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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

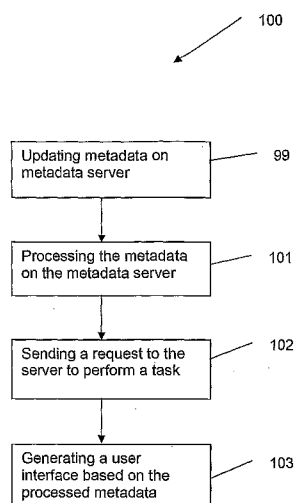
— of inventorship (Rule 4.17(iv))

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(54) Title: A METHOD FOR GENERATING A USER INTERFACE FOR ENABLING ACCESS TO DATA ON A SERVER

Figure 4



(57) Abstract: There is provided a method for generating a user interface for enabling access to data on a server. The method comprises updating metadata in a metadata server, the metadata server being functionally connected to the server; processing the metadata on the metadata server; sending a request to the server to perform a task; and generating the user interface on a client device based on the processed metadata for enabling access to data on the server. The user interface may preferably be used to send the request to the server. The task being performed by the server may include, for example, browsing a collection of files, organizing files, selecting files, editing files, uploading files, downloading files and so forth.

A Method for Generating a User Interface for Enabling Access to Data on a Server

Field of the Invention

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The invention relates to the field of user interfaces. In particular, the invention relates to a method for generating a user interface for enabling access to data on a server.

Background of the Invention

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Many users store data such as media files, image files, or audio files on devices. The users typically wish to access the aforementioned data without any inconvenience even when the stored data is voluminous. It would be
15 frustrating for the users to encounter difficulties when attempting to access the stored data.

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The type of devices may include, for example, mobile phones, Personal Digital Assistants (PDAs), portable media players, computers, any computing device and so forth. As the collection of files grow, the users typically manually organize their files on the device using file management applications running on the device.

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To satisfy the need for increased storage of data, many online data sharing sites allow users to upload data for storage so that the users do not have to compromise a compact form factor for their device in order to possess higher storage capacity. In addition, these online data sharing sites also allow users to access their data regardless of device as long as the device is technically able to access the online data sharing sites. However, to manage the
30 uploaded files or files stored on the server, the device has to be continually connected to the online data sharing sites either through either a wireless or a wired connection. It is desirable that the widespread proliferation of online

data sharing sites still allows the uploaded data from the various online data sharing sites to be easily accessible by the user despite the voluminous amount of data stored at the various online data sharing sites.

- 5 Reference in the specification is made to US 6,928,433 titled "Automatic Hierarchical Categorization of Music By Metadata" which is assigned to Creative Technology Ltd. The reference is made in relation to a media file management application that will be mentioned in the section titled "Detailed Description of the Embodiments".

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Summary of the Invention

There is provided a method for generating a user interface for enabling access to data on a server. The method comprises updating metadata in a
15 metadata server, the metadata server being functionally connected to the server; processing the metadata on the metadata server; sending a request to the server to perform a task; and generating the user interface on a client device based on the processed metadata for enabling access to data on the server. The user interface may preferably be used to send the request to the
20 server. The task being performed by the server may include, for example, browsing a collection of files, organizing files, selecting files, editing files, uploading files, downloading files and so forth.

It is preferable that processing the metadata comprises analysing the
25 metadata on the metadata server. Analysing the metadata may comprise determining a data file format such as, for example, audio file, image file, video file and so forth.

Preferably, analysing the metadata enables categorization of data into a
30 hierarchy in accordance with branches of a directory tree as presented in the user interface.

The client device may be selected from, for example, portable media player, mobile phone, Personal Digital Assistant (PDA), computing device and so forth.

- 5 It may be preferable for the server to be separable into at least one data server and at least one metadata server.

In addition, the method may further include consuming the data based on a combination of a pre-defined protocol and a hardware/software configuration
10 of the client device.

It may be preferable that updating the metadata in the metadata server is either a push process by the server or a pull process by the metadata server.

