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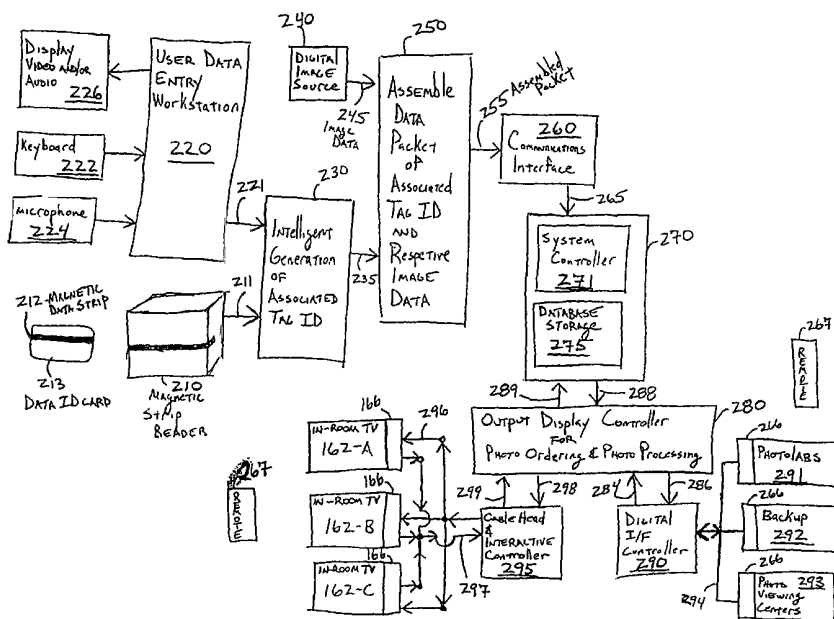
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(54) Title: SYSTEM AND METHODOLOGY FOR PHOTO IMAGE CAPTURE, TAGGING, AND DISTRIBUTION



(57) Abstract: A communications management system is provided comprising a first source of photograph image data, a second source of movie/television programming, a cable head distribution subsystem coupled the first source and the second source for selectively providing a distribution output, a set-top box, coupled to the cable head distribution subsystem, a remote control for providing user signals, and an in-room television. The set-top box is responsive to the user signals from the remote for selecting and coupling the distribution output to provide a set-top output for presentation on the in-room television.

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**SYSTEM AND METHODOLOGY FOR PHOTO IMAGE CAPTURE,  
TAGGING, AND DISTRIBUTION**

**RELATED APPLICATIONS:**

5           This is a application is based upon the pending prior application Serial No. 09/691,698, filed on 10/18/00, for "SYSTEM AND METHODOLOGY FOR PHOTO IMAGE CAPTURE, TAGGING, AND DISTRIBUTION."

**FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT:**

10           Not Applicable.

**BACKGROUND OF THE INVENTION:**

          This invention relates to photography and more specifically to photographic image capture, and management of output control.

15           Currently, photography is managed, displayed, and merchandised in much the same way it was fifty years ago. For example, on a cruise ship, there are multiple photographers working daily, shooting (and printing), and accumulating many tens of thousands of photographs by the end of each cruise. These photographs are indexed by a reference number, then printed and randomly thrown up for display (such as by the  
20           "day of the week" or "event") in a photographic display area of the ship. In a similar manner, conventions, conferences, weddings, etc., utilize a system of taking the photograph, printing, and having the physical photographs manually reviewed. Most of the printed photographs are not purchased and eventually are disposed of.

          This results in great waste and loss of materials, resources, time, and money. On  
25           cruise ships alone, millions of printed photographs are printed and thrown away each year. In addition, on cruise ships, a great deal of space is used to display the thousands of photographs, and space is very limited on cruise ships as it is. This makes searching for photos a very unpleasant experience, and detours many potential buyers.

          Additionally, many customers are daunted and/or frustrated by the process of  
30           having to physically look through the randomly sorted photographs, and therefore they fail to look for or purchase photographs they otherwise would have if they could have found "their" photographs more organized and easily.

          With the advent of digital cameras, and the digitization of photographic images by input devices (such as photo scanners and slide scanners, and computer based

graphics) multiple sources of digital image data are readily available and can easily be purchased or otherwise can be provided. Methods and systems for producing photographs from digital image data are currently available and produce photographs with quality equivalent to that of regular film cameras. Photographic development centers, such as Kodak, Target, Wal-Mart, K-Mart, and many other centers including One-Hour photo development centers, already have systems for producing film quality photographs from digital image data.

In addition to the large scale development centers, there are organizational software application packages commercially available that allow a single user to manually select, move and place numerous images or digital photos into a digital photo album. However, this is both time and labor intensive, and is for a single user on a single computer system. It is still ineffective when used in larger scale operations, such as in a cruise ship situation as described above.

It is an object of the present invention to provide a system, and methodology, to provide for indexed and automated customer retrieval based upon the structure and methodology of the present invention of indexing at capture before storage.

It is also an object of the present invention to provide means for associative tagging of photographic data for indexed database storage and later computer assisted selective retrieval and output of selected ones of a plurality of stored digital photographs.

It is a further object of the present invention to provide a method and system for associatively storing and organizing a large number of photographs (captured and stored with the associated tag ID data in an ad hoc order) for later computer assisted selective remote retrieval and viewing in an organized and automated or semi-automated manner.

#### **SUMMARY OF THE INVENTION:**

In accordance with one aspect of the present invention, a methodology and system provide for automated and semi-automated associative tagging of photo images, indexed storage of the image data, and selective retrieval and output of photographic images.

In accordance with another aspect of the present invention, a source of photographic images (e.g., digital data, such as from a digital camera, computer, etc.) is provided and associatively tagged to identify the images for later selection. The associative tag used can be, for example, a customer's room or cabin number on a cruise

ship, name, or other ID or number. The stored image is tagged with an associative tag ID via any of a number of input mechanisms (including manual entry via keyboard, swiping of a magnetic strip of a card, speech recognition, visual face recognition, etc.). Other types of information can be provided as a part (or all) of the associative tag data.

5           Each image and its associated tag, for each of a plurality of images types, is assembled into a mapping for each image and its associated tag or tags, which is then stored. For example, storage can be built into a digital camera, to capture an image and store the captured image and its respective associated tag, which is later transferred to a larger stored database. Alternatively, or additionally, associative tag data can be later  
10 linked associatively to selected image data. The associatively linked tag data and selected image data are accumulated to a stored database, either linked, distributed, or centralized. A system controller manages the indexing, storing, retrieval, security, etc. for the stored database. An output controller provides for interface to the stored database, and provides a user interface that permits a user to provide for interfacing with  
15 the stored database to allow for selection and retrieval of selected images based on the associated tag. The output controller can be distributed or centralized, separate from, or part of, the system controller.

          The output controller selectively provides output as necessary to provide for communication (digital and/or analog) such as to hotel rooms (or cruise ship cabins) on  
20 a TV via a remote controlled two way set-top controller box.

          An output controller workstation additionally provides for remote photo viewing workstation centers at various locations, including portable and transportable photo viewing centers that can be selectively connected into communications link (e.g., Ethernet) and thereto to the output controller. The output controller can also provide for  
25 output to one (or more) photo processing labs/workstations which provide for processing of customer orders to produce photographic prints of the selected photographs responsive to the user's associated tag and other specified orders.

          These and other aspects and attributes of the present invention will be discussed with reference to the following drawings and accompanying specification.

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#### **BRIEF DESCRIPTION OF THE DRAWINGS:**

FIG. 1 shows a state flow diagram, flow chart, and system functional block diagram provided in an integrated form;

FIG. 2 shows a detailed electrical system block diagram of the hardware and

software combination utilized in achieving the methodology and system of the present invention, corresponding in state flow and functionality to the system and methodology as described above with reference to FIG. 1;

FIG. 3 shows a more detailed example of the distribution to an in-room television **162** (as illustrated in FIGS. 1 and 2);

FIGS. 4A-4C illustrate a sample set of screen displays corresponding to the in-room request process of FIGS. 1-3;

FIG. 5 illustrates a portion of the stored indexed photo database (**275** of FIG. 2 and **145** of FIG. 1), showing a preferred embodiment where the accumulated entered contents are presorted prior to storage for search by associative tags;

FIGS. 6A and 6B illustrate the process, methodology, and system, wherein photographic image data is entered in an ad hoc fashion by numerous photographers at numerous times on numerous occasions; and

FIG. 7 is a block diagram of a system for utilizing the present invention for conventional film-based photography.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT:**

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings, and will be described herein in detail, specific embodiments thereof with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the specific embodiments illustrated.

