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ISSUED:	18 JUL 2000
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DIGITAL LIBRARY SYSTEM

Transaction History

Date	Transaction Description
11/2/1998	Preliminary Amendment
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11/24/1998	Notice MailedApplication IncompleteFiling Date Assigned
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2/4/1999	Application Dispatched from OIPE
5/10/1999	Case Docketed to Examiner in GAU
5/20/1999	Case Docketed to Examiner in GAU
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11/22/1999	Response after Non-Final Action
11/22/1999	Request for Extension of Time - Granted
12/5/1999	Date Forwarded to Examiner
12/16/1999	Mail Notice of Allowance
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3/16/2000	Issue Fee Payment Verified
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3/16/2000	Workflow - Drawings Sent to Contractor
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6/7/2000	Application Is Considered Ready for Issue
6/29/2000	Issue Notification Mailed
7/18/2000	Recordation of Patent Grant Mailed
5/14/2012	Petition Entered
7/3/2012	Mail-Petition Decision - Granted
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MINDGEEK EXHIBIT 1005

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United States Patent [19]

Gustman

- [54] DIGITAL LIBRARY SYSTEM
- [75] Inventor: Samuel Gustman, Santa Monica, Calif.
- [73] Assignee: Survivors of the Shoah Visual History Foundation, Los Angeles, Calif.
- [21] Appl. No.: 09/184,796
- [22] Filed: Nov. 2, 1998

Related U.S. Application Data

- [60] Continuation of application No. 08/677,539, Jul. 10, 1996, Pat. No. 5,832,499, which is a division of application No. 09/076,504, Jul. 10, 1996, and a continuation of application No. 08/680,504, Jul. 8, 1996, Pat. No. 5,832;495.
- [51]
 Int. Cl.⁷
 G06F 17/30

 [52]
 U.S. Cl.
 707/103; 707/3; 707/6;

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Patent Number: 6,092,080

[45] Date of Patent: Jul. 18, 2000

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Primary Examiner—Thomas G. Black Assistant Examiner—Diane D. Mizrahi Attorney, Agent, or Firm—The Hecker Law Group

[57] ABSTRACT

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location.

16 Claims, 9 Drawing Sheets







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Туре

Figure 7B

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1 DIGITAL LIBRARY SYSTEM

This application is a continuation of 80/677,539 Jul. 10, 1996, U.S. Pat. No. 5,832,499, Division of 09/076,504 Jul. 10, 1996 pending application Continuation of 08/680,504 5 Jul. 8, 1996 U.S. Pat. No. 5,832,495.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a system for cataloguing, storing, ¹⁰ retrieving, and distributing multimedia data.

2. Background

Increasingly, computer systems are being used to present multimedia material. Such material is usually in the form of text, graphics, video, animation, and sound. (Other examples include books, manuscripts, pictures, film, audio recordings.) Two or more of these data types are usually combined to form the multimedia data presented by the computer system. A computer system that is used to present multimedia material is called a multimedia system.

The multimedia material must be captured before it can be used by a multimedia system. For example, some or all of the multimedia data is in an analog format and must be converted to digital form before it can be used by a multimedia system. The multimedia data converted from analog must be managed. A management facility is needed to manage and maintain the data. An access capability is needed to search and retrieve stored multimedia data. Once it is retrieved, a distribution facility is needed to distribute the data to a multimedia system. Thus, a system is needed to capture, access, manage, and distribute multimedia material. Such a system is digital library system.

A number of patents that describe software and/or hardware systems are provided below. These systems do not 35 provide a digital library system that can capture, access, manage, and distribute multimedia material.

A search system is described in U.S. Pat. No. 5,241,671, Reed et al., issued on Aug. 31, 1993 relates to a multimedia system that includes a database that is comprised of words, 40 phrases, numbers, letters, maps, charts, pictures, moving images, animations, and audio information. A search capability is provided that provides a series of entry paths for locating information in the database. An entry path allows a user to enter a search request that consists of a set of valid terms or stop terms. A stop term is a term that exists on a stop term list and may be the words "the" or "a", for example. Valid terms are linked to related terms using a stem index. A stem index contains a root term and a set of stems for each term that is related to the root word. For example, the word 50 leaf is linked to terms "leaves" and "leafing".

A repetitive analysis event system that accesses data using a time-based number is described in U.S. Pat. No. 5,414,644, Seaman et al., issued on May 9, 1995. The system uses an information library that consists of visual data storage and a textual database for storing written descriptions of the visual data and a glossary of keywords that identify repetitive events or behavior. A behavioral label is used to define a behavioral activity. A series of images or video clips are associated with the behavioral label. A user can retrieve images by identifying a subject, a behavioral activity, or other type of descriptive text. A chronological timeline is used to control the order in which the images are displayed. That is, the images are displayed in sequential order using the time-based number.

A method for storing and retrieving information that uses a "three file" concept is described in U.S. Pat. No. 3,670,

310, Bharwani et al., issued on Jun. 13, 1972. This concept is so named because it uses three files: an index file, a search file, and a data file. The index file contains a keyword record for each keyword. A keyword is a word that exemplifies the meaning or value of information. The search file contains a search record for each data record in the data file. A search record contains an address for its associated data record in the data file, the keywords for the data record. Each keyword in the search record has an associated link address to another search record that contains the same keyword. Bharwani states that it improves on the "three file" concept by: 1) using an adjustable keyword length in the index file to conserve space, 2) providing a means for marking items as deleted so that they can be bypassed, 3) automatically generating keywords based on field values contained in a data record, 15 and 4) providing continuous searching even during a database update procedure.

A knowledge based information retrieval system is described in U.S. Pat. No. 5,404,506, Fujisawa et al., issued on Apr. 4, 1995. The system provides a visual interface for local searching and a natural language interpreter for global search. The natural language interpreter is used to infer the meaning of a noun phrase or a nominal phrase. The inferred meaning is used to retrieve information.

A system for distributed data from a centralized location to a remote location is described in U.S. Pat. No. 4,974,149, Valenti, Nov. 27, 1990. The centralized system generates a descriptor that describes the data and its source location. The descriptor may further define when the data is to be retrieved. The remote systems use the descriptor to retrieve the data. A preferred embodiment uses the descriptor to distribute software (i.e., executable and data files).

A system for database retrieval wherein entries in different databases are retrieved by a process of matching key words of the databases is described in U.S. Pat. No. 5,210, 868, Shimada et al., issued on May 11, 1993. Examples of two such databases are a mapping database and a customer attribute database. A dictionary is used to separate a keyword from a first database into common and proper noun subparts. Common and proper noun synonyms are inferred according to a set of rules. The synonyms are combined using a combination rule and then compared with keywords in a second database to generate a final matching result.

A system for assembling documents, or files is disclosed in U.S. Pat. No. 5,222,236, Potash et al., issued on Jun. 22, 1993. Documents are stored in a library that is composed of a series of volumes. A volume is a logical grouping of documents such as legal documents. A volume is decomposed into a set of chapters. For example, a chapter within a "legal documents" volume might contain documents related to commercial law. The system further provides a series of user interface screens that prompt a user for input that is used to update a data field in a document (e.g., addressee).

