RAM. If the response to the query is "YES", then the flow advances to step 126 where the system will allocate available space within a bank by making an appropriate amount of address blocks within a bank available. From step 126, the flow advances to step 128 where the system recognizes that the RAM sequence is complete.

If, however, the response to the query at step 124, is "NO", then the flow advances to step 130 where one additional bank will be turned on within the system. Essentially simultaneously, the system will advance to steps 134 and 132. At step 134, the system will recognize that the RAM sequence is complete, but that the allocation was denied. While at step 132, the system will add an additional bank to the free list before returning to re-enter the flow in fron of the query at step 124.

FIG. 9 is a flowchart of the method of the present invention wherein the system 10 packs RAM within an individual bank by re-allocating address blocks in order to be able to optimize allocation of RAM 17 space while shutting down banks of RAM that are not in use.

The packing begins at step 140 before advancing to step 142 where the system will process release of RAM space to the operating system. From step 142, the system will advance to step 144 where the free list is scanned so as to be able to determine which banks have available space within their address blocks.

The address blocks will accept data and place it based on a timing sequence, so that the space is allocated efficiently.

The flow advances from step 144 to the query at step 144 which asks if the entire bank is free. If the response to the query is "NO", then the sequence is determined to be complete at step 152. However, if the response to the query is "YES", then the flow will advance to step 148 where the whole bank will be removed from the free list and then turned off at step 150 to reduce the energy footprint of the device 10. When the bank has been turned off, the flow returns to re-enter the flow in front of the query at step 146.

In the claims, means or step-plus-function clauses are intended to cover the structures described or suggested herein as performing the recited function and not only structural equivalents but also equivalent structures. Thus, for example, although a nail, a screw, and a bolt may not be structural equivalents in that a nail relies on friction between a wooden part and a cylindrical surface, a screw's helical surface positively engages the wooden part, and a bolt's head and nut compress opposite sides of a wooden part, in the environment of fastening wooden parts, a nail, a screw, and a bolt may be readily understood by those skilled in the art as equivalent structures.

Having described at least one of the preferred embodiments of the present invention with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various changes, modifications, and adaptations may be effected therein by one skilled in the art without departing from the scope or spirit of the invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1.   A method for monetizing real world goods and services in an augmented reality environment within a centralized data processing system, said method comprising the steps of:

(a)   locating a set of geographic coordinates associated with a real-time location of a device, said device being linked to said centralized data processing system;

(b)   receiving a real world image from said device at said centralized data processing system;

(c)   converting said real world image into a virtual reality object image to be displayed, to a system user, on a monitor of said device;

(d)   displaying at least one set of image data representative of at least one object in a vicinity of said user;

(e)   receiving, via said link, at least one set of augmentation data associated with said at least one object;

(f)   merging said at least one set of image data with said at least one set of augmentation data so as to create a set of one or more augmented reality images; and

(g)   displaying at least one of said set of augmented reality images on said monitor.

2.   The method of claim 1, wherein said at least one set of augmentation data is determined as a function of at least one feature descriptor determined from said image data.

3.   The method of claim 1, wherein said geographic coordinates of said device are updated as said device is activated.

4.   The method of claim 3, wherein said geographic coordinates of said device are indicative of a content set of said augmented reality image.

5.   The method of claim 1, wherein said augmented reality image further comprises a set of data representative of a value added, said value added associated with said augmented reality image.

6.   The method of claim 1, wherein said augmented reality image is indicative of a good or service which can be purchased through a proxy bidding routine associated with said centralized data processing system.

7.   The method of claim 5, further comprising the steps of:

        (a)   entering content in the form of a set of parameters, said set of parameters conveying a description; and

        (b)   providing means for interfacing with an advertiser of goods or services, said advertiser providing said value added.

8.   The method of claim 7, wherein said set of parameters is selected from the group comprising:

        (a)   a value associated with a geographic location further associated with said augmented reality image;

        (b)   a value associated with a service, said service graphically linked to said augmented reality image;

(c)   a location associated with a store or delivery point for said service or said location;

(d)   a value associated with a product;

(e)   a value associated with a service; and

5   (f)   a note pertaining to said augmented reality image.

9.   The method of claim 1, wherein said at least one set of augmentation data further comprises at least one selected from the group comprising:

(a)   an image file;

10   (b)   an animation file;

(c)   a text file;

(d)   an audio file;

(e)   a geographic mapping (cartographic) file; and

(f)   a software routine associated with an action to be performed

15   relative to said augmented reality image.

10.   A system for monetizing real world goods and services in an augmented reality environment, said monetizing system comprising:

(a)   a centralized data processing system; said centralized data

20   processing system further comprising:

(i)   communication means for transferring data between said centralized data processing system and a set of one or more remote nodes;

(ii)   data storage means for storing data corresponding to an image, said image associated with a geographic location wthin a pre-determined

25   distance from a set of geographic coordinates associated with a real-time location

of a device, and for storing data relative to at least one set of augmentation data associated with said set of geographic coordinates;

        (iii)   a merging routine for merging said at least one set of image data with said at least one set of augmentation data so as to create a set of one or more augmented reality images; and

        (b)   said set of one or more remote nodes, said remote nodes linked to said centralized data processing system via said communication means for transferring a set of data from each one of said set of remote nodes, each one of said set of one or more remote nodes further comprising:

        (i)   a micro-controller;

        (ii)   a memory for storing a set of parameters associated with said remote device;

        (iii)   a display for viewing images communicated to said remote device and for displaying at least one set of image data representative of at least one object in a vicinity of said user;

        (iv)   communication means for communicating with said centralized data processing system, and for receiving, via said communication means, at least one set of augmentation data associated with said at least one object;

        (v)   data entry means for entering data in response to viewing said augmentation data; and

        (vi)   geographic location determining means for communicating a location of said remote node to said centralized data processing system.