Referring to FIG. 1, a state flow diagram, flow chart, and system functional block diagram are provided in an integrated form. A photographic or other digital image data is provided, illustrated as the digital image **110**. For example, a photographer can shoot a still photograph with a digital camera. Additionally or alternatively, a computer based generation (e.g., computer generated or scanned, analog to digital converter, etc.) can be provided. At the same time as the digital image is provided, such as by the photographer shooting a still photo with the digital camera, or thereafter, an associated tag is provided, either via semi-automated entry, such as the photographer or assistant entering the cabin or room number of a guest, or the last name or other identifying data, or a magnetic stripe on a room card is swiped, or otherwise, associated tag data **120** is provided. The digital image output **115** is assembled with the associated tag data output **125** to be assembled at **130** into a data packet for each digital

image. Assembled data packets for each digital image with associated tag data are then output at **135** to the database storage system **140** comprising a system controller **144** providing processing, logic, and other controller functions, coupled to the database storage **145**, which can be a combination of semiconductor memory (non-volatile and/or volatile in combination with non-volatile backup), and/or magnetic storage medium such as hard disk, optical storage, etc. An output display and user interface controller **150** is coupled to the database storage system **140** to provide for selective access to the stored database of assembled data packets for selective retrieval from the database storage **145**. The output display and user interface controller **150** as shown is comprised of a user interface **151**, a digital output interface **152**, a database storage system interface **153**, and an analog/digital TV output interface **155**. The user interface **151** provides for display to an external user via a display **159** responsive to a user input **158**. Via the user input **158**, the user utilizes a keyboard, touch screen, remote control **167**, magnetic stripe card reader (**210** of FIG. 2), or other input device, to access and select from the database storage **145** to permit for the access from the database storage **145** via the database storage interface **153** to provide for output via digital output **152** or analog/digital output **155** for providing display and viewing of the digital images on the local user display **159**. As illustrated in FIG. 1, the digital output interface **152** provides a digital output **154** which is coupled to a plurality of subsystems **170**, **180**, **191**, **192**. A communications medium, such as Ethernet or other wired or wireless coupling and protocols, are provided to facilitate easy connect/ disconnect, easy handshake, and high speed communications. Digital output **154** couples to one or more photographic viewing centers **170**, which can be at various fixed locations and/or can be transportable and moved to various locations. The photographic viewing centers **170** couple to the digital output **154** by simply hooking into the communications medium. Transportable viewing centers can be accomplished via laptop computers, or any other type of computerized individual workstations for coupling to the output display and user interface controller **150**. As illustrated in FIG. 1, a backup subsystem **180** can be provided, where desired and cost available, that is coupled to the communications medium, to provide redundancy and backup capabilities, such as for works in process, and/or items being viewed and utilized by users currently, as well as for archival storage. Also illustrated are multiple, physically separate photographic labs **191** and **192**, which perform the actual photographic processing of the digital image data to provide final photographic print output for sale to customers responsive to received

orders.

The analog/digital TV output interface **155** provides a video or audiovisual output **157** to a cable head distribution subsystem **160**. Additional video input **165** is coupled to the cable head distribution subsystem **160**. The additional video input **165** includes television programming, straight video, audiovisual, computer generated data, music, and other audio, visual, and audiovisual presentation materials. The cable head distribution subsystem **160** provides an output distribution **163** which ultimately couples to each of a plurality of televisions with receiver set-top boxes **166** such as those located in various rooms of a hotel or cruise ship. The output **163** is coupled to the receiver set-top box **166** and therefrom to the respective television or viewing device in each of the cabins **162-a**, **162-b**, .... **162-n**. The set-top box remote control **167** provides communication of user input **158** via the set-top box communicating with cable head distribution subsystem **160** and therefrom via output **168** of the cable head distribution subsystem **160** to the user interface **151** of the output display and user interface controller **150**. Thus, the user is able to provide entry of identifying associated tag information, such as room number, last name, etc., via the set-top box remote control **167**, and a request presentation on the user's local television located in the user's respective cabin **162**, to permit the set-top box **166** to provide a selection output **164** which couples back via the cable head distribution subsystem **160** to the output display and user interface controller **150**, to permit the user selection of stored digital images for display back to the user on their local display responsive to user input **158**. In an alternate embodiment, all interface from the output display and user interface controller **150** is of one type (digital data (e.g., Ethernet), television (e.g., analog, digital)).

Referring to FIG. 2, a detailed electrical system block diagram is provided of the hardware and software combination utilized in achieving the methodology and system of the present invention. FIG. 2 corresponds in state flow and functionality to the system and methodology as described above with reference to FIG. 1. FIG. 2 provides a specific illustrated embodiment of a system in accordance with FIG. 1. As illustrated in FIG. 2, a user data entry workstation **220** provides for user data entry, such as via keyboard **222** and mouse, a microphone **224**, or other input device. The workstation **220** provides for display (of video, audio, or audiovisual output) to the user from the user data entry workstation **220**. The user data entry workstation **220** provides an output **221** which is coupled to a tag controller **230** which provides for intelligent generation of an output **235** responsive to the associated tag data to rooms, viewing

centers and photographic labs (which is output in FIG. 1 as **125**) for combining the digital image output **245** (**115** of FIG. 1) into an assembled data packet output **255** with digital image and associative tag (output **135** in FIG. 1) for storage in the database storage system **270** (**140** of FIG. 1). The associated tag data can also be generated

5 through the user data entry workstation **220** (along with I/O devices keyboard **222**, microphone **224**, display **226**, etc.) and output **221** as associated tag data. The associated tag data can also be provided by alternative input means, such as magnetic card strip reader **210**, which reads the magnetic data strip **212** on a data ID card **213** to provide an output **211** of associated tag information. The associated tag controller **230**

10 provides for the intelligent generation of associated tag data and provides an output **235** of the associated tag data (corresponding to output **125** of associated tag data in FIG. 1). The associated tag data output **235** is input to a packet assembly controller **250**. A source **240** for generating digital images (such as a digital camera, computer generated image data, analog to digital conversion of analog image source data, or other image

15 source) provides an output **245** of image data which is coupled to another input of the packet assembly controller **250**. Packet assembly controller **250** provides for assembly of the image data output **245** and associated tag data output **235** into an assembled packet **255** (corresponding to the assembled data packet **135** of FIG. 1). The assembled packet **255** is communicated to a communications interface **260** which provides for

20 communication, of the assembled packet of image data with associated tag data, to the database storage system **270** (corresponding to the database storage system **140** of FIG. 1). The database storage system **270** is shown as comprised of a storage system controller **271** and of database storage **275**. The system controller provides computing, processing, data manipulation, and storage management to facilitate the management of

25 accumulated plurality of photographic images, either stored in a single location of database storage **275** or distributed among many separate storage sub-elements which are managed as a whole. The database storage can be on a magnetic hard disk, optical storage technology, semiconductor-based, or other. The database storage system **270** provides selective output **288** of image data (and in some embodiments, of additional associated tag data) to the output controller **280** responsive to selection control signals

30 **289** from the output controller **280** to the database storage system **270**. The output controller **280** is also coupled to a cable head distribution and interactive user remote interface controller **295** to provide for communications of the data to each of a plurality of in-room televisions in rooms **162-a** – **162-n** via set-top boxes **166** coupled to each of

the in-room TVs **162**. The set-top box **166** also selectively provides signals to selected TVs responsive to the output **296** of the cable head distribution and interactive user remote interface controller **295** and provides outputs **297** to the cable head distribution and interactive user remote interface controller **295** responsive to in-room user remote control devices **267** (**167** of FIG. 1) to provide for selection, in accordance with the associated tag data, of selected associated photo images, for recall from storage. The output controller **280** is responsive to control signals **299** from the cable head distribution and interactive user remote interface controller **295** generated responsive to output **297**. The output controller **280** requests via the selection control signal **289** of the database storage system **270**, image data retrieved from the database storage **275** responsive to the associated tag data and the user input entered via remote control device **267**. The database storage system **270** provides for output **288** to the output controller **280** for coupling via signals **298** to the cable head distribution and interactive user remote interface controller **295** which provides an output **296** of the presentation signals for coupling to the set-top boxes **166** of each of the requesting in-room televisions **162** associated with the respective remote control device **267** that has selected a particular set of photo images. Thus, for example, by entering the room numbers of all parties at an event, such as a family reunion, all photos for all members of the family can be viewed by any member of the family. Alternatively, by only entering one room number, you can see only that room's photos. Security, such as a Personal Identification Number (PIN) or other security method can be provided to preclude non-authorized people from viewing other people's photo images.

Referring again to FIG. 2, the output controller **280** is also coupled to a digital interface controller **290** which provides for a digital output via communications interface and protocol to a number of subsystems for utilization of the image data and associated tag data as contained in the database storage **275**. A remote control device **267** provides for user interface with an associated digital interface set-top box **266** which provides for interface to the communications and protocol and standards necessary to be compatible with the digital interface controller **290**. For example, Ethernet could be utilized, separate direct communications lines can be utilized, or other techniques can be utilized. In operation, a user at one of the photolab locations **291** (one or a plurality of photolabs physically separate from each other), a backup facility **292**, or a photo viewing center **293** provides for user input via the remote control device **267** (which can be a separate computing system, a keyboard, a mouse, magnetic card

strip reader, etc.) to permit the user to request information via the communications interface channel 294 from the digital interface controller 290 which provides a request signal 284 to the output controller 280 corresponding to the input request via remote control device 267 to provide a selection control signal 289 to the database storage system 270 for selectively retrieving the respective associated image data associated tag data from the database storage 275 and to provide the data signals back via output 288 to the output controller 280 for coupling at 286 to the digital interface controller 290 which provides an output back via communications interface channel 294 to the set-top box 266 for the respective requesting subsystem 291, 292, or 293. The communications interface channel 294 can be a common interface to each of the set-top boxes or there can be separate communication couplings between each of the subsystems 291, 292, and 293, and the digital interface controller 290, rather than a common communications protocol.