A process for creating a search query from a natural language query is described in U.S. Pat. No. 5,265,065, Turtle, issued on Nov. 23, 1993. A database contains a plurality of stopwords and phrases. The database is used to 60 eliminate stopwords from the natural language query. The remaining words are stemmed to their basic roots, or words. The stemmed words are compared against the database to identify phrases. The phrases and any remaining stemmed roots form the search query and are referred to as query. 65 nodes of a query network. The query nodes are also representation nodes of a document. A synonym database is used for finding synonyms.

A service for managing hypertext/hypermedia links is described in U.S. Pat. No. 5,297,249, Bernstein et al., issued on Mar. 22, 1994. A Link Manager Services (LMS) component provides a universal End User Interface (EUI) including menus and dialog boxes that can be called by an 5 application program when a link, or marker, is selected by an application user. The LMS accesses a database that contains information about markers and their associated "presenters" (e.g., application or program). In addition, the LMS includes a viewer capability for viewing and maintaining existing 10 links and creating new links. The LMS is used at runtime to generate menus and dialog boxes and manage the hypertext/ hypermedia links.

A system that interconnects audio-video equipment such as video tape record or video production switcher using one ¹⁵ or more "AV LANS" in U.S. Pat. No. 5,307,456, Mackay, issued on Apr. 26, 1994. Generic device commands are communicated over an AV LAN to a device translator. The device translator translates the generic command into a device-specific command. The AV LANs are interconnected ²⁰ using bridges. The AV LANs can further be used to interconnect workstations, minicomputers, mainframes and personal computers. The workstations can be used to display information about the resources attached to an AV LAN.

A text searching system that includes: 1) a morphological ²⁵ analyzer that generates a set of words that are lexically related to an input word and that together with the input word constitute a set of search words and 2) a search engine for searching an index to detect the occurrence of any of the search words in the index is described in U.S. Pat. No. 5,369,577, Kadashevich et al., issued on Nov. 29, 1994. The morphological analyzer includes a recognition engine that identifies derivational information for a given input word. A thesaurus database is used to generate a list of synonyms for the lexically related words. The synonyms and variations of the synonyms (i.e., words formed by adding a suffix to a synonym) are included in the set of search words. The system can further be used to expand an input word into related words by removing suffixes. Further expansion is accomplished by using the thesaurus database to obtain synonyms for the related words.

A system for dynamically loading software libraries. A service requester of an application program sends a request to a loader module of an application program is described in U.S. Pat. No. 5,410,698, Danneels et al., issued on Apr. 25, 1995. The application's loader module forwards the request to a second loader module outside the application program. The service requester can be a media services manager of a multicast application program that issues a request to load a media service provider library. A global dynamic loader receives the request as part of the multicast application program and forwards it to the global dynamic loader executable (i.e., the second loader module) that loads the media service provider library.

A method for manipulating video data that allow for the definition of frames in a string of isochronous data using frame numbers or names is described in U.S. Pat. No. 5,414,808, Williams et al., issued on May 9, 1995. Frames can be grouped into segments. Frames can be referenced and operations performed on frames using the frame definitions.

A method for storing data in data stores at various locations in a network is described in U.S. Pat. No. 5,442, 771, Filepp et al., issued on Aug. 15, 1995. These locations can be the user system and network concentrator facilities 65 hierarchically located between the user system and the network host. Data is cached in either a temporary cache

(e.g., RAM) or a variable-content permanent stage (e.g., variable-content, fixed disk file). A least-recently-used approach is used to determine the data that is retained in a store. In addition, storage candidacy and version control parameters are used to insure currency if maintained for time-sensitive data (e.g., news or pricing data).

An image data filing system consisting of a library for storing a plurality of image storage media (e.g., optical disks), a disk array for storing image data retrieved from the image storage media, a console for entering user instructions, and an output device for displaying image data is described in U.S. Pat. No. 5,463,771, Sotoyanagi et al., issued on Oct. 31, 1995. A control device is used to control the retrieval and storage operations.

A system for storing and retrieving digital images is described in U.S. Pat. No. 5,493,677, Balogh et al., issued on Feb. 20, 1996. A caption or other metadata can be associated with a digital image. A natural language capability removes ambiguities from the metadata input by a user prior to its storage. The natural language capability determines matches between a user query and the stored metadata. The system allows a user to select an image, review licensing terms for the selected image, and order the image.

A technique for dynamically optimizing the processing of a database query execution plan is described in U.S. Pat. No. 5,495,608, Antoshenkov et al., issued on Feb. 27, 1996. A decision is made during processing to either retrieve records using indexed keys or by retrieving all records based on which approach is optimal.

SUMMARY OF THE INVENTION

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality.

A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. In addition to the data output from the transfer system, the cataloguing system can also receive textual data as input. The cataloguing system catalogues the multimedia and textual data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A contentbased search retrieves data based on the ideas or concepts contained in the data. Data is stored by the transfer system independent of content. The cataloguing systems creates a catalogue that specifies the content of the data. The catalogue includes one or more catalogue elements which can be complex multimedia assets. A complex multimedia asset can consist of one or more attribute elements. An attribute element is an attribute that can have attributes (i.e., pieces of information). A catalogue element is associated with a 55 portion of multimedia data (e.g., one or more frames of video data).

An asset management system is used to access the data using the catalogue created by the cataloguing system. The asset management system identifies data having the desired content. The asset management system includes search tools to query the catalogue to identify a set of catalogue elements having attributes that satisfy a search criteria. The data associated with the catalogue elements have the desired content.

The asset management system includes a browser, an indexing server, an archive server, a tertiary storage

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manager, and a method player. Generalized interfaces define a communication protocol that can be used by any vendorsupplied browser, indexing server, archive server, tertiary storage manager, and/or method player to communicate with another asset management system component.

A request for data is received by a browser. The browser in combination with the indexing server locates a set of catalogue elements that satisfy criteria specified in the request. The set of catalogue elements are sent to an archive server for retrieval. The archive server maintains an identi-¹⁰ fication of the location of the multimedia data. Thus, when a set of catalogue elements is received from the browser, the archive server can identify the location of the portions of multimedia data having the desired content (i.e., the portions of multimedia data associated with the catalogue elements ¹⁵ contained in the set).

The multimedia data associated with a catalogue element is retrieved by the archive server in conjunction with a tertiary storage manager. A tertiary storage manager manages a store that contains multimedia data. The system can consist of multiple instances of tertiary storage manager to manage each data store. The tertiary storage manager can manage various types of data store. The archive server identifies the tertiary storage manager that manages the store containing the requested multimedia data. The tertiary storage manager retrieves the data and transmits the data to a method player. The method player prepares the data (converts the data from MPEG to video format) and transmits the prepared data to the browser. The browser formats a display region and displays the data in the display region. ³⁰

A caching mechanism is implemented by the asset management facility to store retrieved data locally. Preferably, cache is used to store multimedia data that is being or will be played on the browser. The asset management facility locates the data and, if necessary, stores the data in local cache. Preferably, cache management is supplied by an instance of tertiary storage manager. The tertiary storage manager that manages the data denormalizes the data allowing for faster access.

A tertiary storage manager that manages the cache uses a least recently used (LRU) scheme. Thus, multimedia data that has the oldest access time is purged to make room for newly accessed data. The archive server determines whether the local cache contains the multimedia data associated with the catalogue elements. If the multimedia data is not stored in local cache, the archive server can query other archive servers to determine whether the data is stored in a remote cache. If the archive server cannot find a cached copy of the data, it will attempt to retrieve the data from permanent storage (e.g., a tape system).