11.   The system of claim 10, wherein said data storage means, under control of said centralized data processing system are located within a server cloud.

12.   The system of claim 10, wherein said data entry means further comprises means selected from the group comprising:

 (a) a keypad;

 (b) a scanner;

5 (c) a camera; and

 (d) a USB port.

13.   The system of claim 10, wherein said geographic location determining means is a selected from the group comprising:

10 (a) a GPS system;

 (b) a WIFI-based system.

14.   The system of claim 10, wherein said at least one set of augmentation data further comprises at least one selected from the group comprising:

15 (a) an image file;

 (b) an animation file;

 (c) a text file;

 (d) an audio file;

 (e) a geographic mapping (cartographic) file; and

20 (f) a software routine associated with an action to be performed relative to said augmented reality image.

15.   The system of claim 10, wherein said centralized data processing system further comprises a mapping function, said mapping function for recording a real

25 world image, set of geographic coordinates associated with said real world image,

and mapping said real world image relative to a set of images previously stored in said system.

16.   The system of claim 14, wherein said recording of said real world image is stored at said centralized data processing system.

17.   The system of claim 11, wherein said centralized data processing system further comprises a mapping function, said mapping function for recording a real world image, set of geographic coordinates associated with said real world image, and mapping said real world image relative to a set of images previously stored in said system.

18.   A method for monetizing real world goods and services in an augmented reality environment within a centralized data processing system, said method comprising the steps of:

(a)   associating a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of one or more augmented reality images, said set of augmentation data representative of a third party interest;

(b)   charging a fee of said third party for making such association;

(c)   creating an augmented reality image corresponding to said set of data;

(d)   locating a set of geographic coordinates associated with a real-time location of a device, said device being linked to said centralized data processing system;

(e)   receiving a real world image from said device at said centralized data processing system;

(f)   converting said real world image into a virtual reality object image to be displayed, to a system user, on a monitor of said device;

5   (g)   displaying at least one set of image data representative of at least one object in a vicinity of said user;

(h)   receiving, via said link, at least one set of augmentation data associated with said at least one object; and

(i)   displaying at least one of said set of augmented reality images on

10   said monitor.

19.   The method of claim 18, wherein said geographic coordinates of said device are updated as said device is activated.

15   20.   The method of claim 3, wherein said geographic coordinates of said device are indicative of a content set of said augmented reality image.

21.   The method of claim 18, wherein said augmented reality image is indicative of a good or service which can be purchased through a proxy bidding

20   routine associated with said centralized data processing system.

22.   The method of claim 18, further comprising the steps of:

(a)   entering content in the form of a set of parameters, said set of parameters conveying a description; and

25   (b)   providing means for interfacing with an advertiser of goods or services, said advertiser providing said value added.

23. The method of claim 22, wherein said set of parameters is selected from the group comprising:

    (a)   a value associated with a geographic location further associated with said augmented reality image;

    (b)   a value associated with a service, said service graphically linked to said augmented reality image;

    (c)   a location associated with a store or delivery point for said service or said location;

    (d)   a value associated with a product;

    (e)   a value associated with a service; and

    (f)   a note pertaining to said augmented reality image.

24. The method of claim 18, wherein said at least one set of augmentation data further comprises at least one selected from the group comprising:

    (a)   an image file;

    (b)   an animation file;

    (c)   a text file;

    (d)   an audio file;

    (e)   a geographic mapping (cartographic) file; and

    (f)   a software routine associated with an action to be performed relative to said augmented reality image.

25. A method for monetizing real world goods and services in an augmented reality environment within a centralized data processing system, said method comprising the steps of:

(a)   associating a set of augmentation data with a particular set of image data corresponding to a set of geographic coordinates so as to create a set of one or more augmented reality images, said set of augmentation data representative of a third party interest;

5   (b)   charging a fee of said third party for making such association;

(c)   creating an augmented reality image corresponding to said set of data;

(d)   locating a set of geographic coordinates associated with a real-time location of a device, said device being linked to said centralized data processing

10   system and having a RAM memory for processing a set of routines;

(e)   receiving a real world image from said device at said centralized data processing system;

(f)   converting said real world image into a virtual reality object image to be displayed, to a system user, on a monitor of said device;

15   (g)   displaying at least one set of image data representative of at least one object in a vicinity of said user;

(h)   receiving, via said link, at least one set of augmentation data associated with said at least one object; and

(i)   displaying at least one of said set of augmented reality images on

20   said monitor.

26.   The method of claim 25, said method further for controlling energy in said RAM module of a said device, said device further comprising a central processing unit (CPU), said method comprising the steps of:

25   (a)   dividing said RAM into a plurality of banks, wherein each one of said plurality of banks is capable of being turned on or off by a control circuit;

(b)   dividing each of said banks into a plurality of address blocks;

(c)   requesting by said CPU that each bank be placed in an on state;

(d)   releasing RAM as an application terminates;

(e)   initiating a first routine for scanning said plurality of banks at each instance of an application releasing RAM after a use to determine whether or not any one of said plurality of banks is unused; and, if any one of said plurality of banks is unused, then causing said unused bank to be turned off

(f)   initiating a second routine for repacking used RAM within any bank that is less than fully engaged.