15 **Brief Description of the Drawings**

In order that the present invention may be fully understood and readily put into practical effect, there shall now be described by way of non-limitative example only preferred embodiments of the present invention, the description being
20 with reference to the accompanying illustrative drawings.

Figure 1 shows an overview of a method for generating a user interface according to a first embodiment;

25 Figure 2 shows a representation of the user interface of Figure 1;

Figures 3a and 3b show variations of the user interface of Figure 1; and

Figure 4 is a flow chart outlining the method of Figure 1.

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Detailed Description of the Embodiments

Figure 4 illustrates a flow chart of a method 100 for generating a user interface 10 for enabling access to data on a server 12 according to a first embodiment of the invention. Figure 1 illustrates a system 90 where the method 100 may be employed. With reference to Figure 1, the user interface 10 may formatted for display on a display 8 on a client device 14. The server 12 may be, for example, a computer, a program residing on a computer, a remote network site or any storage means. While the server 12 is shown to be a single unit in Figure 1, it should be noted that the server 12 can be separable into at least one metadata server and at least one data server.

The metadata server may contain all metadata of data from the at least one data server. When the at least one metadata server and at least one data server are functionally linked, a user would not be able to distinguish a composition of servers being used. The metadata server may obtain and process new metadata whenever new data is input into the at least one data server. The provision of new metadata to the metadata server may be either a push process (where the data server transmits any new metadata for new data to the metadata server) or a pull process (where the metadata server periodically/continually checks whether new data resides in the data server and consequently sends a request to the data server to transmit any new metadata). The use of a plurality of data servers would be similar to an instance when a plurality of online storage facilities are in use by the user.

The client device 14 may be, for example, a portable media player, a mobile phone, an application running on a processor-based device and so forth. In a non-limiting embodiment, the invention will now be described with reference to the portable media player. It should be noted that the invention may also be applied in other areas such as, desktop/server computers, computing devices and so forth. However, it should be appreciated that the method 100 is most advantageously employed in devices 14 with low-end processing capability as the method 100 does not require the device 14 to carry out data processing in

relation to the method 100. The device 14 is preferably wirelessly connected to the server 12 via a network connection.

Figure 2 shows a non-limiting representation of the user interface 10 which appears on the display 8 on the client device 14. The user interface 10 may comprise a secondary window 16, a task selection bar 18 and a plurality of modal tabs 20 for selecting modes for viewing in a primary window 23. The secondary window 16 may be for presentation of an expanded view of contents of a branch 25 of a directory tree 22. The contents of the branch 25 of the directory tree 22 may also be shown in a contents bar 17 in the primary window 23. As such, the user may select contents of the branch 25 of the directory tree 22 either from the secondary window 16 or the contents bar 17.

The task selection bar 18 may consist of a selection (plurality) of action buttons 19. The action buttons 19 may each be represented by either a graphical icon or a literary description. The action buttons 19 may be grouped in accordance with, for example, a user's preferences, the type of task being performed, how each task is related to each other and so forth. The action buttons 19 in the task selection bar 18 may include, for example, browsing a collection of files, organizing files, selecting files, editing files, uploading files, downloading files and so forth.

In a non-limiting example, for tasks relating to file access, related action buttons 19 like transfer of files, editing or creating a folder are grouped together in a sequential manner to either aid or guide the user to perform the desired task(s) quickly and efficiently. The action buttons 19 may also provide the option for the user to go online to download a file. Furthermore, a query form field 21 is provided in the task bar 18 to enable the user to enter text to search for a specific file.

Each modal tab 20 may have a directory tree 22 and each modal tab 20 may be determined by a data file format of each data file stored in the directory

tree 22. The data files may include, for example, audio files, image files, video files, non-media files or the like. Each directory tree 22 may consist a list of branches 25 that are relevant to the directory tree 22 (which may be dependent on data file format of data files). When a particular modal tab 20 is selected, the set of branches 25 in the directory tree 22 is displayed. The branches 25 may be presented in a list view format in the primary window 23 (as shown). A detailed description relating to how the directory tree 22 is generated follows in a subsequent portion of the description.