A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location. Multimedia data is permanently stored at a centralized location. Multimedia 55 data that is requested by a user is cached from the centralized location to the user site. A wide area network can be used to interconnect user sites with the main site. The WAN can be used to transmit data that resides at the main site or another user site to a requesting user site. In addition, data can be transferred between sites via the Internet.

Either a centralized or decentralized distribution architecture can be used with the invention to distribute functionality (e.g., asset management functionality). In a centralized architecture, the asset management facility is located at a 65 centralized site. Users connect to the asset management facility via the Internet, for example. The catalogue and

multimedia data are stored at the central site. The catalogue is accessed at the central, or main site to identify the requested data. The data is then transmitted to the user via

the Internet. In a decentralized architecture, an instance of the asset management system is located at the user's site. A copy of the catalogue is resident at the user site. The multimedia data is permanently stored at a main site with copies of data that has accessed stored at the user's site. The local catalogue is accessed to identify the data requested in a user request. If a copy of the requested data does not exist at the local site, a search is made for the data at another site. The search first examines the cache at the other sites. If the data cannot be found in cache at the local or another site. The local site accesses the main site to retrieve the requested data. A vehicle such as a WAN or the Internet can be used to transmit the data between sites.

The asset management system can include various access levels (i.e., simple to complex) each of which is associated with a level of interface to access the data based on the type of audience. The audience can be an individual or a group of people, for example. At the complex access level, the audience must be able to understand the catalogue structure (i.e., catalogue element and associated attributes and attribute elements).

At a programmer's level, an interface consisting of lowlevel software routines are available to query the catalogue and its associated attributes and attribute elements. The low-level software routines can be used to create a higher level of abstraction of objects. These objects can become selectable elements in a graphical user interface (GUI) for a development tool that can be used to create a higher-level interface. The GUI can include a drag and drop capability to create a GUI and associate GUI objects to objects that supply functionality (e.g., objects contained in a higher-level interface.)

A development tool can be used to create a browser, for example. A browser can include the ability to view instances contained in a catalogue and its associated attributes and attribute elements. The user can create a query by dragging these instances into a search box and specifying conjunction information (e.g., "and" or "or).

At the simplest access level, predefined sets are created and stored for viewing by individuals using a single video viewing station or in a virtual reality environment or video display kiosks for viewing by groups of people.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 provides an example of a general purpose computer to be used with the present invention.

FIG. 2 provides a block overview of the data capture and interface subsystems according to an embodiment of the present invention.

FIG. 3 provides a block overview of the data distribution subsystem according to an embodiment of the present invention.

FIG. 4 provides a process flow for cache management and retrieval according to an embodiment of the invention.

FIG. 5 provides a data retrieval into cache process flow according to an embodiment of the invention.

FIG. 6 provides examples of access levels and audiences that can be accommodated by interfaces provided by an asset management system according to an embodiment of the invention.

FIG. 7A provides an example of catalogue and attribute elements and their attributes according to an embodiment of the invention.

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FIG. 7B illustrates relationships formed between the elements identified in FIG. 7A according to an embodiment of the invention.

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FIG. 7C provides an illustration of instances of keyword 710 and a plurality of associated label attributes according to ⁵ an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

A digital library system is described. In the following ¹⁰ description, numerous specific details are set forth in order to provide a more thorough description of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known features have ¹⁵ not been described in detail so as not to obscure the invention.

An embodiment of the invention can be implemented as computer software in the form of computer readable program code executed on a general purpose computer such as illustrated in FIG. 1. A keyboard 110 and mouse 111 are coupled to a bi-directional system bus 118. The keyboard and mouse are for introducing user input to the computer system and communicating that user input to central processing unit (CPU) 113. Other suitable input devices may be used in addition to, or in place of, the mouse 111 and keyboard 110. I/O (input/output) unit 119 coupled to bi-directional system bus 118 represents such I/O elements as a printer, network communications card, modem, A/V (audio/video) I/O, etc.

The computer system of FIG. 1 also includes a video memory 114, main memory 115 and mass storage 112, all coupled to bidirectional system bus 118 along with keyboard 110, mouse 111 and CPU 113. The mass storage 112 may include both fixed and removable media, such as magnetic, optical or magnetic optical storage systems or any other available mass storage technology. Bus 118 may contain, for example, thirty-two address lines for addressing video memory 114 or main memory 115. The system bus 118 also includes, for example, a 32-bit data bus for transferring data between and among the components, such as CPU 113, main memory 115, video memory 114 and mass storage 112. Alternatively, multiplex data/address lines may be used instead of separate data and address lines.

In one embodiment of the invention, the CPU 113 is a microprocessor manufactured by Motorola, such as the 680×0 processor or a microprocessor manufactured by Intel, such as the 80×86, or Pentium processor, or a SPARC microprocessor from Sun Microsystems. However, any 50 other suitable microprocessor or microcomputer may be utilized. Main memory 115 is comprised of dynamic random access memory (DRAM). Video memory 114 is a dualported video random access memory. One port of the video memory 114 is coupled to video amplifier 116. The video $_{55}$ amplifier 116 is used to drive the cathode ray tube (CRT) raster monitor 117. Video amplifier 116 is well known in the art and may be implemented by any suitable apparatus. This circuitry converts pixel data stored in video memory 114 to a raster signal suitable for use by monitor 117. Monitor 117 is a type of monitor suitable for displaying graphic images.

The computer system described above is for purposes of example only. An embodiment of the invention may be implemented in any type of computer system or programming or processing environment.

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and

cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality.

The data capture system captures multimedia data in whatever format (e.g., analog or digital) and stores it in permanent storage independent of its content. An asset management system uses a content specification to identify data captured by the transfer system to satisfy a data request. FIG. 2 provides a block overview of the data capture and asset management systems according to an embodiment of the present invention.

Data Capture

The data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia data from analog to digital format. The cataloguing system catalogues the multimedia data output from the transfer system as well as textual input.

Transfer System

Referring to FIG. 2, multimedia data 250 is input to transfer system 246 in data capture subsystem 234. Multimedia data 250 is video and/or audio data, for example. Transfer system 246 consists of one or more transfer stations. A system comprised of multiple transfer stations with an interface is available from Electrosonics, Los Angeles, Calif. Each transfer station is capable of taking analog input such as a videotape and converting it into multiple types of output.

The conversion capabilities of transfer system 246 can be used to convert analog data for use with the invention. For example, multimedia data 250 is converted by transfer system 246 to Digital Betacam version 258. Digital Betacam version 258 is sent to long term storage 260 for preservation. A timecoded VHS version 256 is also created from multimedia data 250 and sent to cataloguing system 240. MPEG version 252 is also created from multimedia data 250. MPEG is a digital data format used to store video data in a compressed form.

An MPEG version of the analog input (multimedia data 252) is sent to non-line storage 242 via a network that interconnects transfer system 246 and a computer system including non-line storage 242. For example, non-line storage is an E-MASS tape system. The MPEG version can be transmitted over the network using the File Transfer Protocol (FTP), for example.