27.   The method of claim 2, wherein said first routine and said second routine are co-located.

28.   The method of claim 27, wherein said CPU further comprises a free list, said free list further comprising a set of one or more available banks within said said plurality of banks, and wherein availability of a given block is determined by whether or not said given block is less than fully engaged.
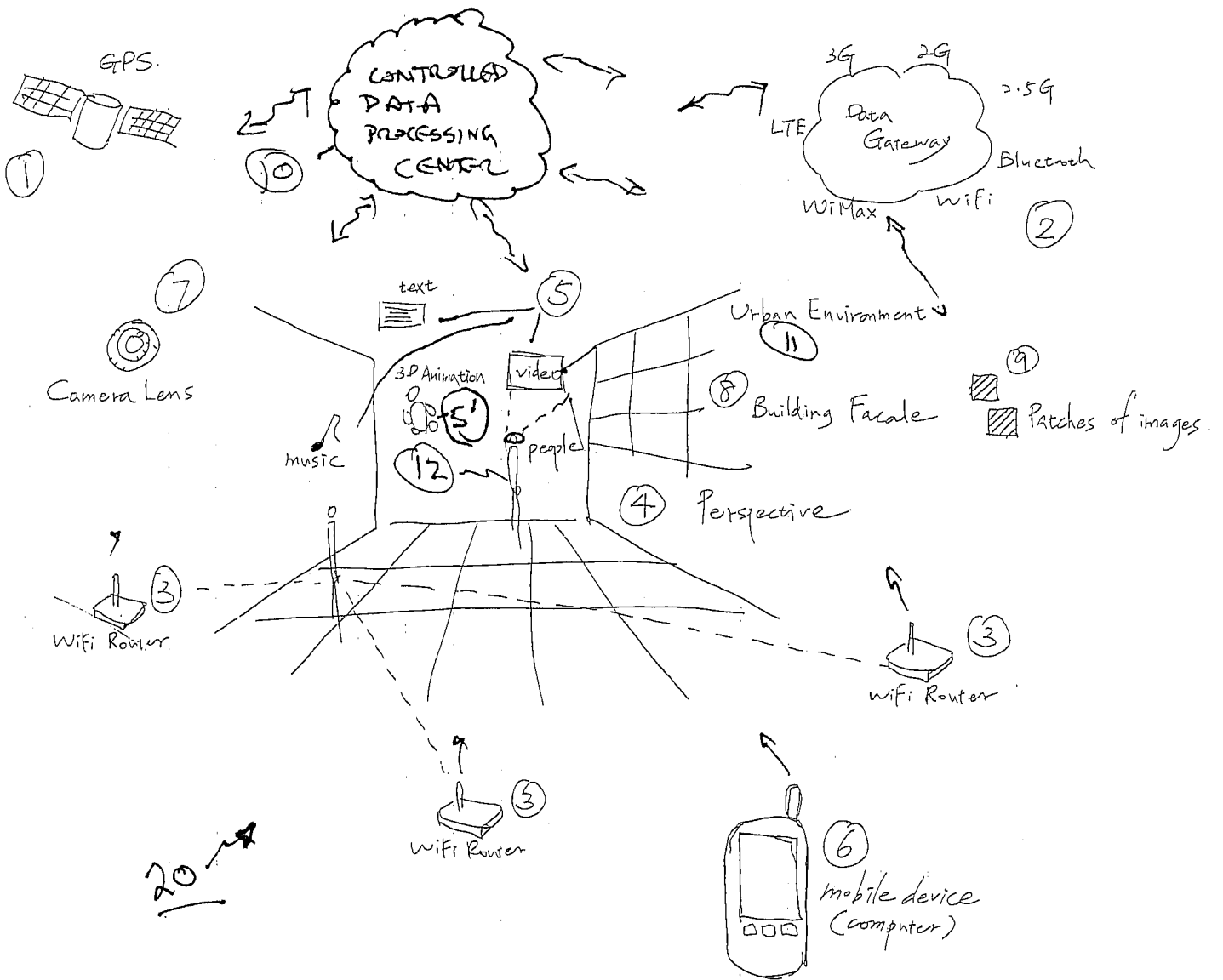
GPS.