The system controller 271 can provide many additional functions to the database storage, management, sorting, and image processing and tracking. For example, database storage system 270 can also provide, either alone or in conjunction with other subsystems, the counting for the photographs taken, utilization of people and equipment, demographics of people buying photos, etc.

Referring to FIG. 3, a more detailed example of the distribution to an in-room television 162 (as illustrated in FIGS. 1 and 2) is shown. As shown in FIG. 3, digital photograph image data 315 and movie/television programming 305 is coupled to a cable head distribution system 310 which provides an output 316 coupled to the set-top box 320 used for interfacing, which, responsive to remote control signal 342 received from a remote control 340 via a broadcast transmitter (infrared, ultrasonic, radio wave, etc.) received via receiver 321 of the set-top box 320, provides an output 322 for presentation (audio, visual, or audiovisual) on the in-room television 332. The set-top box 320 is responsive to the user input subsystem remote control 340 (such as a keyboard, TV remote control, or other input interface such as touch screen, voice recognition, etc.) and responsive to the user input, as communicated via the remote control signal 342 broadcast from the transmitter 341 of the remote control 340 to the receiver 321 of the set-top box 320, providing for output of user subsystem request information 326 to the cable head distribution system 310 for permitting the selection request 317 signal output to receive back digital photograph image data 315 which is coupled via the cable head distribution system 310, and output 316 as broadcast

presentation which is interfaced via the set-top box 320 and provided as output 322 to the in-room television 332 to provide for a display presentation of the requested photographic image data. Various methods and systems for implementing a cable head distribution system are currently available and well-known. Numerous Cable head distribution systems are commercially available. In addition, interactive set-top boxes, responsive to user inputs, are currently available and well-known. Numerous set-top box systems are commercially available. Examples of set-top boxes include digital cable boxes which provide audio, visual and audiovisual presentations to TVs. The digital cable boxes are also responsive to a user remote control, which allows for selection of different channels, video, audio, and audiovisual, and allows for selection of special events and movies that are normally unattainable, via user selection of the event or movie via the remote control, responsive to some identifying code or tag entered into the remote control. The cable head distribution system is also partially responsible for making sure that the unattainable event or movie is now available to the user on their TV.

Referring to FIGS. 4A-4C, a sample set of screen displays corresponding to the in-room request process of FIGS. 1-3 is illustrated. Referring to FIG. 4A, the display screen 410 provides for user entry of room number or other associated tag identification information at 411, for entry of the user's name or a selected photo name at 412, and, in a preferred embodiment, provides for security for entry of a personal identification number at 413 for security purposes. Any or all of these can be excluded or other items added in accordance with the desired functionality of the final system.

Referring to FIG. 4B, the display interface 420 provides for the responsive display presentation to the user's entry of room number, name, and PIN. At 421, the display includes the room number and name information, verifying that which had been entered, and identifying the contents of the remainder of the display. Section 425 of the display provides for the image data content to be displayed as thumbnails for a plurality of responsive digital images. As illustrated in FIG. 4B, there are nine photographic images 426 recalled based on the associated search criteria. The display is shown as comprising a matrix identifier, such as A, B, or C, 429 and designating the row and a column designator 1, 2, 3, 4 428. Furthermore, a user interface display portion 427 is provided, and as illustrated in a touch screen mode embodiment, provides for the ability of the user to touch the screen and to choose which of the images to expand and to look at. In an alternate embodiment, a remote control can be used with arrow keys to move

around to choose which of the images to expand. Alternatively, where a keyboard is provided, the letters A1, A2, etc. can be chosen to indicate the column and row location and select the image to expand.

Referring to FIG. 4C, the next step of the display process is illustrated, corresponding to a user selecting the image A1 from FIG. 4B. Referring to FIG. 4C, the chosen A1 cell of the photographic images **426** of FIG. 4B is expanded, showing the details in an expanded figure **431**. The image cell being expanded is denoted on the display at **432**. The user interface display portion is provided at **433**. Thus, the display screen **430** provides for a blow-up of a particular individual photo. However, the user is provided navigational information and control to look at all the pictures, as well as the ability to select and order particular pictures once having viewed them.

Referring to FIG. 5, a portion of the database storage **275** of FIG. 2 (and **145** of FIG. 1) is illustrated, showing a preferred embodiment where the accumulated entered contents are presorted prior to storage for search by associative tags. Thus, FIG. 5 illustrates a portion of the set up of the associative linking and mapping. The portion of the memory **510** is shown as storing, in an indexed fashion, the associative tag information (here illustrated as room number/name, indicating one or more fields can be used for indexing, depending on system design and cost constraints) where a display is provided to the user on a screen with the heading **511** room number/name for one column and the corresponding associated photo image index address **515** as illustrated in FIG. 5. The room number is indexed to the photo image index address which is a pointer to the addresses containing photo images for that associative tag. There can be one or multiple addresses for each tag ID **512**. Thus, for example, room 128 could have had photos taken on three different occasions, each time having one or more photos taken. The image index addresses **516** correspond to one or more photo images being associated with the associative tag ID. Many different ways of providing for sorting can be implemented, for example, either by leaving original data in its ad hoc order as accumulated, and indexing it separately for look-up, or sorting and restoring the accumulated data in a sorted order and format.

In this regard, FIGS. 6A and 6B illustrate the process, methodology, and system, wherein photographic image data is entered in an ad hoc fashion by numerous photographers at numerous times on numerous occasions, but each time with "keyed associative data", associated and affiliated with the photographic data, as shown in FIG. 6A. The photo data is stored with an index or in a structure such that the photo data **615**

is shown as stored relative to a heading **611** and the corresponding room number ID tag data **616** is shown under a heading **612**. The portion of memory **610** differs from that of **510**, in that the actual photo image data **615** is stored and associatively mapped to the associative tag data **616**. By contrast, in FIG. 5, the photo image index address **516** is associatively mapped with the associative tag ID **512**. The direct availability of the actual photo image data **615** provides for quicker look-up and access based on the associative tag data **616**, than would be required with the extra step of the index addressing of FIG. 5, but requires possible additional storage requirements.

Referring to FIG. 6B, a controller, such as the storage system controller **271** of FIG. 2, sorts or otherwise indexes the accumulated stored database represented by the portion of memory **610** from FIG. 6A (according to any one of a number of well-known sorting techniques) to provide for quick user access to the associated photo image data responsive to the associated tag data. Referring to FIG. 6A, the photo image data is accumulated in the order entered into the database storage (**275** of FIG. 2). Note that the associated tag data **616** are in the order of entry, showing room 28, room 37, room 28, and then room 152. However, referring to FIG. 6B, after the sort has occurred, the ordering of the associated tag data **626** reorders the photo data **625**, correspondingly, so that the ordering in the portion of memory **620** is in the order of room numbers (i.e., room 28, room 28, room 37, room 152). As discussed above, the sorting can be actual physical sorting so that a new entire stored database is created, either instead of or in addition to the original stored database represented by the portion of memory **610**, or can be virtual, such as indexed as discussed above with reference with FIG. 5, or a combination of the two.

In one embodiment, the stored database provides adequate unused storage capacity to permit storage of both the original stored database represented by the portion of memory **610** and the sorted stored database represented by the portion of memory **620**. This not only provides for redundancy and backup, but also provides options for different types of sorts. Thus, where adequate stored database capacity (such as database storage **275** of FIG. 2) is available, then multiple sorts on multiple criteria can be stored, either in an indexed format as illustrated in FIG. 5, or as multiple sorted databases where each sort is based on a different criteria. An example would be where one criteria might be the room number. Another example criteria might be the last name. Another criteria might be the date, time, location, etc.

Imaging means can be any form of video input to the system, providing image

data units such as digital cameras, computers, and photographic scanners of negatives (or prints). The image data units are associatively tagged (e.g., indexed) for storage and retrieval.

In a traditional cruise ship work flow, thousands of negatives are shot per sitting. Costs of wasted untaken prints are over half of the cost of goods. Display presentation is confusing and time-consuming to find yourself

Yet for utilizing the present invention, wasted prints can be virtually eliminated. Furthermore, workflow processing is altered significantly as is the front end equipment (e.g., camera, etc.) However, as shown in FIG 7, the developed negatives are scanned **910**, tagged **930**, and stored **940**.

A person (the user **901**), with a user input device (remote **905**) utilizes a local computing and video subscription (set-top box **950**). Coupled via a communications medium **951** to an output interface controller **960** which selectively retrieves image data units per one of a plurality of protocols or modes (e.g., by room number, by name, by the associative tag, by event name, by date, random, etc.) The retrieved image data units are coupled to the requesting set-top box **950** which provides for a display presentation on the in-room television **955**, or via the video display (such as ethernet computer link, firewire link, USB link, etc.)

The present specification teaches of many systems and methodologies. It will be appreciated by those skilled in the art that many alternative embodiments, and variations on the above teachings, may be realized consistent with the present invention.

A system is taught for managing the storage and delivery of image data (see, FIGS. 1-3, 6). In one embodiment, the system is comprised of image means, tag means, database storage means, a system controller, an output interface controller and a display means. The image means generates a plurality of image data units. The image data can be computer generated, scanned, and analog, digital, etc.

