EXHIBIT E TO THE DECLARATION OF
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(54) **METHODS AND APPARATUS FOR SHARING, TRANSFERRING AND REMOVING PREVIOUSLY OWNED DIGITAL MEDIA**

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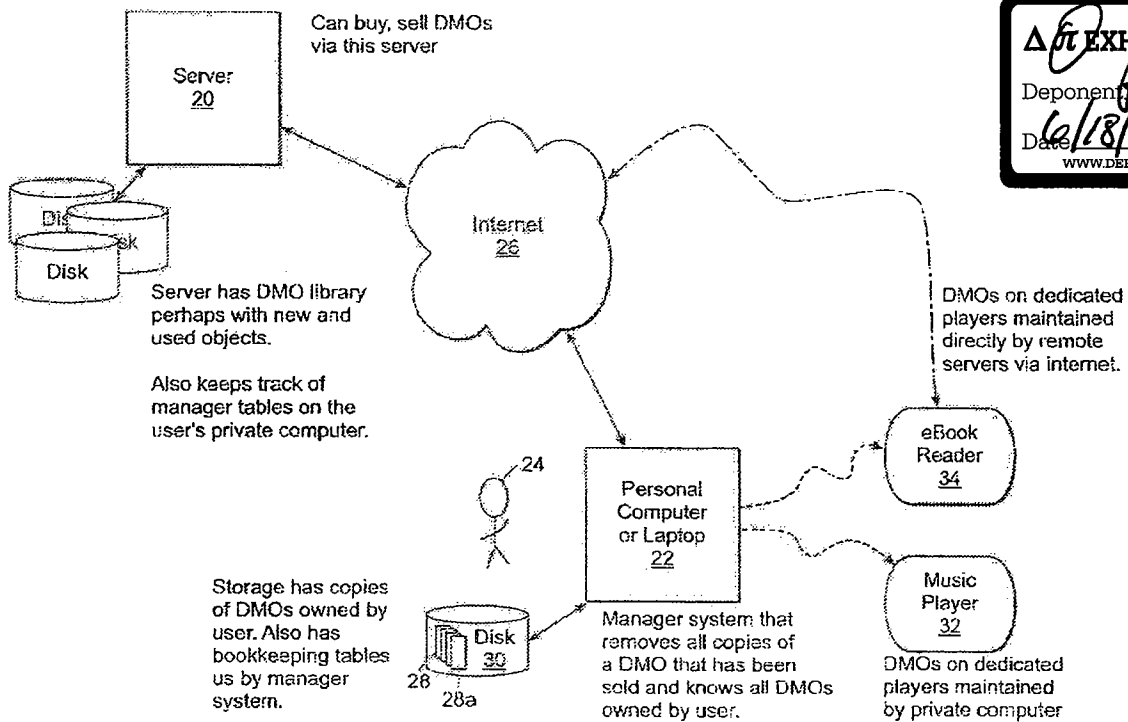
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(57) **ABSTRACT**