Data is sent to storage by transfer system 246 independent of its content. For example, MPEG version 252 is stored in non-line storage 242 without the need to determine its content. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data.

Cataloguing System

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Cataloguing system 240 catalogues multimedia data input (e.g., timecoded VHS 256) received from transfer system 246 and other data 254 that includes data in the form of text. A catalogue is generated by cataloguing system 240. The catalogue created by cataloguing system 240 is stored in indexing server 216.

The catalogue includes one or more catalogue elements which can be a complex multimedia asset. A complex multimedia asset can consist of one or more attribute elements. An attribute element is an attribute that can have attributes. An attribute is a piece of information. A catalogue element is associated with a portion of multimedia data (e.g.,

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one or more frames of video data). The result of a search operation performed by the browser identifies a set of catalogue elements that can satisfy a search request. Each catalogue element has an associated ID (e.g., an integer ID) that uniquely identifies the catalogue element. A set of IDs that represent the set of catalogue elements identified in a search operation are sent to the archive server component for retrieval of the associated multimedia data. The section entitled Catalogue Instance below provides an instance of a catalogue that can be used with the invention. A detailed discussion of a cataloguing scheme is provided in a co-pending U.S. patent application entitled "Method and Apparatus for Cataloguing Multimedia Data", Ser. No. 08/680,504, filed on Jul. 8, 1996 now U.S. Pat. No. 5,832, 495 and incorporated herein by reference.

Asset Management System

Referring to FIG. 2, asset management system 232 is used to access the data using the catalogue created by cataloguing system 240. Asset management system 232 identifies data having the desired content using search tools to query the catalogue to identify a set of catalogue elements having attributes that satisfy a search criteria. The data associated with the catalogue elements provide the content specified by the search criteria. The following provides a brief summary of asset management system 232. A more detailed discussions of an asset management system is provided in a co-pending and pending U.S. patent application entitled "Method and Apparatus for Management of Multimedia Assets", Ser. No. 09/076,504, filed on Jul. 10, 1996 and incorporated herein by reference.

Asset management system 232 includes browser 218, indexing server 216, archive server 206, tertiary storage manager 204, and method player 202. Generalized interfaces 210, 214, and 212 define a communication protocol that can be used by any vendor-supplied browser, indexing server, archive server, tertiary storage manager, and/or method player to communicate with another asset management system component.

Browser **218** includes a user interface in which a user can ⁴⁰ formulate a search request for data. The search request contains search criteria that can be used to identify catalogue elements that identify portions of multimedia data. Attributes and/or attribute elements associated with the catalogue elements contain information that can be compared against the search criteria contained in the request. The comparison identifies catalogue elements that satisfy the search criteria. That is, catalogue elements are selected that have attributes and/or attribute elements that satisfy the search criteria.

A request for data is received by browser 218. Browser 218 in combination with indexing server 216 locates a set of catalogue elements that satisfy criteria specified in the request. The set of catalogue elements are sent to archive server 206 for retrieval. Archive server 206 maintains an ⁵⁵ identification of the location of each piece of multimedia data. Thus, when a set of catalogue elements is received from browser 218, archive server 206 can identify the location of the portions of multimedia data having the desired content (i.e., the portions of multimedia data associated with the catalogue elements contained in the set).

The multimedia data associated with a catalogue element is retrieved by archive server 206 in conjunction with tertiary storage manager 204. Tertiary storage manager 204 manages a store that contains multimedia data. Asset management system 232 can consist of multiple instances of tertiary storage manager 204 to manage each data store. Tertiary storage manager 204 can manage various types of data store. Archive server 206 identifies the instance of tertiary storage manager 204 that manages the store containing the requested multimedia data. Tertiary storage manager 204 retrieves the data based on a request from archive server 206 and transmits the data to method player 202. Method player 202 prepares the data (converts the data from MPEG to video format) and transmits the prepared data to browser 318. Browser 218 formats a display region and displays the data in the display region.

Access Levels

Asset management system 232 can include various access levels each of which is associated with a level of interface to access the data based on the type of audience. FIG. 6 provides examples of access levels and audiences that can be accommodated by interfaces provided by an asset management system according to an embodiment of the invention. The vertical axis is used for access level. An access level ranges from simple to complex. Audience examples are depicted along the horizontal axis. The audience can be an individual or a group of people, for example. At the complex access level, the audience must be able to understand the catalogue structure (i.e., catalogue element and associated attributes and attribute elements). An interface used at this level that requires knowledge of the catalogue structure is research interface 616. At the next access level (e.g., a programmer's level), an interface consisting of low-level software routines are available to query the catalogue and its associated attributes and attribute elements. The low-level software routines can be used to create a higher level of abstraction of objects. These objects can become selectable elements in a graphical user interface (GUI) for a development tool that can be used to create a higher-level interface used in the next access level. Such a higher-level interface is teacher's design tool 614. The GUI in teacher's design tool 614 can include a drag and drop capability to create other GUIs and associate GUI objects to objects that supply functionality (e.g., objects contained in a higher-level interface.)

Teacher's design tool **614** is an example of a development tool that can be used to create browser **612**, for example. Browser **612** provides tools for interfacing with the multimedia data that make it simpler to user than teacher's design tool **614**. For example, this level includes an ability to view instances contained in a catalogue and its associated attributes and attribute elements. The user can create a query by dragging these instances into a search box and specifying conjunction information (e.g., "and" or "or).

At the simplest access level, predefined sets are created and can be replayed by an individual using single video viewing screen (video screen 610). Virtual environments or video display kiosks 618 can be created using predefined sets for viewing by groups of people.

Cache

A caching mechanism is implemented by asset management system 232 to store retrieved data locally. Preferably, cache is used to store multimedia data that is being or will be played on browser 218. Asset management system 232 locates the data and, if necessary, stores the data in local cache (e.g., cache 244). Asset management system 232 manages cache and the retrieval of data using cache.

Cache Management

Preferably, cache management is supplied by an instance of tertiary storage manager 204. The instance of tertiary storage manager 204 that manages the data denormalizes the data allowing for faster access. Tertiary storage manager 204

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that manages cache 244 uses a least recently used (LRU) scheme. Thus, multimedia data that has the oldest access time is purged to make room for newly accessed data.

Preferably cache 244 is a size that can meet user demand requested by a user. That is, cache 244 is a size that can temporarily store requested data such to optimize retrieval transparently (e.g., requested data can be cached for use by the user). For example, cache 1 through N can each have a one terabyte (Tb) capacity. Preferably, tertiary storage manager 204 uses a least recently used (LRU) scheme for managing the cache. That is, data copies that are the least recently used can be purged to make room for new data. The ID attribute of a catalogue element can be used to maintain a log for the cached data. The log can identify the data contained in cache 244 and its use history as well as a pointer to the data in cache 244.

Retrieval and Cache Management

The multimedia data associated with catalogue elements can be retrieved from offline storage such as a tape system. The invention also provides the ability to temporarily store multimedia data in cache such as cache 244 in FIG. 2. Cache can be local (i.e., cache that resides at the local site) or remote (i.e., cache at a remote site). In most cases, retrieval time is fastest when the data is retrieved from cache (either local or remote). When a tape system must be accessed to retrieve the data, retrieval time will most likely be slower. Therefore, it is preferable to determine whether the data is resident in cache before accessing a storage system such as a tape system. Further, it is preferable to manage the cache such that the data that is most likely to be needed is resident. 30 in cache.