①
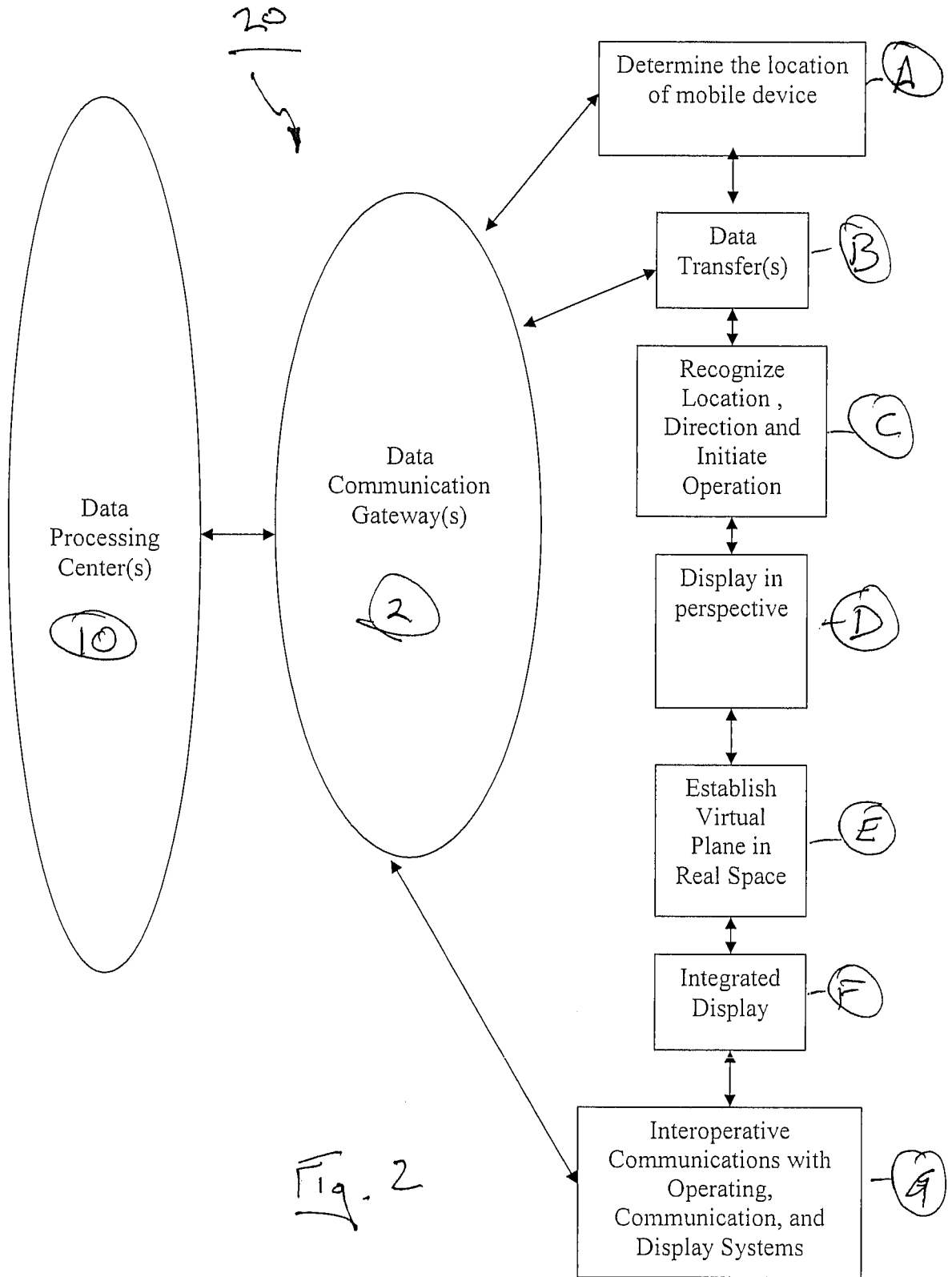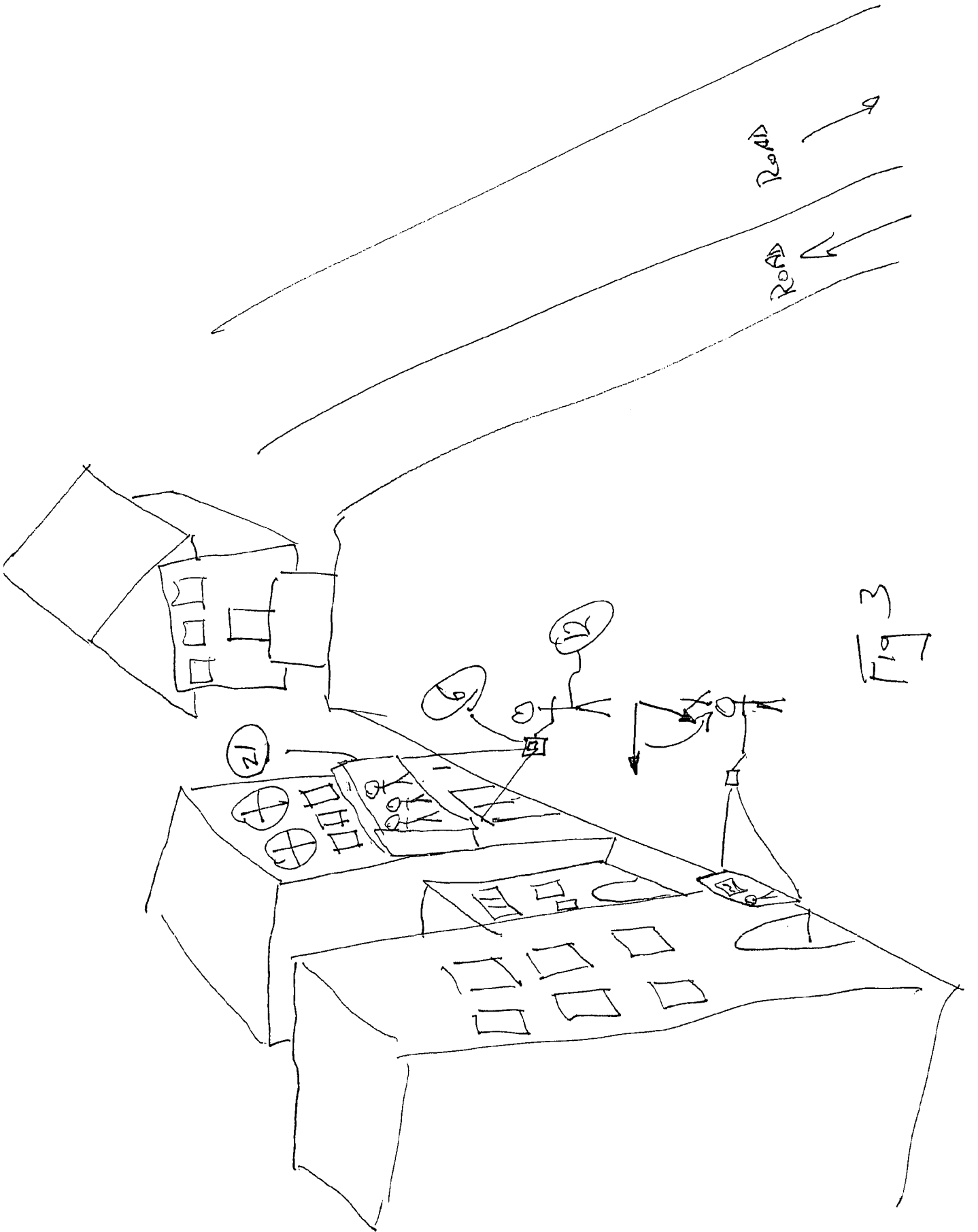
CONTROLLED
DATA
PROCESSING
CENTER

⑩

3G   2G

2·5G

LTE

Data
Gateway

Bluetooth

WiMax   wifi

②

⑦

Camera Lens

text

⑤

3D Animation

video

⑤'

music

⑫

people

Urban Environment

⑪

⑧ Building Facade

⑨

Patches of images.