The tag means provides associated tag data, for identifying a respective one of the plurality of image data units. The tag means provides associated tag data comprised of entering at least one of a room number, a last name, social security number, unique identifying data, and reading a magnetic stripe on a card.

The database storage means stores as a stored database the plurality of image data units. The database storage means can be comprised of at least one of semiconductor memory, non-volatile, volatile, magnetic storage medium, hard disk, and optical storage.

The system controller provides processing, storage and logic, functions and is coupled to the database storage means.

The output interface controller is coupled to the database storage means and provides for access to the stored database for selective retrieval of selected ones of the image data units from the database storage means.

The output interface controller can be comprised of a user interface, a digital output interface, a database storage system interface, or an analog/digital TV delivery output interface.

The user interface may be comprised of one or more of a keyboard, a touch screen, a remote control, a magnetic stripe card reader, or other input device.

The user interface provides for user access to the database storage means and provides means for selection by the user from the database storage means

The digital output interface provides a digital output which is coupled to at least one of a plurality of subsystems via a communications medium. The communications medium can be wired or wireless. The communications medium facilitates connect and disconnect, handshake, and high speed communications. The digital output couples to at least one photographic viewing center, or to a plurality of photographic viewing centers located at multiple locations.

In a preferred embodiment at least one photographic viewing center is transportable and moveable to various locations. The transportable viewing center is coupled to the output interface controller. The photographic viewing center can couple to the digital output via the communications medium.

In one embodiment, there are a plurality of subsystems, wherein at least one of the plurality of the subsystems is a backup subsystem, such as for archival storage. Alternatively, or additionally, one of the plurality of subsystems can be one or more physically separate photographic labs, wherein said physically separate photographic lab performs processing of the digital image data to provide final photographic print output, wherein said final photographic print out is sold to customers responsive to received orders.

The display means provides a display presentation responsive to the output interface controller.

The analog/digital TV delivery output interface provides an output to a cable head distribution subsystem coupled to an additional video input. The cable head distribution subsystem provides an output distribution which couples to at least one of a

plurality of televisions with receiver set-top boxes.

The additional source of video input can include one or more of television programming, straight video, audiovisual, computer generated data, music, and other audio, visual, and audiovisual presentation materials.

5 A set-top box remote control provides communication of user input via the set-top box communicating with the cable head distribution subsystem and therefrom via output of the cable head distribution subsystem to the user interface of the output display and user interface controller allowing the user entry of identifying associated tag information via the set-top box remote control, and a request for presentation on a user's  
10 local display, wherein the set-top box provides a selection output which couples via the cable head distribution subsystem to the output interface controller to provide for user selection of stored digital images for display to the user on the respective local display responsive to the selection output.

The interface from the output interface controller can be one or more of  
15 Ethernet, analog television, analog, wired or wireless, and digital television, other digital, etc.

The image means can be one or more photographers shooting photographs with an analog or digital camera, wherein the image data is photographic preferably an analog or preferably digital image data. The image means can alternatively be any  
20 source of image data, including scanned photographic negatives, slides and prints, computer generated, etc.

There can be a plurality of the image means (photographers, scanners, computers, etc.) providing a plurality of image data units for storage in the stored database. The database storage means can be distributed among a plurality of  
25 subsystems and linked, or can be centralized.

In a preferred embodiment, the system is further characterized as utilized aboard a cruise ship, within a convention center, a hotel, an amusement park, etc.

In one embodiment, an assembly controller couples and assembles the image data unit with the associated tag data into an assembled data packet and stores the  
30 assembled data packet in the database storage means, wherein the stored database is comprised of the assembled data packets

The display means provides for viewing of the digital image data, such as on a local user display or other displays as appropriate.

In a second system embodiment, the system manages the storage and retrieval of

a plurality of separately identifiable image data words. The system is comprised of an entry workstation, a tag controller, a database storage system and a display means. The entry workstation provides for entry of associated tag data, associatively identifying a respective one of the image data words. The tag controller is coupled to the user data entry workstation and combines a respective one of the image data words with a  
5 respective one of the associated tag data to provide an assembled data packet. The database storage subsystem stores a plurality of the assembled data packets. The display means provides a presentation output responsive to the storage controller. The database storage subsystem is comprised of a storage controller for computing,  
10 processing, data manipulation, and storage and retrieval management to facilitate the management of an accumulated plurality of image data words.

The system can further comprise a communications controller for communication of the assembled data packets to the database storage subsystem, the accumulated plurality of image data words are representative of photographic images.

15 In one embodiment, the database storage subsystem is distributed among many separate storage sub-elements which are managed as a whole.

In a preferred embodiment, the system is further comprised of a display apparatus for providing at least one of an audio display, a video display and an audio-visual display presentation responsive to the presentation output. There can also be a  
20 plurality of physically separate ones of the display apparatus.

In a preferred embodiment, the system additionally comprises a selection controller associated with respective ones of the display apparatus, for selecting one of the image data words from the database storage means for local display on the respective display apparatus. In another embodiment, the selection controller is further  
25 comprised of a user remote for providing user signals; and a set-top box responsive to the user remote for coupling selection signals to the database storage subsystem. The selected image data words are communicated to the respective set-top box, and the respective associated display apparatus provides a local visual presentation of the selected image data word responsive to the set-top box. In another embodiment, there  
30 are a plurality of separate ones of the display apparatus each with an associated respective one of the selection controllers. An interactive interface controller is coupled to each of the set-top boxes, and the set-top boxes selectively provide signals to selected respective ones of the display apparatus responsive to the selection controller for selection, in accordance with the associated tag data, of selected associated ones of the

image data words, for recall from the database storage subsystem.

The image data words are preferably photographic images.

The user data entry workstation is comprised of at least one of any input device such as a keyboard, a mouse, a microphone, and a magnetic strip reader.

5 The image means can be comprised of one or more of a digital camera, computer generated image data, photographic scanner, and analog-to-digital conversion of analog image source data, etc.

10 In a preferred embodiment, the system additionally comprises a cable head distribution subsystem for coupling from the database storage subsystem to the set-top boxes responsive to the selection signals from the set-top boxes. The output controller is responsive to the associated tag data and a user input entered via a remote control device. The database storage subsystem provides an output for coupling via the cable head distribution subsystem to provide an output for coupling to the set-top boxes to provide for a respective display presentation on a respective associated display apparatus associated with the respective user remote associated with selection of the  
15 selected image data word.

The display apparatus can be television sets, LCD's, monitors, etc.

The output from the cable head distribution subsystem are presentation signals, which control the display apparatus presentation.

20 Security means can be provided to prevent non-authorized viewing of the image data words. The security means can utilize a Personal Identification Number (PIN) password protection.

One or more of the selected image data words can be associated with a particular set of photo images for retrieval.

25 In a preferred embodiment, the system additionally comprises a digital interface controller coupled to the output controller. The digital interface controller provides an output for utilization of the image data words and associated tag data as contained in the database storage subsystem. The user interface apparatus utilizes an associated one of the set-top boxes for interface with the digital interface controller from at least one  
30 location. The digital interface controller is responsive to one or a plurality of locations of the respective set-top boxes. The locations can be one or more of a plurality of photolabs physically separate from each other, a backup facility, and a photo viewing center providing for the user to request information via the digital interface controller.

The output controller is responsive to the digital interface controller to provide a

selection control signal to the database storage subsystem for selectively retrieving from the database storage subsystem the respective associated image data word with the associated tag data from the database storage subsystem to provide output to the respective set-top box for a respective requesting location.

5           The user interface apparatus can be comprised of a separate computing system, a keyboard, a mouse, and/or a magnetic card strip reader.

10           The digital interface controller is coupled via a communications interface channel comprising at least one of a common interface to each of the set-top boxes and separate communication couplings between each of the set top boxes and the digital interface controller.

          The storage controller provides for at least one of database storage, management sorting, image processing, image tracking, accounting for the photographs taken, utilization of people and equipment, and demographics of people buying photos.

15           In a cruise ship preferred embodiment, the system is located on a cruise ship with guest cabins. A portion of the plurality of display apparatus can be located in some of the guest cabins

20           In accordance with a third embodiment, a communications management system is provided comprising a first source of photograph image data, a second source of movie/television programming, a cable head distribution subsystem coupled to the first source and the second source for selectively providing a distribution output, a set-top box, coupled to the cable head distribution subsystem, a remote control for providing user signals, and an in-room television. The set-top box is responsive to the user signals from the remote for selecting and coupling the distribution output to provide a set-top output for presentation on the in-room television.

25           The remote control communicates with the set-top box, preferably wirelessly, such as via one of infrared, ultrasonic, radiowave or microwave communications. The set-top box is responsive to the user signals to provide an output of user input request information to the cable head distribution subsystem. The cable head distribution subsystem is responsive to the user input request signal output to selectively couple the requested photograph image data via the cable head distribution subsystem, to the in-room television to provide for a display presentation of the requested photograph image data.

30

          User signals are provided via a user input entered via any input device such as at least one of: a keyboard, TV remote control, touch screen, and voice recognition.

As shown in FIGS. 4-6, the in-room television (or other display apparatus) provides a display user interface screen for user entry of room number, associated tag identification information, user name, and/or a selected photo identification. The system can further provide for security for user entry of a personal identification number for security purposes.