Archive server 206 determines whether the portion of cache 244 resident at the same site (i.e., local cache) contains the multimedia data associated with the catalogue elements. If the multimedia data is not stored in local cache, the archive server can query other archive servers to deter mine whether the data is stored in the portion of cache 244 that resides at the other site (i.e., remote cache). If the archive server cannot find a copy of the data in cache 244, it will attempt to retrieve the data from permanent storage (e.g., non-line storage 242). FIG. 4 provides a process flow for cache management and retrieval according to an embodiment of the invention.

At step 402, archive server 206 searches for the data associated with the catalogue elements received from 45 browser 218. When a set of catalogue elements is received, archive server 206 determines whether the associated data is stored in a local cache. For example, ID attributes associated with each catalogue element in the set can be compared against a log that contains the ID attributes for catalogue 50 elements whose data is stored in the local cache. At step 404 (i.e., "all data found in local cache?"), a determination is made whether the data was found in the local cache. If so, the data is available and can be retrieved from local cache. Therefore, processing for this cache management request 55 ends at step 418.

If all of the data does not reside in local cache, processing continues at step 406. At step 406 (i.e., "any data in another cache?"), the local instance of archive server 206 can query other (remote) instances of archive server 206 to determine 60 whether any of the requested data is resident in a remote cache. If not, processing continues at step 410. If data is found in a remote cache, processing continues at step 408 to retrieve the data from the remote cache into the local cache. Processing continues at step 410. 65

At step 410 (i.e., all data located?"), a determination is made whether all of the requested data has been found at

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either a local or remote cache. If so, processing for this cache management request ends at step 418. If all of the data is not found in cache, processing continues step 412. At step 412 (i.e., "remaining data offline?"), offline storage is examined to obtain the remaining data. If all of the remaining data is not found offline, processing continues at step 414 to raise an error. If the remaining data is found offline, processing continues at step 416 to retrieve the offline data into local cache. Processing ends at step 418.

At steps 408 and 416, data found at a remote cache or in offline storage is retrieved into cache. As new data is cached, older data may need to be purged from cache to make room for the new data. In addition, tertiary storage manager 204 must update the cache log to reflect additions to or deletions from cache. FIG. 5 provides a data retrieval into cache process flow according to an embodiment of the invention.

At step 502 (i.e., "space available in cache?"), tertiary storage manager 204 determines the total amount of space available in cache. If there is available space for the data that is being retrieved, processing continues at step 510 to cache the data. If there isn't enough space available, processing continues at step 504. At step 504 (i.e., "can space be freed?"), a determination is made whether enough space can be freed for the data by purging data from cache that is currently not in use (e.g., not being played on a browser). If not, processing continues at step 506 to raise and error and processing ends at step 514. If enough data can be purged to make room for the new data, processing continues at step 508 to purge the unused data.

At step 510 the new data is retrieved into cache. At step 512, cache management information is updated. For example, the IDs associated with the purged data are removed from the cache management information (e.g., a cache log) and the IDs associated with the newly retrieved data are added to the log. LRU information can be set for the new data (e.g., the time of access of the data). In addition, tertiary storage manager 204 can perform operations that maintain information about the total amount of space used and/or available. Processing ends at step 514.

Named Cache

In addition to the regular cache that can be managed as discussed above, the invention includes a plurality of named caches. A named cache can be used to store data on a more permanent basis. A named cache is a portion of cache (e.g., cache 318) that is can be managed separate from the general cache pool. A named cache may be used for data that is accessed or has the potential for access on a more permanent basis. For example, one or more searches can yield a sub-catalogue (e.g., a subset of the set of catalogue elements associated with multimedia data 252) that contains data pertinent to a particular subject area or group of users. The named cache can be used to store the portions of multimedia data 252 associated with the sub-catalogue at a remote site such that it is not purged despite its LRU statistics. The portions of multimedia data 252 associated with a subcatalogue can be retained permanently or semi-permanently. That is, the contents of the named cache can be retained for a specified period of time and is not subject to purge.

Referring to FIG. 5, step 504 can be expanded to include the notion of named cache. In determining whether space can be freed, a determination is made whether the cache that is currently being consumed is named cache. If so, the space cannot be freed to make room for the new data. Processing would continue at step 506 to raise an error. However, it is determined that the space is not named cache and it does not contain data that is currently in use, processing can continue at step 508 to purge the data.

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Distribution

A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location. Multimedia data is permanently stored at a centralized location. Multimedia ⁵ data that is requested by a user is cached from the centralized location to the user site. A wide area network can be used to interconnect user sites with the main site. The WAN can be used to transmit data that resides at the main site or another user site to a requesting user site. In addition, data can be ¹⁰ transferred between sites via the Internet.

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Either a centralized or decentralized distribution architecture can be used with the invention to distribute functionality (e.g., asset management functionality). In a centralized architecture, the asset management facility is located at a ¹⁵ centralized site. Users connect to the asset management facility via the Internet, for example. The catalogue and multimedia data are stored at the central site. The catalogue is accessed at the central, or main site to identify the requested data. The data is then transmitted to the user via ²⁰ the Internet.

In a decentralized architecture, an instance of the asset management system is located at the user's site. A copy of the catalogue is resident at the user site. The multimedia data is permanently stored at a main site with copies of data that has accessed stored at the user's site. The local catalogue is accessed to identify the data requested in a user request. If a copy of the requested data does not exist at the local site, a search is made for the data at another site. The search first examines the cache at the other sites. If the data cannot be found in cache at the local or another site. The local site accesses the main site to retrieve the requested data. A vehicle such as a WAN or the Internet can be used to transmit the data between sites.

FIG. 3 provides a block overview of the data distribution subsystem having centralized permanent storage for multimedia data and decentralized functionality according to an embodiment of the present invention.

A network is used to establish a link between a plurality of remote sites and a main site. Preferably, data distribution system **300** includes main site **302** and a plurality of remote sites (e.g., remote sites **306A-306D**). These sites can be located around the world. For example, main site **302** is located in California with remote sites in Israel, Washington, D.C., New York, Connecticut and California. Each site (i.e., main site **302** and remote sites **306A-306D**) includes asset management system **232**. A site (i.e., main **302** or remote sites **306A-306D**) is depicted having a processing unit **310** interconnected with terminals **314** and **316** via network **312**. 50 However, any site configuration having processing, storage and display capabilities can be used.

Network 312 is preferably a local area network (LAN). Network 304 is a wide area network that connects main site 302 with remote sites 306A-306D. Asynchronous Transfer 55 Mode (ATM) switches are preferably used at each site (e.g., main site 302 and remote sites 306A-306D) to interconnect the sites. The ATM switches are available from various vendors such as FORE Technology, for example. In addition, sites 302 and 306A-306D can be interconnected 60 via the Internet. The Internet can be used to send information from main site 302 to one or all of remote sites 306A-306D. In addition, a version of asset management system 232 can be placed on the Internet to allow access by Internet users.