④ Perspective

Wifi Router

③

Wifi Router

③

20

Wifi Router

③

mobile device
(computer)

⑥

Fig 1

20

Data
Processing
Center(s)

10

Data
Communication
Gateway(s)

2

Determine the location
of mobile device — A

Data
Transfer(s) — B

Recognize
Location,
Direction and
Initiate
Operation — C

Display in
perspective — D

Establish
Virtual
Plane in
Real Space — E

Integrated
Display — F

Interoperative
Communications with
Operating,
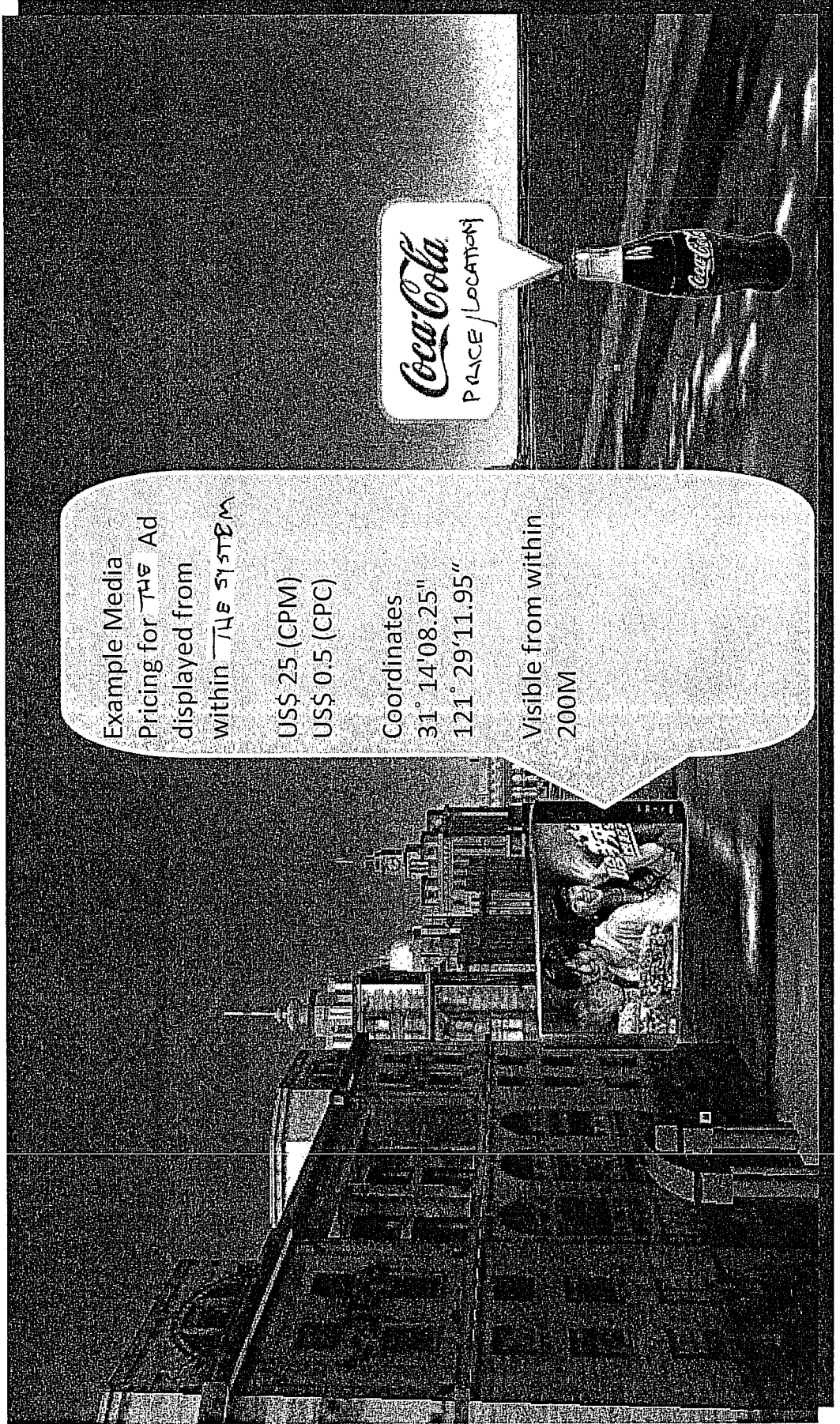Communication, and
Display Systems — G