10 In the non-limiting example as shown in Figure 2, when a music modal tab 20 is selected, the directory tree 22 containing a set of music branches 25 is shown. Each music branch 25 may define a node for storing music files categorized by metadata in a hierarchical fashion as per the disclosure of US 6,928,433. For example, the set of music branches 25 may include, as shown
15 for illustrative purposes, playlist, album, artist, genre, all tracks, folders, DJ, transfer list or the like.

Figures 3a, and 3b illustrate other non-limiting examples of the interface 10 when a picture modal tab 20, and a video modal tab 20 are selected
20 respectively. In Figure 3a, a set of picture branches 25 may include, as shown for illustrative purposes, slideshow, year, people, event, place, folders, transfer list, or the like. Similarly, in Figure 3b, a set of video branches 25 may include, as shown for illustrative purposes, year, genre, director, cast, producer, folders, transfer list, or the like.

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Figure 4 shows a process flow of the method 100 for generating the user interface 10 on the client device 14. Firstly, new metadata is provided to the metadata server in step 99. As such, the metadata is updated in the metadata server. The metadata server may be a part of server 12 or may be a separate
30 server. The new metadata may be transmitted to the metadata server either via a push process (where the data server transmits any new metadata for new data to the metadata server) or a pull process (where the metadata

server periodically/continually checks whether new data resides in the data server and consequently sends a request to the data server to transmit any new metadata). Subsequently, in step 101, the metadata in the metadata server is processed. Processing of the metadata may include analysis of the metadata on the server. Analysing the metadata may comprise determining a data file format such as, for example, an audio file, an image file, a video file and so forth. Analysing the metadata enables categorization of data into a hierarchy in accordance with the branches 25 of each directory tree 22 as presented in the primary window 23 of the user interface 10.

In step 102, the user sends a request using the user interface 10 on the client device 14 to the server 12 to perform a task such as for example, to view one data file or to access a collection of music files, where the files are stored on the server 12. This may be done by selecting the music modal tab 20 in the user interface 10.

At step 103, the client device 14 consequently generates the user interface 10 based on the user's request for enabling access to data on the server 12 (data server). The server 12 (metadata server) sends the hierarchy of data to the client device 14. The client device 14 then renders a directory tree 22 based on hierarchy of data and a pre-defined protocol linking the client device 14 and the server 12. It should be noted that a hardware/software configuration of the client device 14 requires a minimum performance level to operate on the pre-defined protocol. A combination of the pre-defined protocol and the hardware/software configuration of the client device 14 determines how the data is consumed by the client device 14 (either via streaming or downloading). However, as mentioned earlier, it is advantageous that the client device 14 only requires low-end processing capability.

There is no requirement for an application on the client device 14 to send the data file or hierarchy information to the server 12. Advantageously, since the processing of metadata is done on the server 12 (metadata server) prior to

5 sending to the client device 14, this minimizes a requirement for the client device 14 to have sophisticated processing power. Consequently, diminishing a need for high performance processors minimises the cost of producing each client device 14. In this regard, a need to adopt more advanced processors on a client device 14 is eradicated given that the major processing aspects are handled by the server 12. Consequently client device 14 obsolescence is minimized as the changing tasks and demands of the user may be controlled by the server 12. Thus, environmental friendly consumer patterns will emerge since usage of client devices 14 is prolonged.

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Having now fully described the invention, it should be apparent to a person of ordinary skill in the art that many modifications can be made hereto without departing from the scope as claimed.