Main site 302 has storage capacity sufficient to store a 65 copy of all of the system's multimedia data. For example, permanent storage 342 is a tape robot mass storage device

manufactured by EMASS. It has a capacity of 100 Terabytes (Tb), for example. A file system such as the AMASS file system available from EMASS is used as an interface to permanent storage 342. The file system runs on processing unit 310. Processing unit 310 is, for example, a supercomputer such as the Challenge supercomputer available from Silicon Graphics, Inc. A file containing a digital form (e.g., MPEG) of an analog tape is transferred to processing unit 342 and then stored in permanent storage 342.

Preferably, each site (e.g., main site 302 and remote sites 306A-306D) is capable of running asset management system 232. Preferably, a copy of the catalogue created by data collection subsystem 234 is resident at each site as well. When a user request is made at a site, asset management system 232 queries the catalogue resident at that site to identify the catalogue elements that satisfy the request. The selected catalogue elements are used to locate the associated portions of multimedia data 236. Cache 318 that is resident at the site is examined to determine whether it contains a copy of the portions of multimedia data 236 that satisfies the request. If so, the data is retrieved from the site's cache 318.

If the data is not resident in local cache, a check is made of each remote site's cache until the data is located or all of the remote sites have been examined. To facilitate the search, an index of each remote site's cache is replicated at the other remote sites. A site can therefore examine a locally stored index to determine what data is resident in cache at each site. If the data is not resident at a remote site (sites **306A-306D**), the data is retrieved from main site **302** and a copy is sent to the remote site. The data is therefore retrieved first from a local cache, then, if necessary, from a remote cache or permanent storage.

Catalogue Instance

The multimedia data catalogue used in the invention ³⁵ preferably consists of one catalogue element that is referred to as a phrase. A phrase is associated with a portion of multimedia data. A phrase has a plurality of attributes some of which are attribute elements. The attribute elements that are attributes of a phrase include keyword, person, image, ⁴⁰ video (e.g., documentary footage), proposed person, and proposed keyword. The keyword, person, image, proposed person and proposed keyword attribute elements can have attributes that are also attribute elements. For example, attribute elements that are attributes of the keyword attribute ⁴⁵ element include thesaural keyword, thesaural person, keyword, and type. An index is built on the attributes and attribute elements. The index can be used to navigate through the catalogue (e.g., search for phrases).

FIG. 7A provides an example of catalogue and attribute elements and their attributes according to an embodiment of the invention. Segment 704 is a container element. It can contain other elements. For example, segment 704 can contain one or more instances of phrase 706. In the invention, input data is decomposed into one or more pieces, or fragments. An instance of phrase 706 is associated with each input data fragment. Phrase 706 is a catalogue element. Phrase 706 has one or more attributes and/or attribute elements on which an index is built. The index can be used to navigate through the catalogue.

An attribute of phrase **706** is keyword **710**. An instance of phrase **706** can be associated with one or more instances of keyword **710**. Keyword **710** further defines aspects of an input data fragment. Preferably, an attribute of keyword **710** identifies content, or substance, for an input data fragment. The content or substance identified by keyword **710** is preferably expressed as a single word. However, content or substance can be expressed using multiple words.

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To illustrate, the input data can be a videotape. The videotape is, for example, that of an interview conducted with a survivor of the Holocaust. The interview is broken down into the interviewee's pre-war, war-time, and post-war experiences. The interviewee's pre-war experience can be broken down into topics. A pre-war topic might be the interviewee's personal life, for example. Each topic can be broken down into sub-topics. In the example of the interviewee's personal life, a sub-topic might be the interviewee's relationship with family members, experiences at school, etc. Each sub-topic contains an information item. To further illustrate using the current example, an information item might be home, brother, sister, teacher, etc. In this example, the topic of the interviewee's personal life becomes an instance of segment 704. The interviewee's relationship with family members and experiences at school become instances of phrase 706. The words home, brother, sister, and teacher become instances of keyword 710. The words home, brother, sister and teacher provide information regarding the content or substance of an input data fragment.

An instance of keyword 710 can be associated with one or more instances of thesaural keyword 712. An instance of thesaural keyword 712 is an instantiation of an instance of keyword 710. Thesaural keyword 712 specifies a value or label for its associated instance of keyword 710. Thesaural keyword 712 can be one or more words. Thesaural keyword 712 can be used, for example, to specify a value for an instance of keyword 710 in a particular language. Multiple instances of thesaural keyword 712 can be used to express the value of an instance of keyword 710 in multiple languages. Alternative expressions for the value of an instance of keyword 710 can be retained by instances of thesaural keyword 712 as well. Thus, the content or substance of an input data fragment can be expressed in multiple languages with a plurality of alternative expressions in each language. A preference can be associated with an instance of thesaural keyword 712 to identify it as a preferred alternative in a given language.

FIG. 7C provides an illustration of instances of keyword 710 and a plurality of associated label attributes according to an embodiment of the invention. A grid is displayed with axes 786 and 788. Instances of keyword 710 are displayed along a vertical axis, axis 786. A horizontal axis, axis 786 contains examples of languages in which a label associated to an instance of keyword 710 can be represented. Instances of thesaural keyword 712 are depicted at the intersections of these two axes.

Each instance of thesaural keyword 712 is an instantiation for an associated instance of keyword 710. Each instance of thesaural keyword 712 contains a label that can be used as 50 the label for an instance of keyword 710. For example, thesaural keywords 790A-790D, 791A-791E, 792A-792B, and 793A-793B are instantiations of Keyword Instance One. Similarly, thesaural keywords 794A-794B, 795A-795B, 796A-796C, 797A-797B are instantiations of 55 Keyword Instance Two.

An instance of thesaural keyword 712 can be an instantiation of an instance of keyword 710 in a particular language. For example, thesaural keywords 791A-791E are English instantiations of Keyword Instance One. Thesaural 60 keywords 791A-791E provide alternate instantiations for Keyword Instance One. That is, each contains a Englishlanguage label for Keyword Instance One. Thus, Keyword Instance One can be associated with a different Englishlanguage label based on which instance of thesaural keywords 791A-791E is used to supply the label for Keyword Instance One. Similarly, Keyword Instance is associated 16

with English-language alternatives contained in thesaural keywords 795A-795B.

Thus, within a language, an instance of keyword 710 can have alternate instantiations of thesaural keyword 712. An instance of keyword 710 can also have alternate instantiations of thesaural keyword 712 across multiple languages as exemplified in FIG. 7E. Alternate instantiations for Keyword Instance One exist in French (e.g., thesaural keywords 790A-790D), German (e.g., thesaural keywords 792A-792B), and Russian (e.g., thesaural keywords 793A-793B), for example. Similarly, Keyword Instance Two has alternative instantiations in French (e.g., thesaural keywords 794A-794B), German (e.g., thesaural keywords 794A-794C), Russian (e.g., thesaural keywords 797A-797B).

A preferred alternate instantiation of an instance of keyword 710 can be identified in each of the languages in which the keyword instance is represented. Thus, for example, thesaural keyword instance 790C can be identified as the preferred instantiation of Keyword Instance One for the French language. Similarly, thesaural keyword instances 791B, 792A, and 793B can be the preferred English, German, and Russian (respectively) instantiations for Keyword Instance One. Thesaural keyword instances 794A, 795B, 796C, and 797A can be the preferred French, English, German, and Russian instances (respectively) for Keyword Instance Two.