In a preferred display embodiment, a display apparatus, such as the in-room television, provides for the photograph image data to be displayed as a display presentation comprising a plurality of thumbnails (e.g., reduced size images) for a plurality of photographic images. The display presentation of the thumbnails further comprises a matrix identifier, and designates a row and a column designator associated with each of the thumbnail photographic images. The display presentation provides a user interface display which provides for the user selection of which of the thumbnail photographic images to expand and display.

The user interface display is responsive to any input device such as at least one of: a touch screen, a remote control device, a keyboard, and voice recognition. The display presentation shows details in an expanded figure view of a user selected thumbnail. The user is provided navigational information to control looking at a plurality of the photographic images, and an ability to select and order particular ones of the photographic images.

The image data words can be sorted by any means, such as associative tags, and stored in the database storage the database storage subsystem. The database storage subsystem stores the image data words in an indexed relation according to the associative tag information. The photograph image data can be entered in an ad hoc fashion numerous times, each time with associative tag data associated and affiliated with the photograph image data, and is stored such that all of the photograph image data is stored as associated with the respective associated tag data.

The storage system controller can sort the accumulated stored database to provide for quick user access to the associated photograph image data responsive to the associated tag data. The photographic image data can alternatively be accumulated in the order entered into the database storage, and sorting creates a new stored database. The stored database can provide adequate unused storage capacity to permit storage of both the database as originally stored database and the sorted stored database.

From the foregoing, it will be observed that numerous variations and modifications may be effected without departing from the spirit and scope of the

invention. It is to be understood that no limitation with respect to the specific apparatus illustrated herein is intended or should be inferred. It is, of course, intended to cover by the appended claims all such modifications as fall within the scope of the claims.

**WHAT IS CLAIMED IS:**

1. A system for managing the storage and delivery of image data, the system comprising:

image means for generating a plurality of image data units;

5 tag means for providing associated tag data, for identifying a respective one of the plurality of image data units;

database storage means for storing as a stored database the plurality of image data units;

10 a system controller for providing processing, storage and logic, functions and couples to the database storage means;

an output interface controller coupled to the database storage means and providing for access to the stored database for selective retrieval of selected ones of the image data units from the database storage means; and

15 display means for providing a display presentation responsive to the output interface controller.

2. The system as in claim 1, wherein the image data is one of computer-based generation, scanned photographic images, analog-to-digital conversion, and digital image data.

20

3. The system as in claim 1, wherein the tag means for providing associated tag data is comprised of entering at least one of a room number, a last name, social security number, unique identifying data, and reading a magnetic stripe on a card.

25

4. The system as in claim 1, wherein the database storage means is comprised of at least one of semiconductor memory, non-volatile, volatile, magnetic storage medium, hard disk, and optical storage.

30

5. The system as in claim 1, wherein the output interface controller is comprised of a user interface, a digital output interface, a database storage system interface, and an analog/digital TV delivery output interface.

6. The system as in claim 5, wherein the user interface is comprised of at least one of a keyboard, a touch screen, a remote control, a magnetic stripe card reader, or other

input device.

7. The system as in claim 6, wherein the user interface provides for user access to the database storage means and provides means for selection by the user from the database storage means

8. The system as in claim 5, wherein the digital output interface provides a digital output which is coupled to at least one of a plurality of subsystems via a communications medium.

9. The system as in claim 8, wherein the digital output couples to at least one photographic viewing center.

10. The system as in claim 9, wherein said digital output is connected to a plurality of photographic viewing centers located at multiple locations.

11. The system as in claim 9, wherein at least one photographic viewing center is transportable and moveable to various locations.

12. The system as in claim 8, wherein there are a plurality of subsystems wherein at least one of the plurality of the subsystems is a backup subsystem.

13. The system as in claim 8, wherein at least one of the plurality of subsystems is a physically separate photographic lab providing processing of the digital image data to provide final photographic print output.

14. The system as in claim 13, wherein said final photographic print out is sold to customers responsive to received orders.

15. The system as in claim 5, wherein the analog/digital TV delivery output interface provides an output to a cable head distribution subsystem coupled to an additional video input; and wherein the cable head distribution subsystem provides an output distribution which couples to at least one of a plurality of televisions with receiver set-top boxes.

16. The system as in claim 15, wherein the additional source of video input includes at least one of television programming, straight video, audiovisual, computer generated data, music, and other audio, visual, and audiovisual presentation materials.

5

17. The system as in claim 15, wherein a set-top box remote control provides communication of user input via the set-top box communicating with the cable head distribution subsystem and there from via output of the cable head distribution subsystem to the user interface of the output interface controller allowing user entry of identifying associated tag information via the set-top box remote control, and a request for presentation on a user's local display, wherein the set-top box provides a selection output which couples via the cable head distribution subsystem to the output interface controller to provide for user selection of stored digital images for display to the user on the respective local display responsive to the selection output.

10

15

18. The system as in claim 1, wherein the interface from the output interface controller is at least one of Ethernet, analog television, and digital television.

19. The system as in claim 1, wherein the image means for generating is a photographer shooting photographs with a digital camera, wherein the image data is photographic digital image data.

20

20. The system as in claim 19, wherein there are a plurality of the image means providing a plurality of image data units for storage in the stored database.

25

21. The system as in claim 1, further characterized as aboard a cruise ship.

22. The system as in claim 1, further comprising;

an assembly controller for assembling the image data unit with the associated tag data into an assembled data packet and for storing the assembled data packet in the database storage means, wherein the stored database is comprised of the assembled data packets.

30

23. The system as in claim 1, wherein the image means is comprised of scanning of

photographic negatives and processing the scanning to provide corresponding ones of the image data units.

24. The system as in claim 1:

5                    wherein the tag means is comprised of an entry workstation providing for entry of associated tag data, associatively identifying a respective one of the image data units and a tag controller coupled to the user data entry workstation for combining a respective one of the image data units with a respective one of the associated tag data to provide an assembled data packet;

10                   wherein the database storage means provides for storing a plurality of the assembled data packets;

                    wherein the database storage means is comprised of a storage controller for computing, processing, data manipulation, and storage and retrieval management to facilitate the management of an accumulated plurality of the image data units; and

15

                    wherein the display means provides a presentation output responsive to the storage controller.

25. The system as in claim 24, wherein the display means is further comprised of a display apparatus for providing at least a video display presentation responsive to the presentation output.

20

26. The system as in claim 25, further comprising a selection controller associated with the display apparatus, for selecting one of the image data units from the database storage means for local display on the respective associated display apparatus.

25

27. The system as in claim 26:

                    wherein the selection controller is further comprised of a user remote for providing user signal, and a set-top box responsive to the user remote for coupling selection signals to the database storage means;

30

                    wherein the selected image data units are communicated to the respective set-top box, wherein the respective associated display apparatus provides a local visual presentation of the selected image data unit responsive to the set-top box.

28. The system as in claim 27, wherein there are a plurality of separate ones of the display apparatus each with an associated respective one of the selection controllers.

5 29. The system as in claim 28, further comprising;  
an interactive interface controller coupled to each of the set-top boxes,  
wherein the set-top boxes selectively provide signals to selected respective ones  
of the display apparatus responsive to the selection controller for selection, in  
accordance with the associated tag data, of selected associated ones of the image  
10 data units, for recall from the database storage means.

30. The system as in claim 24, wherein the image data units are photographic  
images.

15 31. The system as in claim 24, further comprising a source for generating the image  
data units comprised of at least one of a digital camera, computer generated image data,  
a photographic scanning, and analog-to-digital conversion of analog image source data.

20 32. The system as in claim 27, further comprising a cable head distribution  
subsystem for coupling from the database storage means to the set-top boxes responsive  
to the selection signals from the set-top boxes.

25 33. The system as in claim 27, wherein the output controller is responsive to the  
associated tag data and a user input entered via a remote control device.

30 34. The system as in claim 32, wherein the database storage means provides an  
output for coupling via the cable head distribution subsystem to provide an output for  
coupling to the set-top boxes to provide for a respective display presentation on a  
respective associated display apparatus associated with the respective user remote  
associated with selection of the selected image data unit.

35. The system as in claim 27, further comprising security means to prevent non-  
authorized viewing of the image data units.

36. The system as in claim 35, wherein the security means utilizes a Personal Identification Number (PIN) password protection.

5 37. The system as in claim 26, wherein the selected image data unit is associated with a particular set of photo images for retrieval.

10 38. The system as in claim 28, further comprising a digital interface controller coupled to the output controller wherein the digital interface controller provides an output for utilization of the image data units and associated tag data as contained in the database storage means, wherein the user interface apparatus utilizes an associated one of the set-top boxes for interface with the digital interface controller from at least one location.

15 39. The system as in claim 38, wherein the digital interface controller is responsive to a plurality of locations of the respective set-top boxes.

20 40. The system as in claim 39, wherein the locations are at least one of an individual room, one of a plurality of photolabs physically separate from each other, a backup facility, and a photo viewing center.

25 41. The system as in claim 39, wherein the output controller is responsive to the digital interface controller to provide a selection control signal to the database storage means for selectively retrieving from the database storage means the respective associated image data unit with the associated tag data from the database storage subsystem to provide output to the respective set-top box for a respective requesting location.

30 42. The system as in claim 27, wherein the user remote is at least one of a remote control device, a separate computing system, a keyboard, a mouse, and a magnetic card strip reader.