The invention provide systems and methods for management of digital media objects, comprising first and second client digital data processors (e.g., personal (or private) computers, laptops, dedicated music devices, electronic book readers, and so forth) that are in communications coupling with one or more stores (e.g, dedicated disk drives, flash drives, cloud storage, etc.). At least one digital media object (DMO) or copy thereof is stored in one or more of those stores and is accessible by at least one of the first and second client digital data processors.
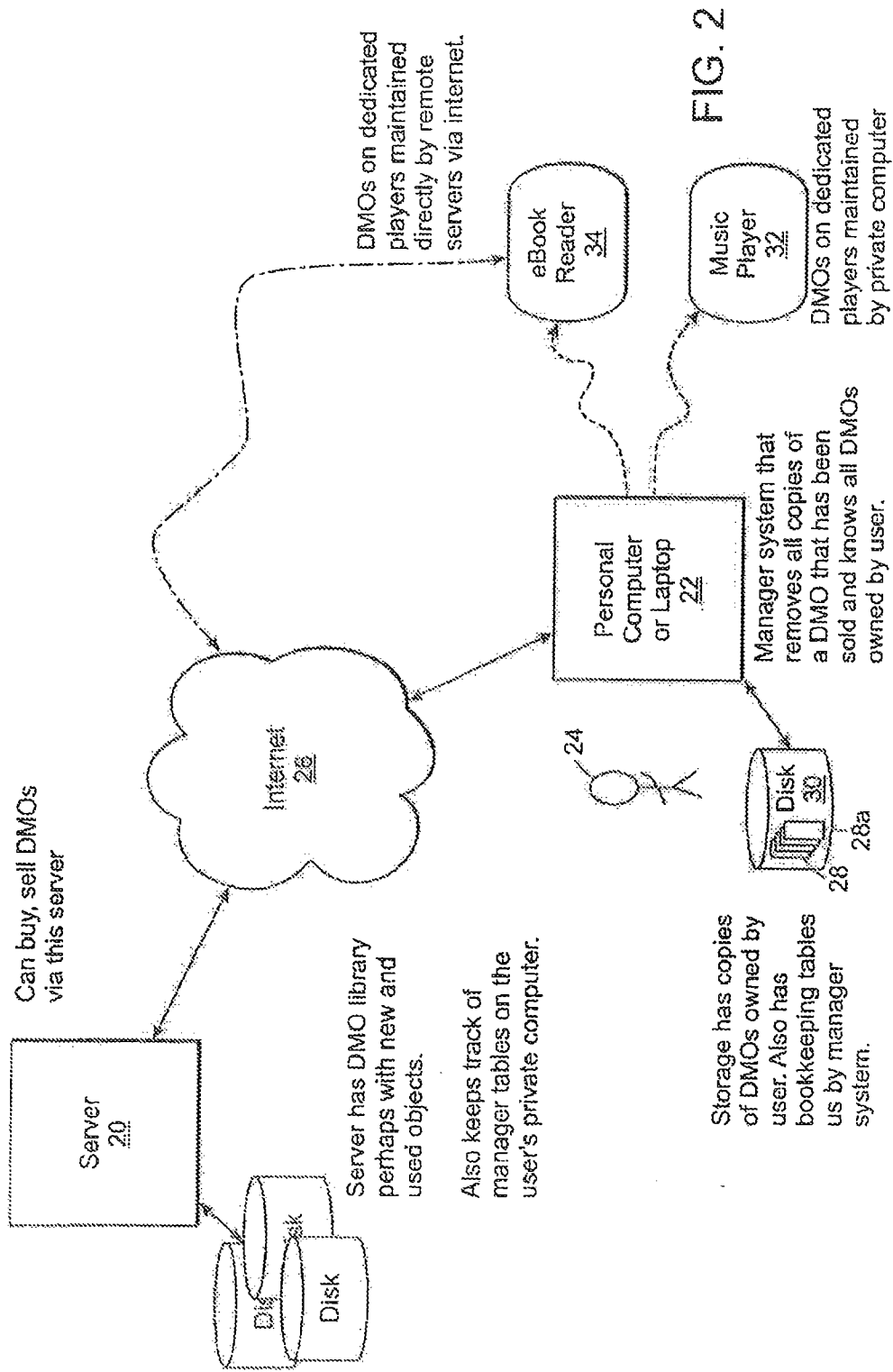
FIG. 2

DMOs on dedicated players maintained directly by remote servers via internet.

eBook Reader 34

Music Player 32

DMOs on dedicated players maintained by private computer

Personal Computer or Laptop 22

Manager system that removes all copies of a DMO that has been sold and knows all DMOs owned by user.

24

Internet 26

Disk 30

28
28a

Storage has copies of DMOs owned by user. Also has bookkeeping tables us by manager system.

Can buy, sell DMOs via this server

Server 20

Disk
Disk
Disk

Server has DMO library perhaps with new and used objects.

Also keeps track of manager tables on the user's private computer.

pixels of the image are arranged in a rectangle with a certain number of columns and rows. Thus somewhere in the beginning of the file, are these two numbers. There is much more information that can be specified about the picture. This information is often stored in the header of the file before the actual bits of the image. The information in the header is sometimes referred to as "meta-data" since it describes things about the image but not the image itself.

[0060] Meta-data in the header may specify information such as the camera, the shutter speed, time and date, the place or GPS coordinate as to where the picture was taken, and other things about the image. In addition, other information can be stored in this header, such as the photographer, the owner of the image, or a unique id representing a particular purchase of the image. The header might be sealed using encryption techniques to prevent others from changing this information. The image may be compressed using one of the standard techniques such as jpeg, tiff, postscript, bitmap, and many others. The image may or may not be encrypted.