Referring to FIG. 7A, type 716 is associated with keyword 710. Type 716 provides attribute information for keyword 710. Type 716 can be used to include instances of keyword 710 in a classification or category. In other words, an instance of keyword 710 is an instantiation of an instance. of type 716. For example, an instance of keyword 710 having an attribute of "Ford Bronco" could be associated with a type instance having an attribute of "car". Another instance of keyword 710 having an attribute of "Mustang" can also be associated with the same instance of type 716. Both instances of keyword 710 are instances of a car. One or more instances of type 716 can be associated with an instance of keyword 710. In the preferred embodiment, a hierarchy is established for instances of type 716. An instance of type 716 can be a parent to or a child of another other instances of type 716. An instance of keyword 719 that is associated with an instance of type 716 is also associated with the hierarchy of the instance of type 716.

Other attribute elements that can be associated with an input data fragment via phrase **706** include person **718**, and image **720**. Person **718** identifies an individual associated with an input data fragment. In the previous example, a personal life experience may contain a reference to a person. An instance of person **718** can be used to identify the reference. Person information **726** provides attribute information for an instance of person **718**. An instance of image **720** is used for data such as a still photograph that is referenced in the input data.

In the preferred embodiment of the invention, some elements, such as keyword 710 and person 718, must be approved before becoming actual instances. Prior to approval, the instances are considered to be proposed instances. For example, proposed keyword 714 and proposed person 724 are attribute elements used to identify instances of keyword 710 and person 718 that have not yet been approved as actual instances. Proposed instances are reviewed and a determination is made whether to transform the proposed attribute element into an actual attribute element or to otherwise dispose of the proposed attribute element.

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Person Information 726 is an attribute element associated with person 718. A "one-to-one" relationship (relationship 736) exists between person information 726 and person 718. Person information 726 contains attributes for person 718. The attributes of person information 726 contain information for a person having an instance of person 718.

Events can also be associated with input data. Each event becomes an instance of event 708. As previously described, input data can be decomposed into input data fragments each of which is associated with an instance of phrase 706. Input data can also be decomposed into input data fragments that are associated with instances of event 708. A type attribute is associated with event 708. Examples of an event type in the preferred embodiment include a segment, phrase, break between tapes, quality assurance details, facts, and miscellaneous (or other). An event can be used to access the associated input data fragment. An instance of event 708 can be used to access an input data fragment. For example, an instance of event 708 of type phrase can be used to locate the input data fragment associated with an instance of phrase 20 706.

Another example of an event type is a quality assurance event. In the preferred embodiment of the invention, a quality assurance mechanism can be used to monitor the quality of the input data and provide feedback. Quality assurance events are used to mark the input data. An event can mark a positive, negative, or neutral quality assurance event. For example, video input data is being collected in multiple interviews. Each interview can be reviewed to identify parts of the interview process that are noteworthy. Where, for example, an interviewer does not follow-up with an interviewee to obtain additional details, a negative quality assurance event can be created. A positive event can be similarly created. An event that is neither positive nor negative (i.e., informational or neutral) can also be created. A report of quality assurance events can be generated and used to provide feedback to the persons involved in collecting the input data.

Relationships of Elements

In the preferred embodiment, catalogue and attribute 40 elements are interrelated. Relationships are formed between two or more elements using the invention. FIG. 7B illustrates relationships formed between the elements identified in FIG. 7A according to an embodiment of the invention. A "many" relationship is signified using a double arrow. A $_{45}$ "one" relationship is identified using a single arrow. Relationship 728, for example, is a "many-to-many" relationship. That is, one or more instances of segment 704 can be related to many instances of phrase 706. Alternatively stated, segment 704 contains one or more instances of phrase 706. 50 One instance of phrase 706 can be related to multiple instances of segment 704. That is, an instance of phrase 706 is contained within one or more instances of segment 704. As illustrated by relationship 746, one or more instances of type 716 can be related to other instances of type 716.

A "many-to-many" relationship (relationship 730) exists between phrase 706 and proposed keyword 714, keyword 710, image/video 720, proposed person 724 and person 718. An instance of phrase 706 can be related to a set of proposed keywords, a set of keywords, a set of images and/or video, a set of proposed persons, and a set of persons, each set having zero or more members. Further, an instance of proposed keyword 714, keyword 710, image 720, proposed person 724 or person 718 can be related to more than one instance of phrase 706.

Relationship 738 illustrates a "many-to-many" relationship between keyword 710 and thesaural keyword 712. An 18

instance of keyword **710** can be associated with one or more instances of thesaural keyword **712**. The same instance of thesaural keyword **712** can be associated with one or more instances of keyword **710**.

As previously stated, instances of type 716 can be interrelated with other instances of type 716 via a type hierarchy. Relationship 744 identifies an instance of type 716 as a parent or child of another instance of type 716. Similarly, the instances of keyword 710 are interrelated via a keyword hierarchy. Keyword 710 can be related to other instances of keyword 710 via relationship 742. Relationship 742 identifies an instance of keyword 710 as a parent or child of another instance of keyword 710. Relationship 744 relates keyword 710 and type 716. That is, one instance of keyword 710 is related to an instance of type 716. Conversely, an instance of type 716 can be associated with multiple instances of keyword 710.

Further, an instance of keyword 710 can be related to many instances of type 716 via relationships 742 and 746. That is, an instance of keyword 710 has a type that is associated with an instance of type 716. In addition, the instance of keyword 710 inherits the types associated with the children of its associated instance of type 716.

Person 718 and person information 726 have a "one-toone" relationship via relationship 728. Person 718 and thesaural person 722 are related via relationship 734. Person 718 can be associated with multiple instances of thesaural person 722. An instance of thesaural person 722 can be related to multiple instances of person 718 via relationship 734.

Segment 704 is a container element. That is, as illustrated by relationship 728, segment 704 can contain multiple instances of phrase 706. Segment 704 is defined by the set of elements that it contains. For example, segment 704 is, for example, a chapter segment, a testimony segment, or a general segment. Instances of phrase 706 can be grouped in the order in which they occur in the input data in a chapter segment. As a testimony segment, segment 704 contains a grouping of instances of 704 associated with the input data. For example, a testimony segment can contain all instances of segment 704 that are associated with a videotaped interview. Person 718 can be related to segment 704 via relationship 732. At least one instance of person 718 is related to an instance of segment 704 that is a testimony segment via relationship 732.

Relationship 750 illustrates the relationship between instances of segment 704 (i.e., a testimony segment) that act as a container for other instances of segment 704. A general segment contains a set of instances of phrase 706 that are not necessarily related to particular input data. A general segment can be a collection of phrases that meet a certain criteria. For example, a general segment can contain instances of phrase 706 that are related to an instance of keyword 710 having a value of "teacher".

Segment 704 therefore identifies a group of catalogue elements (e.g., phrase 706. An instance of segment 704 can identify all catalogue element instances. Other instances of segment 704 can identify a subset of catalogue elements. Thus, for example, an instance of segment 704 can identify
all instances of phrase 706 or a some subset of all of the instances of phrase 706. The set including all instances of phrase 706 is a catalogue. A smaller catalogues that contain a subset of all instances of phrase 706 is also a catalogue. Within a catalogue, a smaller catalogue can be created by, for example, a query operation or user designation.