43. The system as in claim 39, wherein the digital interface controller is coupled via a communications interface channel comprising at least one of a common interface to each of the set-top boxes and communication couplings between each of the set top

boxes and the digital interface controller.

44. The system as in claim 24, wherein the storage controller provides for at least one of database storage, management sorting, image processing, image tracking,  
5 accounting for the photographs taken, utilization of people and equipment, and demographics of people buying photos.

45. The system as in claim 28, wherein the system is located on a cruise ship with guest cabins, wherein at least a portion of the plurality of display apparatus are located  
10 in some of the guest cabins.

46. The system as in claim 1 further comprising:

a communications management system coupled to the database storage means and to a source of movie/television programming; said communications  
15 management system further comprising a cable head distribution subsystem for selectively providing a distribution output from one of the database storage means and the source of movie/television programming;

a set-top box, coupled to the cable head distribution subsystem;

a remote control for providing user signals; and

20 an in-room television;

wherein the set-top box is responsive to the user signals from the remote for selecting and coupling the distribution output to provide a set-top output for presentation on the in-room television.

47. The system as in claim 46, wherein the remote control communicates with the set-top box via one of infrared, ultrasonic, radiowave and microwave communications.

48. The system as in claim 47, wherein the set-top box is responsive to the user signals to provide an output of user input request information to the cable head  
30 distribution subsystem, wherein the cable head distribution subsystem is responsive to the user input request signal output to selectively couple requested ones of the image data units via the cable head distribution subsystem, to the in-room television to provide for a display presentation of the requested image data units.

49. The system as in claim 47, wherein user signals are provided via a user input entered via at least one of: a keyboard, a TV remote control, a touch screen, and voice recognition.

5 50. The system as in claim 46, wherein the in-room television provides a display user interface screen for user entry of at least one of: room number, associated tag identification information, user name, and a selected photo identification.

10 51. The system as in claim 47, wherein the in-room television provides a display presentation comprising a plurality of thumbnail photographic images responsive to the respective image data units.

15 52. The system as in claim 51, wherein the display presentation of the thumbnail photographic images further comprises a matrix identifier, and designates a row and a column designator associated with each of the thumbnail photographic images.

20 53. The system as in claim 52, wherein the display presentation provides a user interface display which provides for the user selection of which of the thumbnail photographic images to expand and display, wherein the display presentation shows details in an expanded figure view of a user selected thumbnail.

54. The system as in claim 53, wherein the user interface display is responsive to at least one of: a touch screen, a remote control device, a keyboard, and voice recognition.

25 55. The system as in claim 53, wherein the user is provided navigational information to control looking at a plurality of the thumbnail photographic images, and an ability to select and order particular ones of the thumbnail photographic images.

30 56. The system as in claim 24, wherein the database storage means stores the image data words in an indexed relation according to the associative tag information.

57. The system as in claim 56, wherein the image data units are entered at numerous times, each time with associative tag data associated and affiliated with the image data unit, and is stored such that all of the image data units are stored and associated with

respective ones of the associated tag data.

5 58. The system as in claim 57, wherein the storage system controller provides for quick user access to the associated image data units responsive to the associated tag data.

10 59. The system as in claim 57, wherein sorting creates a new stored database; wherein the stored database provides adequate unused storage capacity to permit storage of both an originally stored database and the new stored database.

15 60. The system as in claim 1, wherein the image means provides for generating the plurality of image data units by:

capturing a variety of frames of photographs on a film medium;  
developing the film medium; and

15 scanning the developed film medium to create a plurality of image data units corresponding to the plurality of frames.

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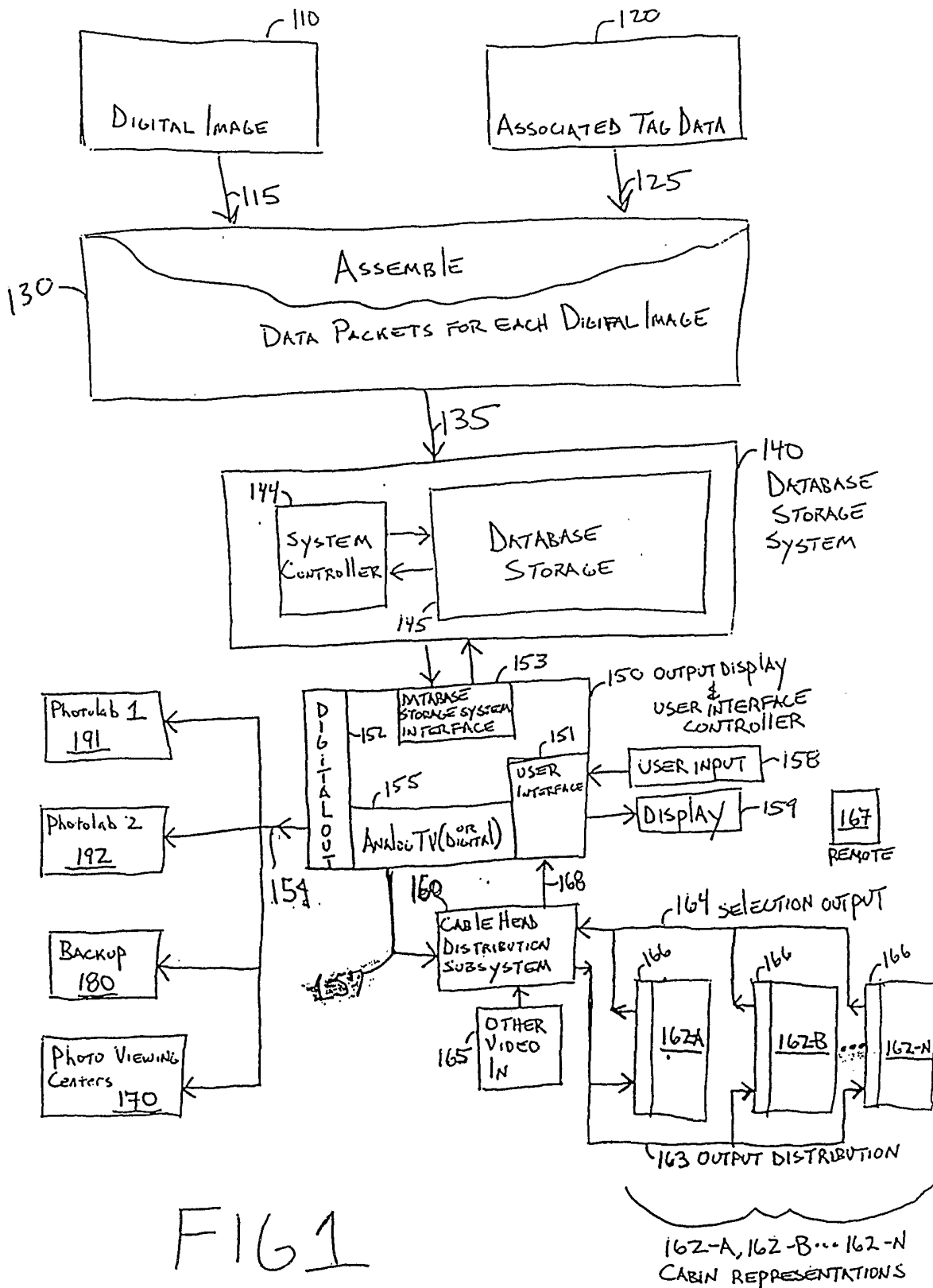
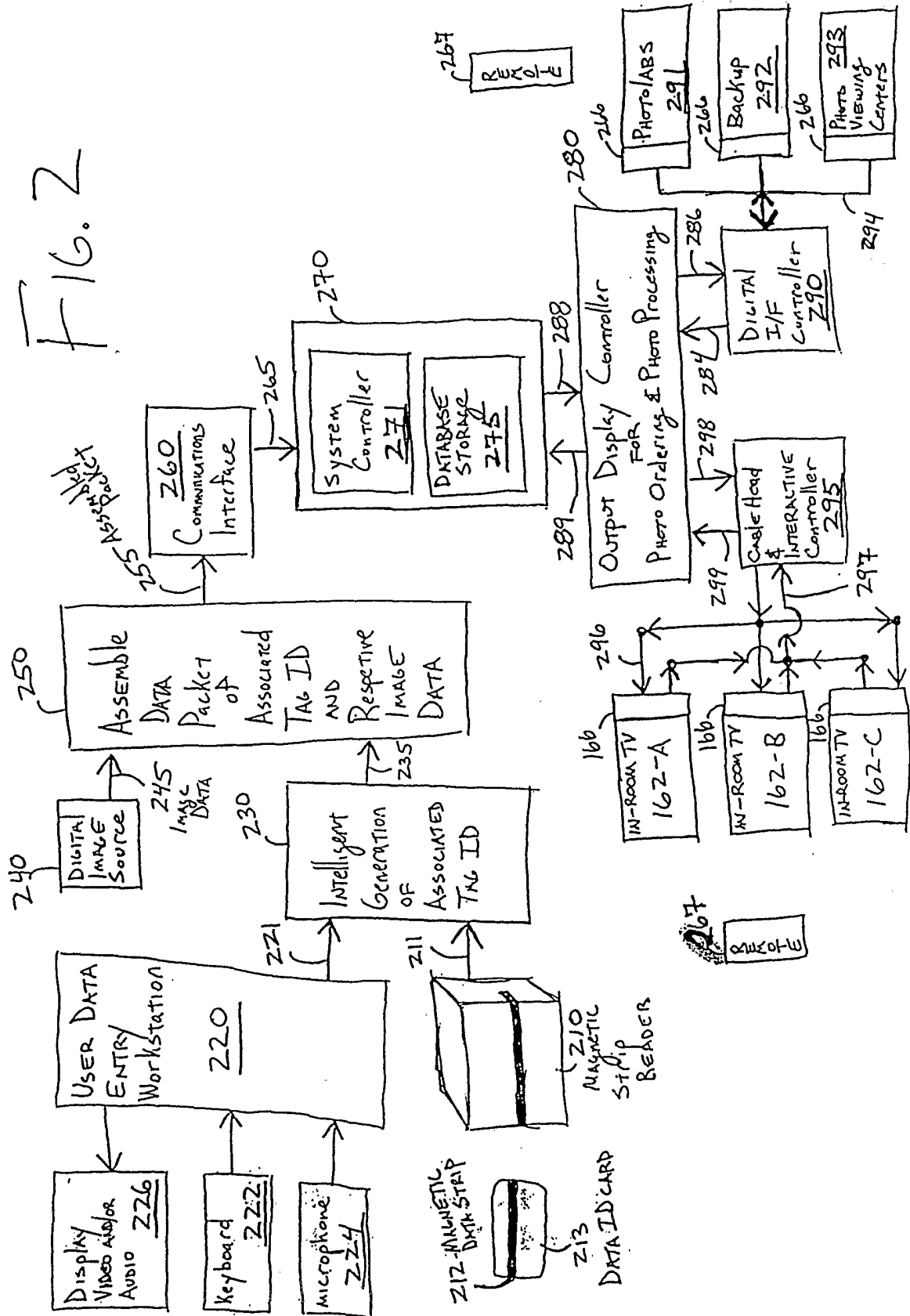