Claims

1. A method for generating a user interface for enabling access to data on a server comprising:
 - 5 updating metadata in a metadata server, the metadata server being functionally connected to the server;
 - processing the metadata on the metadata server;
 - sending a request to the server to perform a task; and
 - generating the user interface on a client device based on the
- 10 processed metadata for enabling access to data on the server.
2. The method according to claim 1, wherein processing the metadata comprises analysing the metadata on the metadata server.
- 15 3. The method according to claim 2, wherein analysing the metadata comprises determining a data file format selected from a group consisting of: {audio file, image file and video file}.
4. The method according to claim 2, wherein analysing the metadata
- 20 enables categorization of data into a hierarchy in accordance with branches of a directory tree presented in the user interface.
5. The method according to claim 1, further comprising:
 - 25 using the user interface to send the request to the server.
6. The method according to claim 1, wherein the task is selected from a group consisting of: {browsing a collection of files, organizing files, selecting files, editing files, uploading files, downloading files}.
- 30 7. The method according to claim 1, wherein the client device is selected from the group consisting of: {portable media player, mobile phone, Personal Digital Assistant (PDA), computing device}.

8. The method according to claim 1, wherein the server is separable into
5 at least one data server and at least one metadata server.

9. The method according to claim 1, further including:
consuming the data based on a combination of a pre-defined protocol
and a hardware/software configuration of the client device.

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10. The method according to claim 1, wherein updating the metadata in the
metadata server is either a push process by the server or a pull process by
the metadata server.