Fig. 2
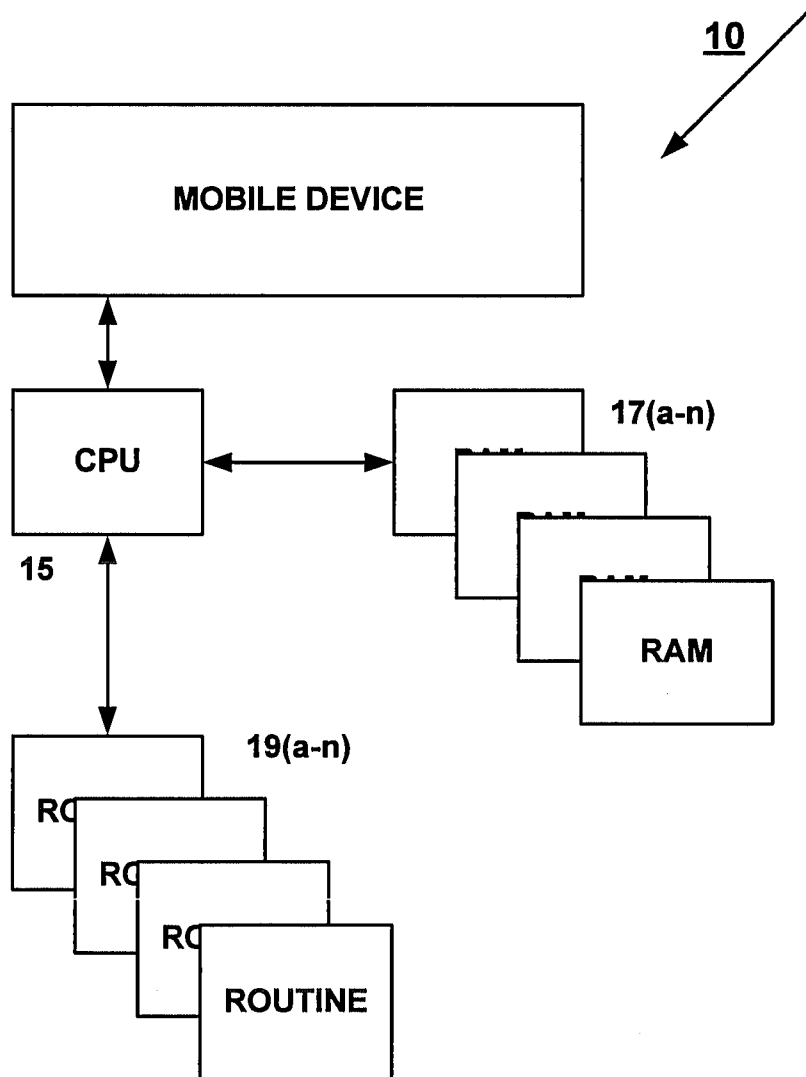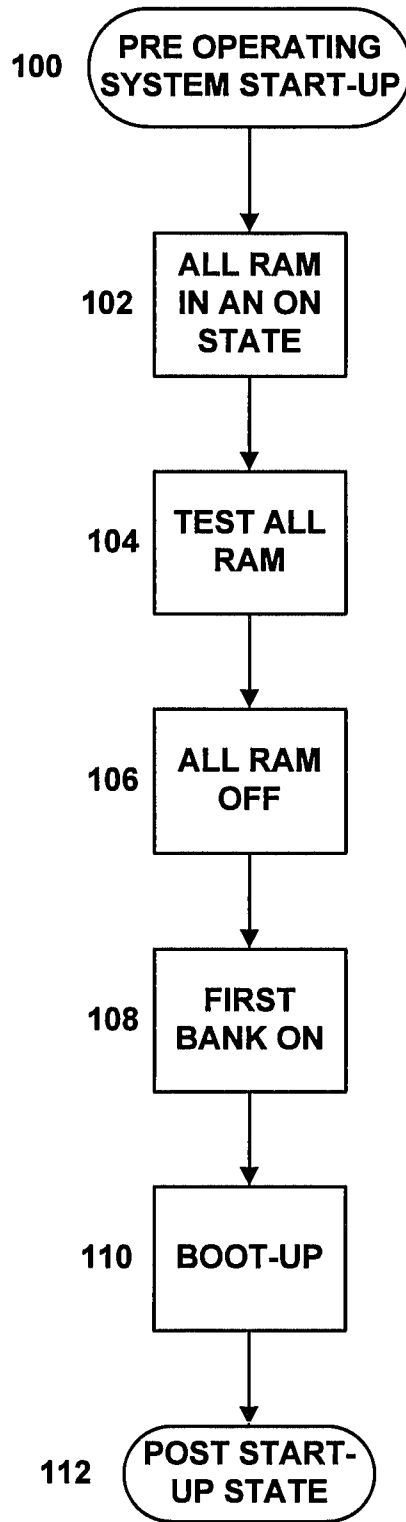
Fig 3

Fig 4

Sample Ratecard

The world is the platform to sell

Shanghai China, with recognized taggs

Fig 5

FIG. 6

<u>10</u>

MOBILE DEVICE

CPU

15

17(a-n)

RAM

RAM

RAM

RAM

19(a-n)

ROUTINE

ROUTINE

ROUTINE

ROUTINE

FIG. 7

Flowchart (Fig. 7):