FIG 1

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FIG. 2



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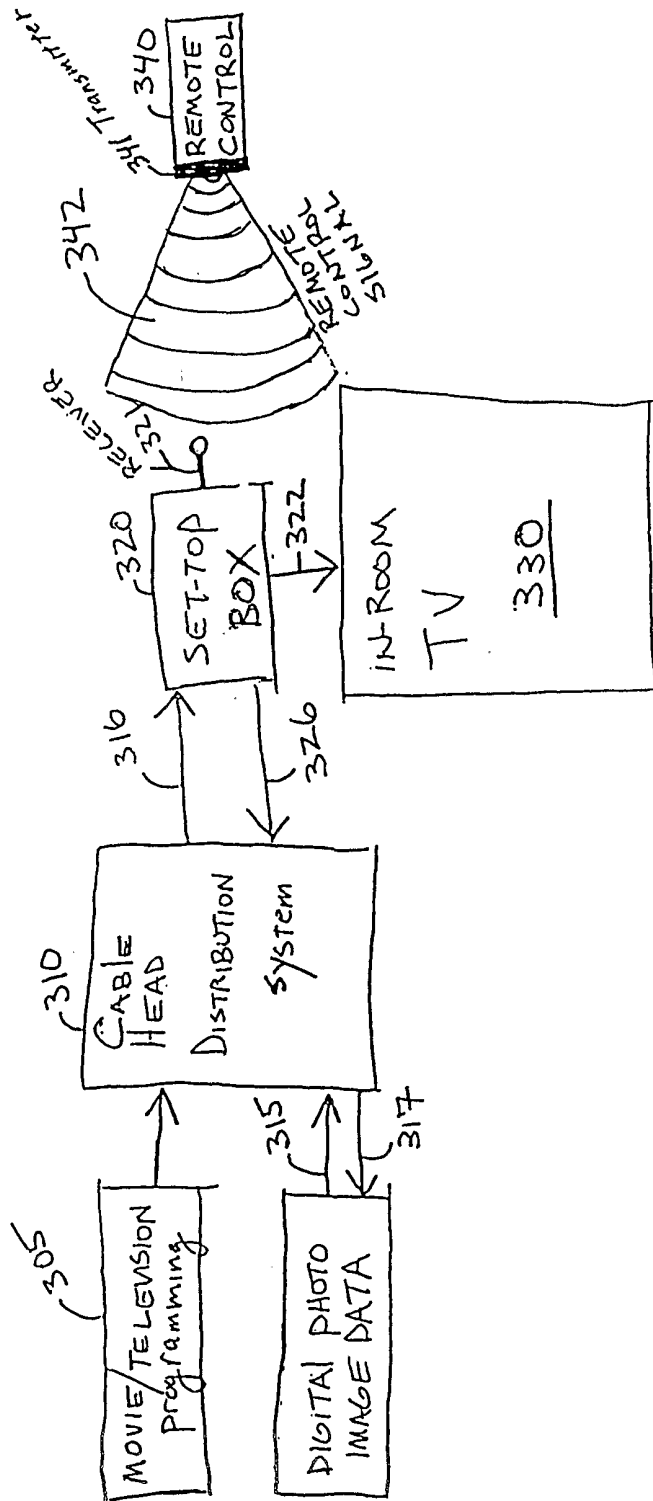


Fig 3



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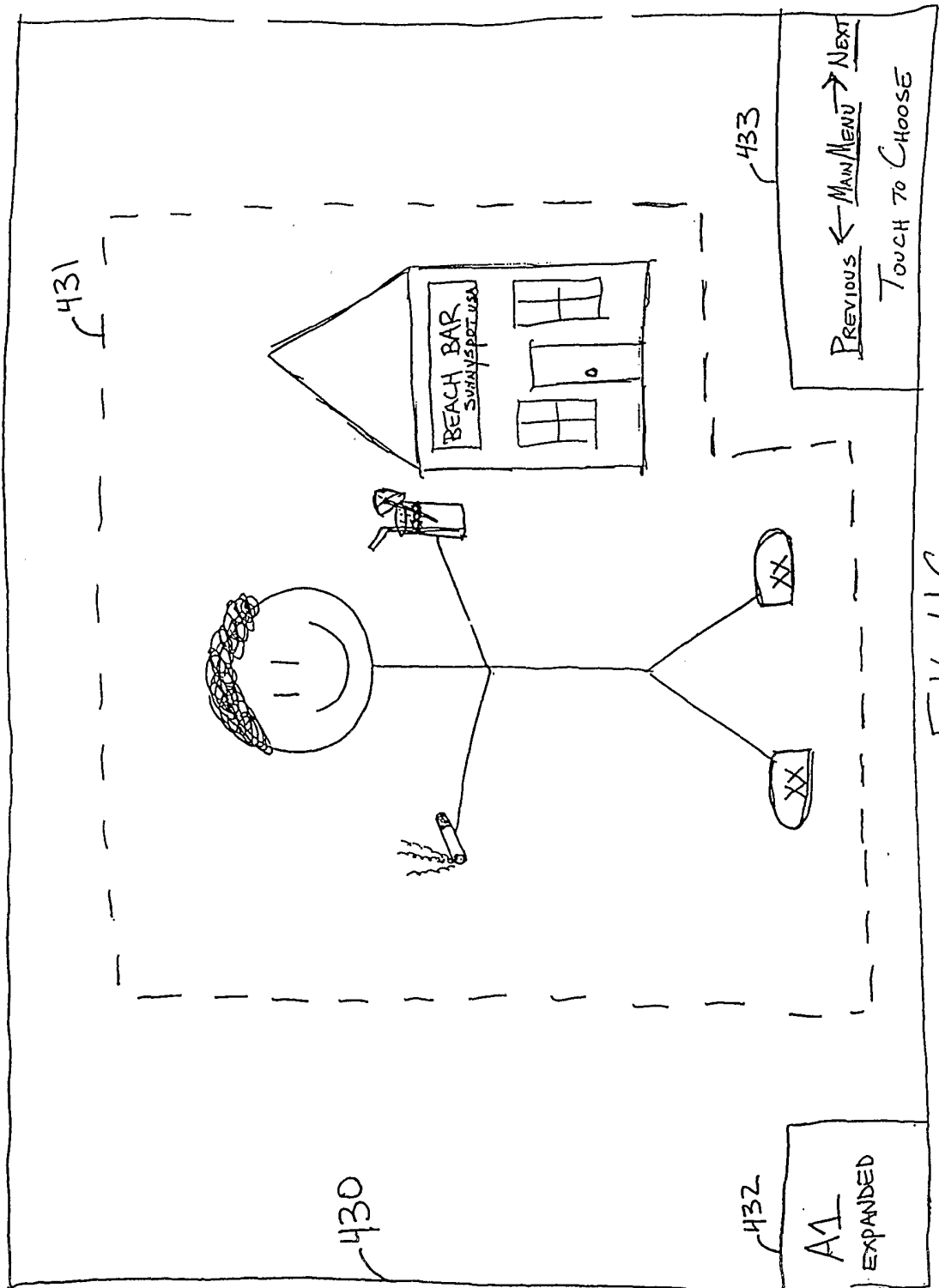
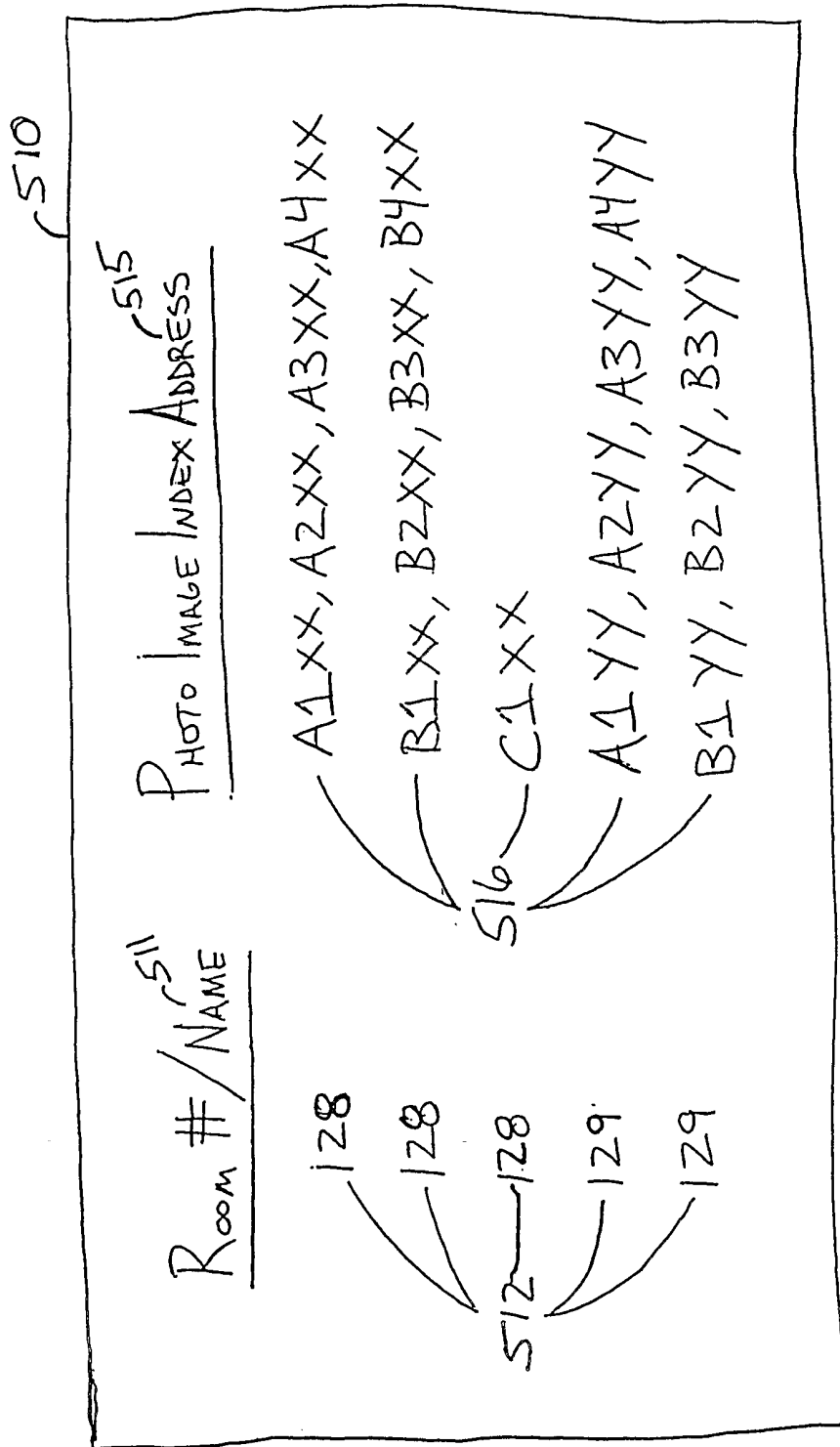