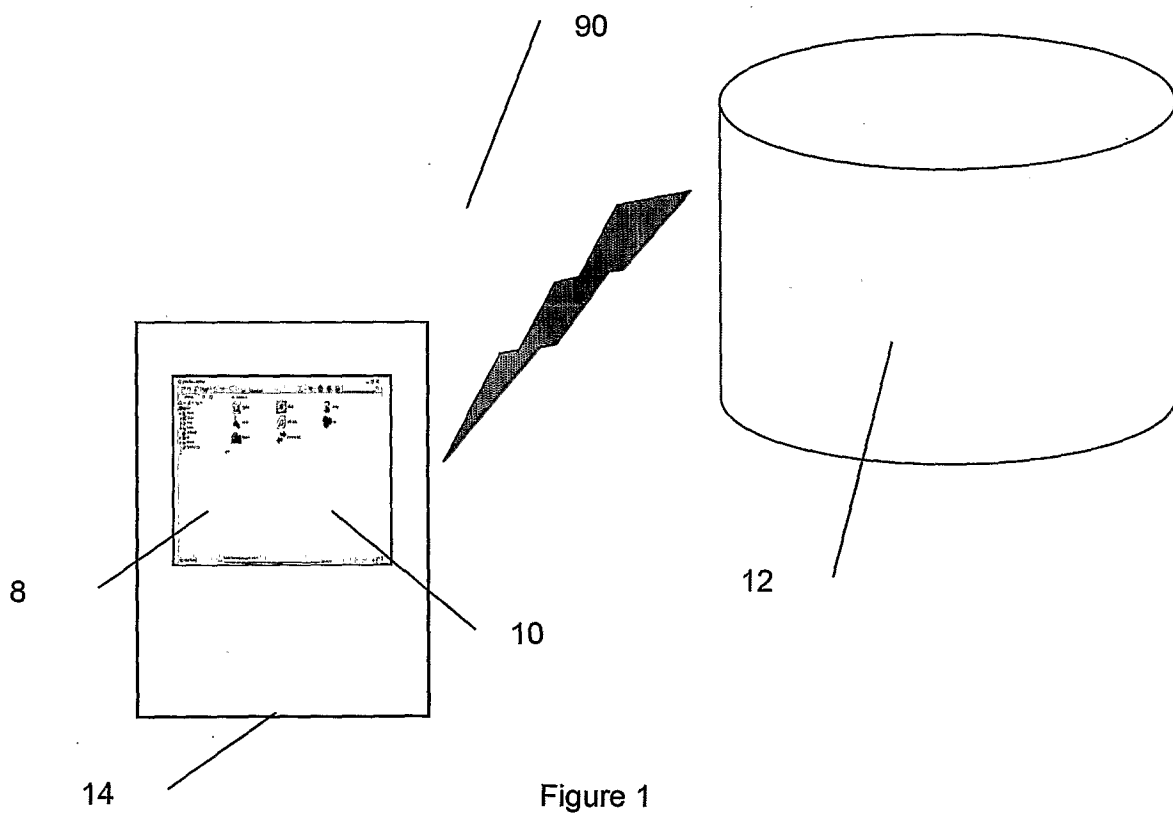


Figure 1

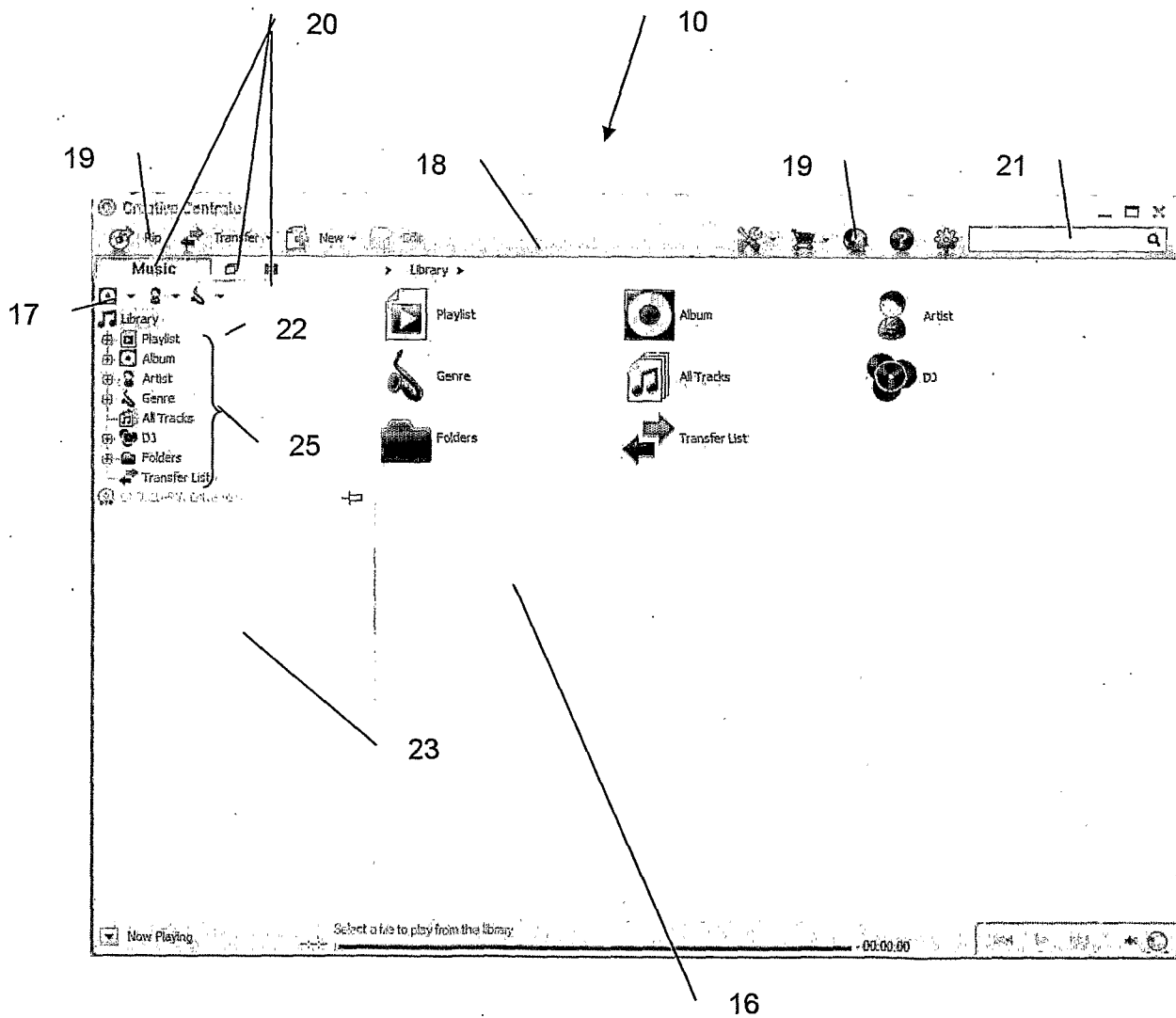


Figure 2

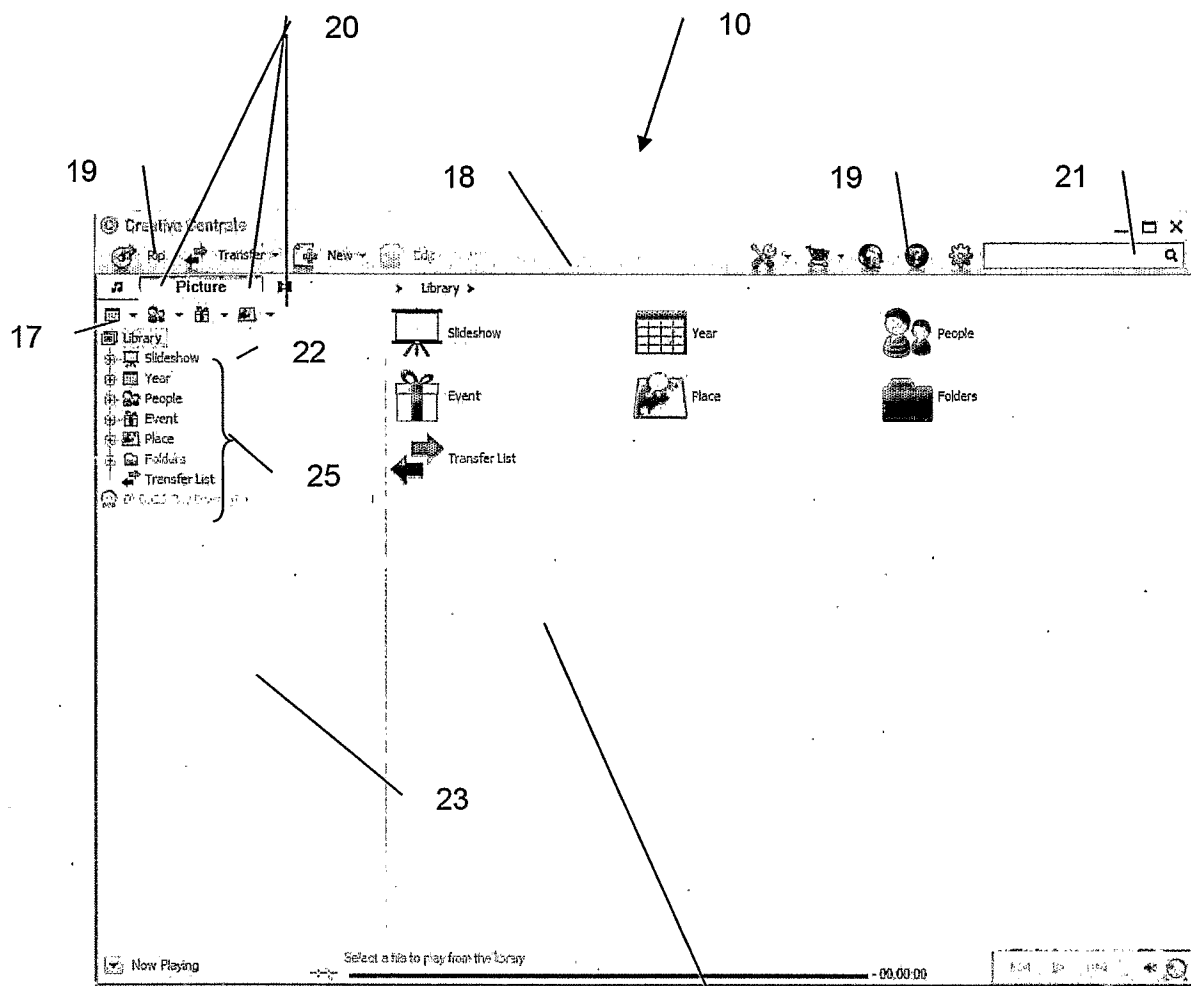


Figure 3a

16

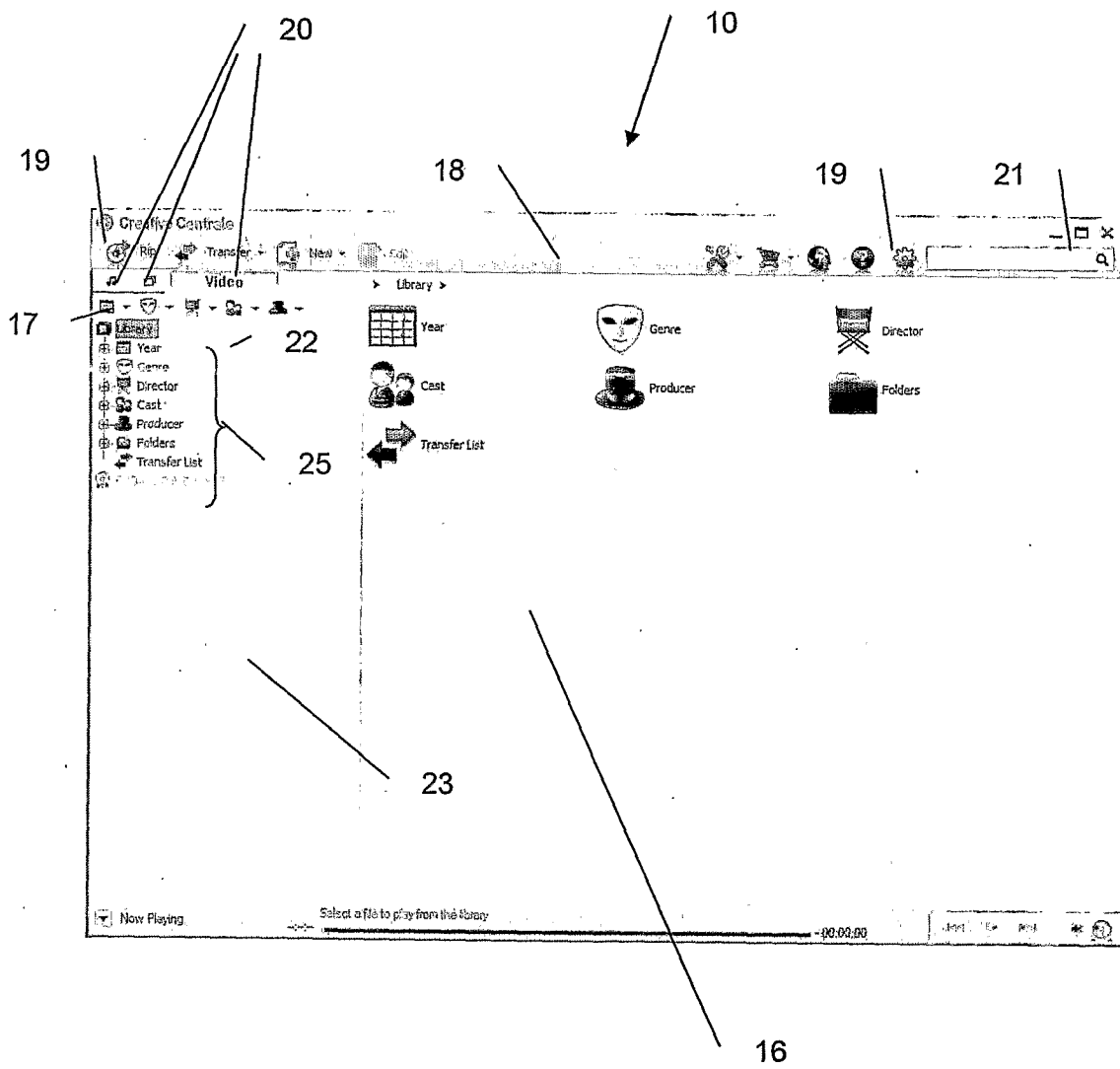


Figure 3b

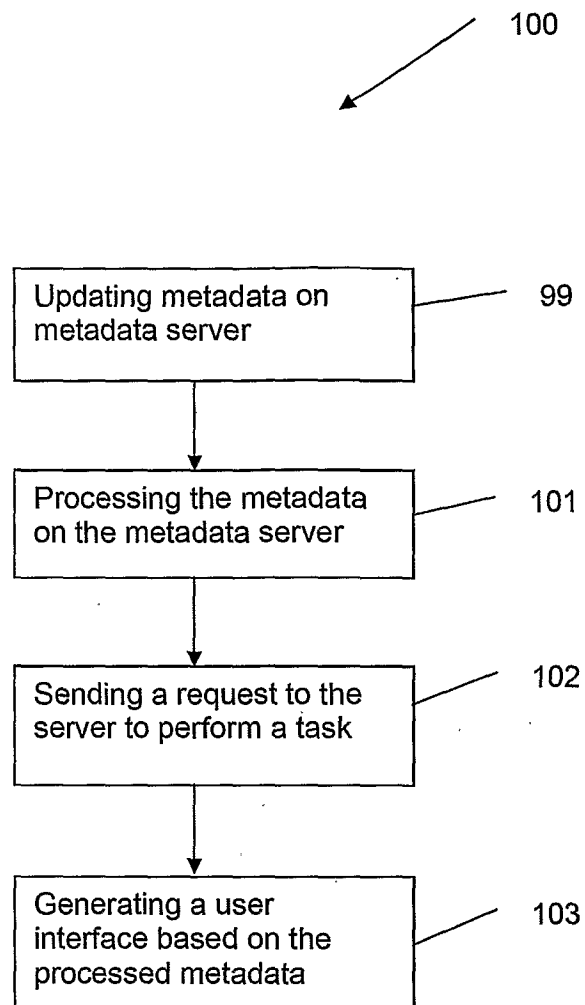


Figure 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SG2009/000398

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

G06F 17/30 (2006.01)

G06F 15/16 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Epodoc, WPI, Google