100 — PRE OPERATING SYSTEM START-UP

102 — ALL RAM IN AN ON STATE

104 — TEST ALL RAM

106 — ALL RAM OFF

108 — FIRST BANK ON

110 — BOOT-UP

112 — POST START-UP STATE
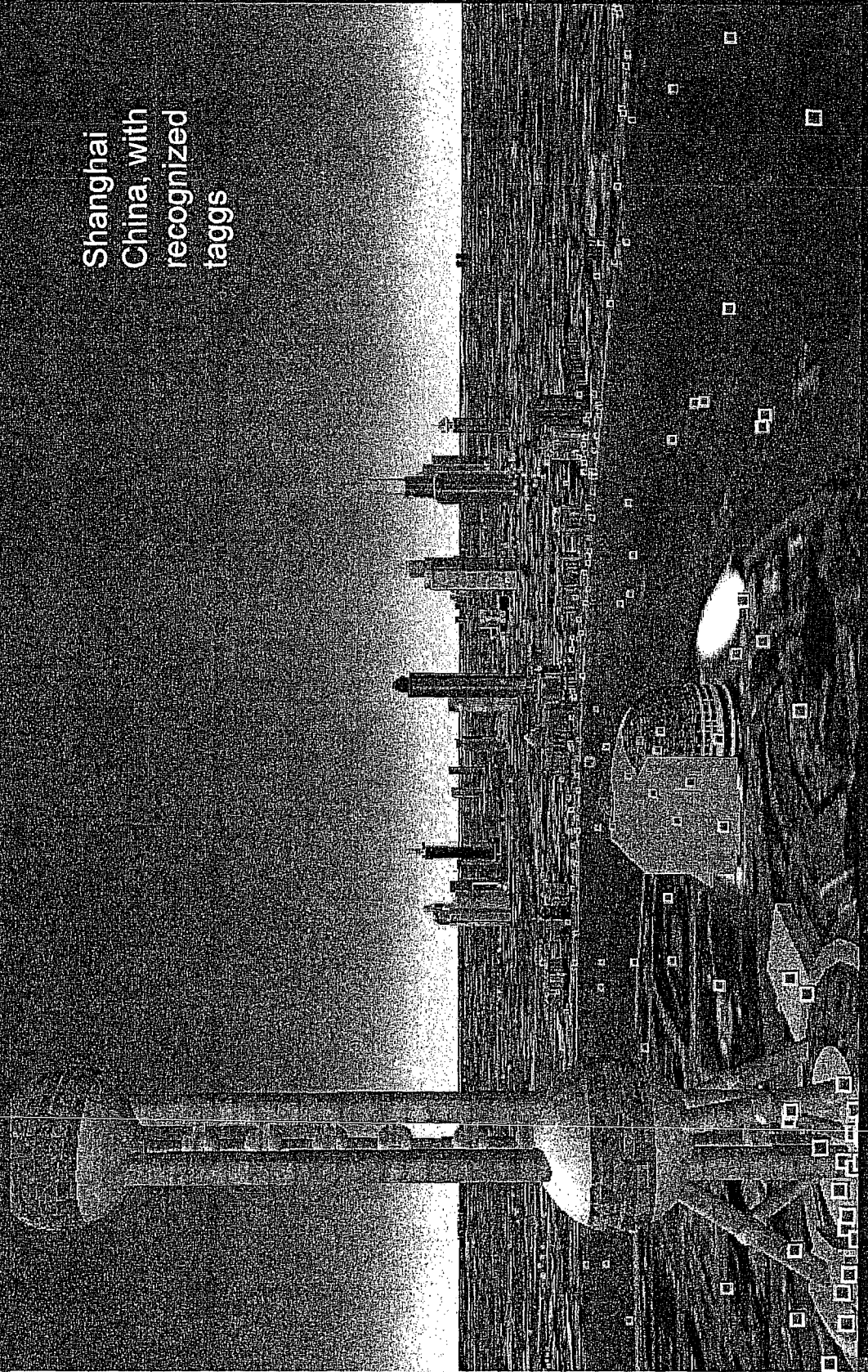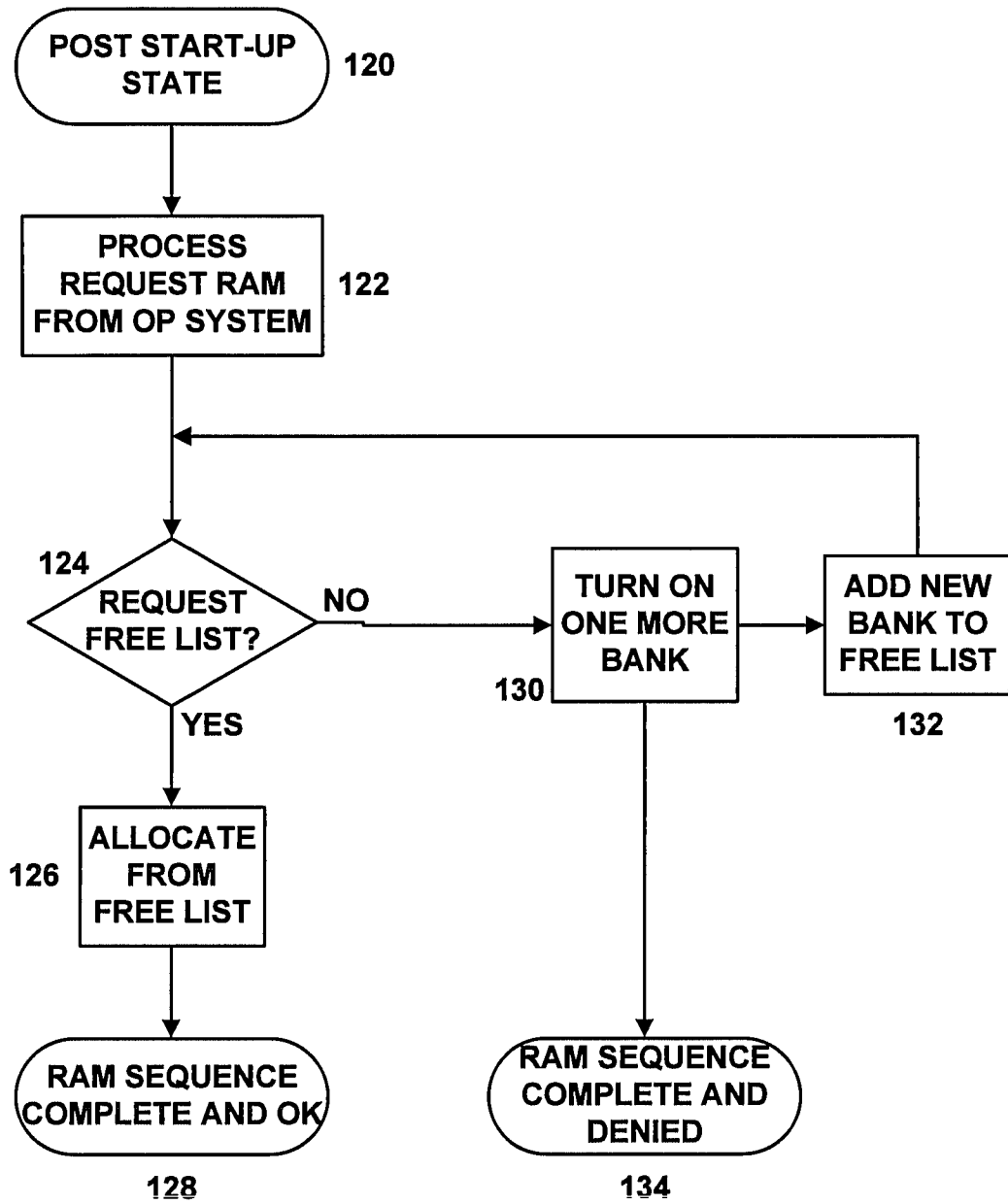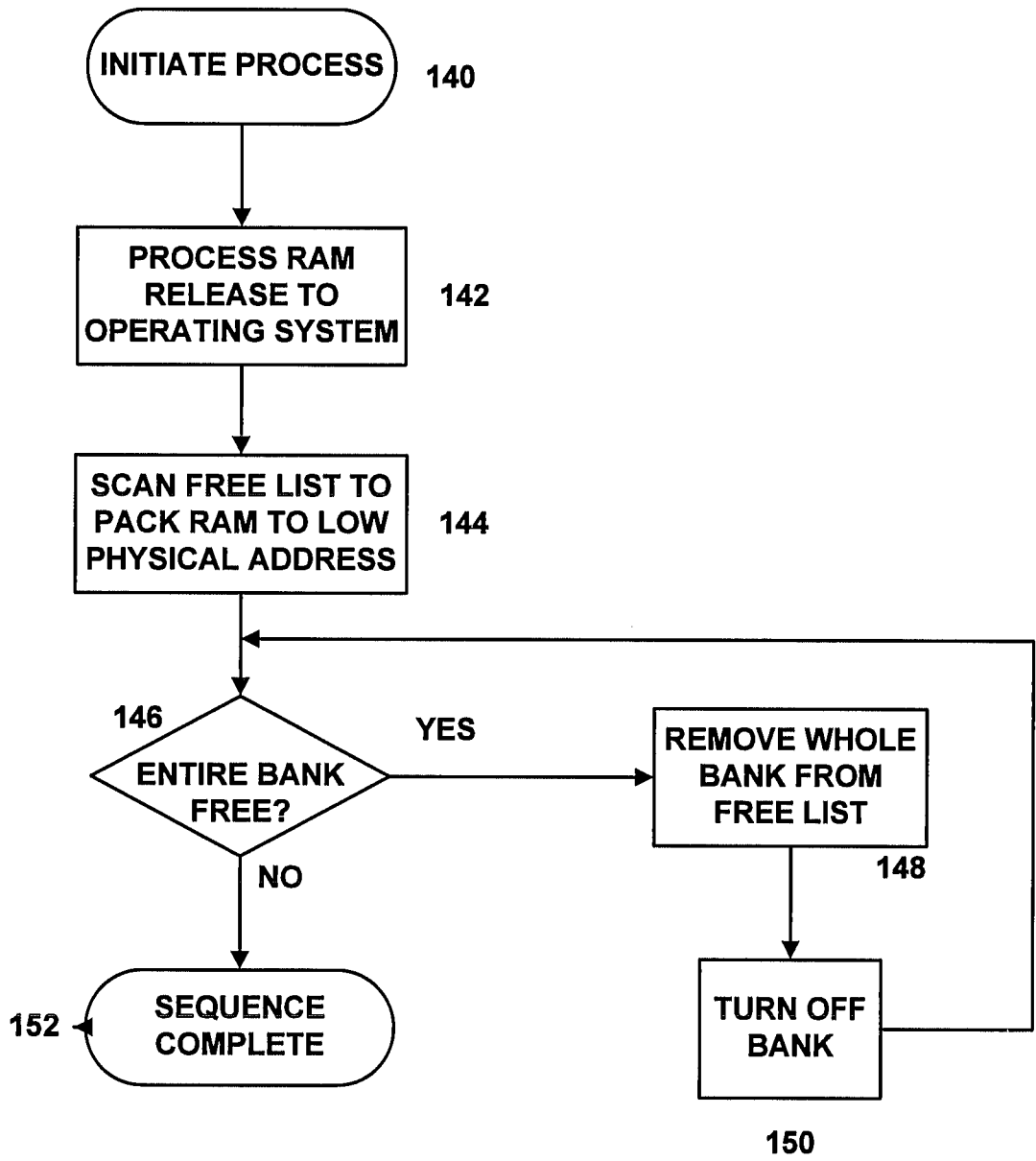
FIG. 8

FIG. 9

FIG. 10

Step 200 - A method for monetizing real world goods and services in an augmented reality environment within a centralized data processing system, said method comprising the steps of:

Step 202 locating a set of geographic coordinates associated with a real-time location of a device, said device being linked to said centralized data processing system;

Step 204 receiving a real world image from said device at said centralized data processing system;

Step 206 converting said real world image into a virtual reality object image to be displayed, to a system user, on a monitor of said device;

Step 208 displaying at least one set of image data representative of at least one object in a vicinity of said user;

Step 210 receiving, via said link, at least one set of augmentation data associated with said at least one object;

Step 212 merging said at least one set of image data with said at least one set of augmentation data so as to create a set of one or more augmented reality images; and

Step 214 displaying at least one of said set of augmented reality images on said monitor.