[0061] FIG. 1 depicts various options for encrypting different parts of the file containing a digital media object in a system according to the invention. Thus, as shown in FIG. 1A, a digital media object 10 contains a header 12, along with a "body" 14 containing bits representing the digital song, video, or other file content. As shown in FIG. 1B, one option for encrypting the file includes encrypting the body 14 using a private key of the hardware device or software application that will be used by the user to render (or, more generally, "play") the object 10. As shown in FIG. 1C, another option is to additionally encrypt the header 12, albeit using a private key associated with the distributor, producer or owner of the digital media object. Further, as shown in FIG. 1D, a further option is to encrypt both the header 12 and body 14—both encrypted in accord with FIG. 1C—with the private key of the copyright owner.

[0062] Music has seen a similar transformation. Music is no longer recorded on a paper-roll, record or tape. It too has been digitized and a recording placed in a file with a header similar to that of digital pictures. The music encoding, number of bits per second of playback, pitch, volume, Dolby encoding, and the dynamic range. Other information may also be placed in the header, again, such as the owner, producer, song title, and a whole lot more.

[0063] Pictures, music, and other digital media often contain more precision than can be observed, heard, or sensed by people or by the rendering technology. Consequently, variations in the bits specifying the object may not be noticeable. Two images may appear identical even though their bit representations differ slightly. One the one hand, this provides a challenge when trying to identify an image from its file representation. On the other-hand, it permits embedding information directly into the image or music that is not noticeable but can be used to watermark the object.

[0064] Of course, movies, which essentially are a combination of images and sound have been digitized and wrapped in a file or multiple files with detailed meta-data. There are many different formats for movies as well. Since movies require a large number of bits, they are often stored in multiple files but usually within one main directory representing the entire movie.

[0065] Computers have been used as "word processing" devices or desktop publishing for many years. More recently, there has been an increase in electronic books, or e-books. Again, the contents of a book are recorded digitally usually in

a file or multiple files within a directory. Once again, there is metadata associated with the e-book, that may contain the title, author, number of pages, and much more information.

[0066] Many other types of media are similarly treated. Computer games, 3-D or holographic movies, karaoke, rock-band, maps, slide shows, maps, and more. We shall refer to all of these as "digital media objects."

[0067] Since digital media objects are just a file of binary data they can be easily copied. Unlike the physical counter-parts, the copies are usually identical in that their binary specification are exactly the same. The meta-data may be the same or may differ depending on how the copy was made.

[0068] Typical Organization

[0069] FIG. 2 depicts a system for the management of digital media objects according to one practice of the invention. It will be appreciated that this is shown and described by way of example, and that other systems incorporating changes to that shown (and described) may fall are within the scope of the invention, as well. As shown in the drawing,

[0070] There are many ways to install, maintain, distribute, sell, and other operations involving DMO's and their use. In a typical use case (see FIG. 2) of a system according to the invention, there is a server digital data processor ("server") 20 that is accessed by and in communications coupling with a client digital data processor, e.g., private computer 22 of a user 24 via the internet 26. The server 20, which is typically remotely disposed from the client digital data processor (or "client") and which is therefore referred to occasionally herein without loss of generality as the "remote server," stores original versions of the DMO's 28 for this user 24 (as well as for other users). The user (a term which is typically used herein to refer to an act of the client digital data processor, e.g., under the control of and/or at the behest of its human owner and/or operator) may upload or download his or her DMO's between his or her private computer and his or her storage area on the remote server. Every non-new DMO stored in the remote server 20, is owned by some user's account. The user's account has a pointer to the DMO stored on the disks associated with the remote server.

[0071] For a DMO to be offered for sale, it is first copied to the remote server and stored on the disk. The user's account points to the place on the disk where the DMO is stored. All copies of the DMO must be purged from the user's private computer. When this is confirmed, the DMO can be offered for sale.

[0072] To buy a DMO 28a, a user places an order. When a matching DMO is offered for sale a transaction occurs, that involves an exchange of money and the pointer to the object is moved from the previous owner to the new owner. The new owner's private computer 22 will download the object 28a from the remote server 20 and store it on the local hard drive 30 of the private computer 22. Later, the DMO player 32 is connected to the private computer 22 and the DMO 28a is copied to that device 32.

[0073] Referring to FIG. 2, digital music can be played on a computer 22, a dedicated music device 32, etc. Electronic books can be read on computers 22, dedicated e-book readers 34. (The computer 22 and devices 32, 34 are collectively referred to herein as "client digital data processors"). The digital media objects may be downloaded from a server 20 via the internet 26. They may first be stored on a computer 22 and then transferred to a dedicated media device, e.g., 32 or the dedicated media device, e.g., 34 can directly connect to the remote server 20 via the internet 26 for such download.