Patents, Patent Lens, Esp@cenet : keywords (metadata, server, user interface) and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0107973 A1 (LENNON et al.) 8 August 2002 para. [0066-0067, 0073, 0163-0164, 0186-0217, 0237-0241, 0267-0273, 0308, 0313], abstract, Fig. 3 item 301	1-9
X	US 2006/0259511 A1 (BOERRIES et al.) 16 November 2006 para. [0005, 0008, 0015-0018, 0021-0023, 0025, 0029], abstract	1-5, 7-8, 10
X	US 2008/0059535 A1 (LINDSLEY et al.) 6 March 2008 para. [0008, 0010-0011, 0015, 0018, 0020-0023, 0025-0026]	1-2, 4-9
X	US 2004/0122917 A1 (MENON et al.) 24 June 2004 para. [0014, 0016, 0039-0040, 0051, 0069]	1-2, 4-5

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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24 DEC 2009

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SG2009/000398

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5953005 A (LIU) 14 September 1999	1-10
A	US 6697808 B1 (HURWOOD et al.) 24 February 2004	1-10
A	US 7277928 B2 (LENNON) 2 October 2007	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SG2009/000398

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	2002107973	AU	89393/01	JP	2002236695	US	7099946
US	2006259511	WO	2006124420				
US	2008059535	WO	2008027683				
US	2004122917	AU	2003302963	WO	2004055679		
US	5953005	EP	0817103	JP	10232841		
US	6697808	NONE					
US	7277928	AU	97377/01	US	2002152267		
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.							
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