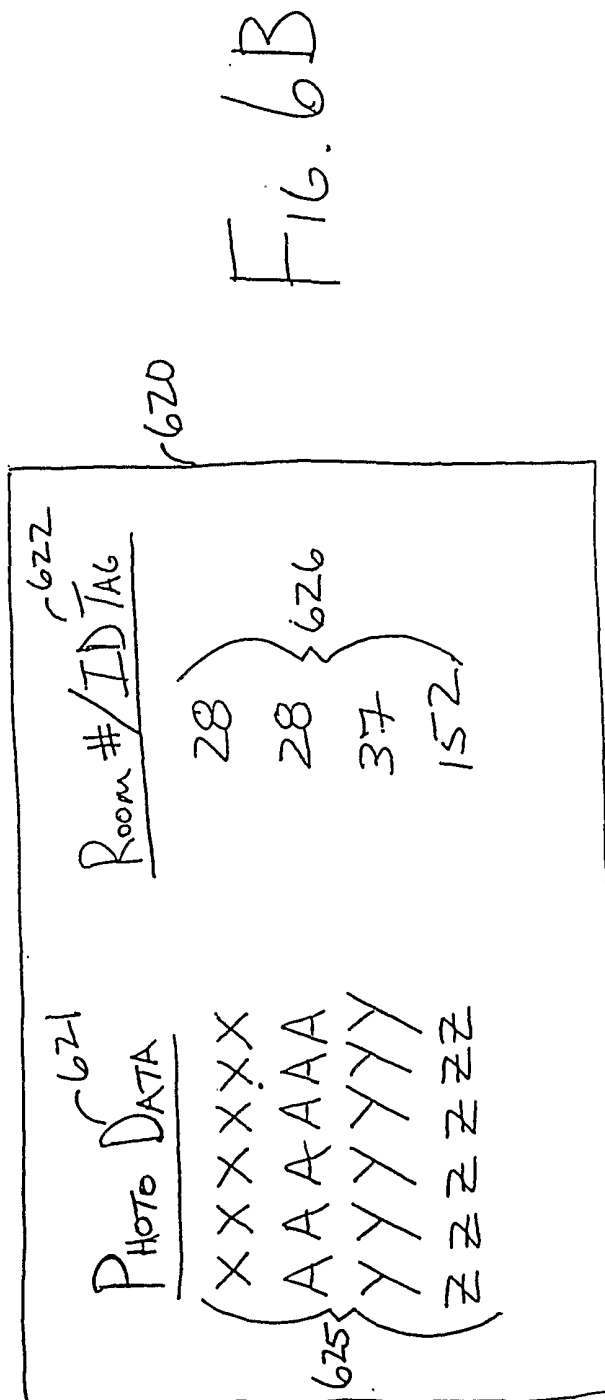
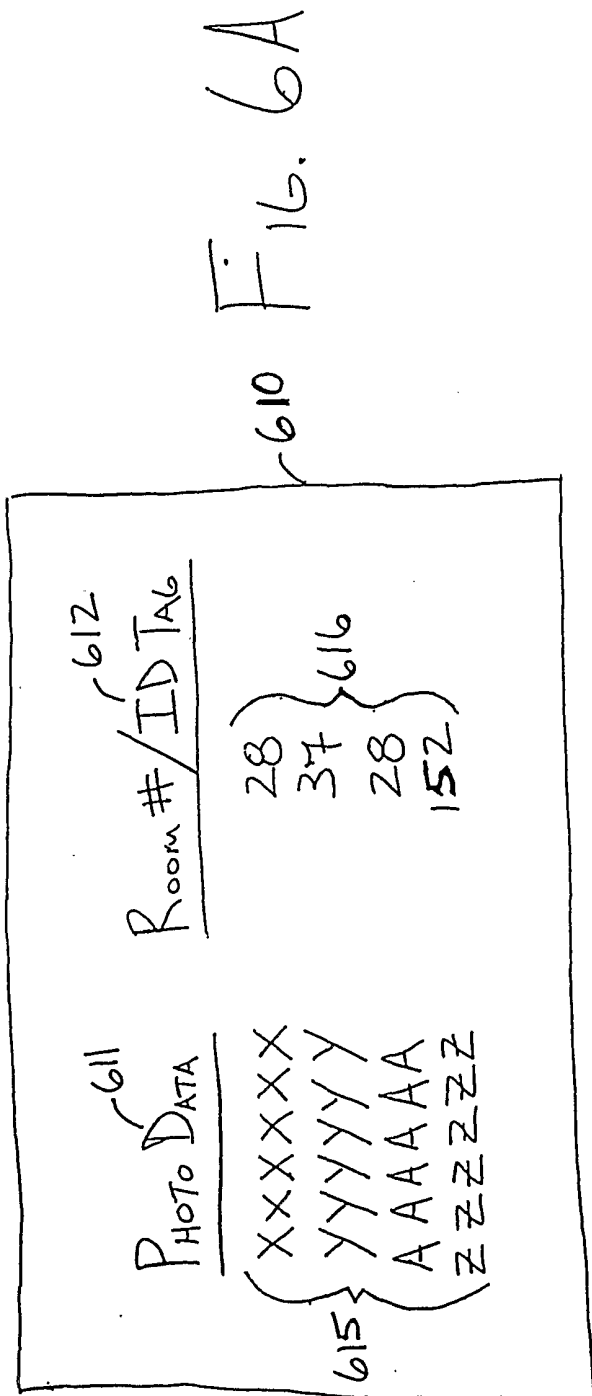
FIG. 4C

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FIG. 7