A set of catalogue elements can be identified by querying the attribute elements, for example. A query operation can be

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performed on the attribute elements to examine other attribute elements associated with a catalogue element. A query operation identifies a set of cataloguing elements (e.g., instances of phrase 706) that satisfy the criteria specified in the query. A set of cataloguing elements identified in a query are grouped in an instance of segment 704. A user can also specify a collection of phrases 706 that can be grouped in an instance of segment 704.

Attributes

FIG. 7A provides examples of attributes for catalogue and ¹⁰ attribute elements according to an embodiment of the invention. Segment 704 contains an identifier (ID), a descriptive phrase, and a set of phrases, for example. The phrases related to an instance of segment 704 are included in the segment instance's set of phrases. A set is formed by creating relationships between the elements. FIG. 7B illustrates examples of the relationships that exist between elements in an embodiment of the invention. The relationships that form a set can be implemented using any of the known techniques known in the art. For example, the relationships can be implemented in a programming language using pointers. In a relational database management system, for example, the relationships can be formed using relations and primary and foreign keys.

Referring to FIG. 7A, phrase 706 includes an input data ID (e.g., identifies the input data from which the phrase was generated), an ID, a descriptive phrase, In/Out timecodes (i.e., a corresponding location within the input data), a set of keywords, images, persons, proposed keywords, and pro-posed persons. Keyword 710 includes an ID, and sets of types, thesaural keywords, child keywords and parent keywords. The child and parent keyword set form relationships for the keyword hierarchy. The set of thesaural keywords related to keyword 710 contain keyword values or labels for 35 keyword instance.

Person 718 includes an ID, a primary name, an occupation, date of birth, and a set of proposed persons. Person information 726 contains a person ID for the associated instance of person 718. Person information 726 contains one or more attributes for the associated instance of person 718. The attribute information can vary depending on the multimedia information being catalogued. For example, the catalogued multimedia data may consist of interviews with individuals. An instance of person 718 can be instantiated and associated with an interviewee. Person information 726 associated with the instance of person 718 can then include biographical information of the interviewee. The multimedia data videotaped sporting events. In this case, an instance of person 718 can be created for a person associated with the sporting event (e.g., player, referee, and broadcasting personnel). An instance of person information 726 associated with the instance of person 718 can include statistical information associated with the participant.

An event 708 includes an ID, type (e.g., segment, phrase, 55 interviewer, videographer, fact, or other), sub-type (e.g., a positive, negative, or informational event), timecodes, and a comment (or descriptive note).

Thesaural keyword 712 includes an ID, a keyword ID (i.e., the ID for an instance of keyword 710 for which the 60 thesaural keyword instance is an alternative), a label (i.e., the value of the keyword instance to which the thesaural instance is related), a language of choice identifier (or language ID), a preferred flag, and a characteristic (or class). If set, the preferred flag specifies that the thesaural keyword 65 manager is a cache manager. instance is the preferred alternative for the related keyword instance in the language specified by the language ID. The

characteristic attribute further defines the thesaural keyword instance. It can be used to identify that thesaural keyword instance is a slang word, for example.

An ID, timecode and locator are included as attributes for image 720. The locator attribute is used to locate the digitized image, for example. Proposed keyword 714 includes an ID and a label. It is also possible to include the attributes contained in keyword 710 in proposed keyword 714. Thus, the user that is proposing a new keyword can enter as much information regarding the proposed keyword. Proposed person 724 includes an ID and name attribute. Like proposed keyword 714, the attributes associated with person 718 can be included in proposed person 724. Type 716 includes an ID and a label.

Elements and their relationships can be managed using a cataloguing mechanism and a relationship management mechanism. The cataloguing mechanism includes a user interface that includes a series of screens. During cataloguing, a user (e.g., a cataloguer) reviews the input data and causes elements to be instantiated and associated with the input data and other elements. Elements that already exist can be associated with the input data during cataloguing. In addition, a cataloguer can propose new elements and relationships. The relationship management facility is used to review the elements and relationships proposed by a cataloguer. The relationship management facility can also be used to create new elements and relationships.

Thus, a digital library system has been provided.

- What is claimed is:
- 1. A digital library system comprising:
- a catalouging system having a catalogue of multimedia data comprising at least one catalogue element associated with a plurality of keywords identifying said multimedia data;
- an access management system coupled to said cataloguing system; and
- a distribution system coupled to said access management system

2. The digital library system of claim 1 wherein said access management system further comprises:

- a browser;
- a text interface coupled to said browser;
- an indexing server coupled to said text interface;
- a first media interface coupled to said browser;
- an archive server coupled to said media interface;
- a second media interface coupled to said browser; and
- a method player coupled to said second media interface.

3. The system of claim 2 wherein said indexing server comprises:

a database management system (DBMS);

- a plurality of catalogue elements coupled to said DBMS; and
- a plurality of attributes and attribute elements coupled to said plurality of catalogue elements.

4. The system of claim 3 wherein said text interface contains operations for querying said plurality of catalogue elements and said plurality af attributes and attribute elements

5. The system of claim 2 further comprising a tertiary storage manager coupled to said archive server.

6. The system of claim 5 wherein said tertiary storage

7. The system of claim 1 wherein said distribution system further comprises:

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- a main site wherein said main site comprises permanent storage for the multimedia data in said digital library system; and
- a plurality of remote sites coupled to said main site wherein said remote sites comprise temporary storage ⁵ for some or all of said multimedia data in said digital library system.

8. The system of claim 7 wherein said plurality of remote sites further comprise an instance of said asset management system.

- 9. The system of claim 7 wherein said main site further comprises an instance of said asset management system.
- 10. The system of claim 7 wherein said temporary storage is a cache.

11. The system of claim 7 wherein said temporary storage 15 is a named cache.

12. The digital library of claim 7 wherein said plurality of remote sites are connected over a wide area network.13. The digital library of claim 12 wherein said wide area

network is the internet.

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14. A digital library system comprising:

- a catalouging system having a catalogue of multimedia data comprising at least one catalogue element associated with a plurality of keywords identifying said multimedia data, said plurality of keywords being interrelated by one or more of associative, whole-part, and inheritance relationships;
- an access management system coupled to said cataloguing system; and
- a distribution system coupled to said access management system.

15. The digital library system of claim 14 wherein said catalouging system is configured to perform the step of: receiving textual information as input.

16. The digital library of claim 14 further comprising a transfer system configured to convert said multimedia data from analog format to digital format.

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GROUP ART UNIT ATTORNEY DOCKET NO. SERIAL NUMBER CLASS FILING DATE 707 2771 84300.911C 09/184,796 11/02/98 SAMUEL GUSTMAN, SANTA MONICA, CA. **CONTINUING DOMESTIC DATA***** THIS APPLN IS A CON OF 08/677,539 07/10/96 PATING 5,832,499 DIV 09/076,504 7/10/96 pending application, CON application 08/680,504 -1/8/96 pater 5,832,495 VERIFIED m **371 (NAT'L STAGE) DATA* VERIFIED m **FOREIGN APPLICATIONS***** VLAIFIED ***** SMALL ENTITY **** FOREIGN FILING LICENSE GRANTED 11/17/98 Foreign Priority claimed Uyes Who 35 USC 119 (a-d) conditions met, Uyes pho DMet after Allowance STATE OR COUNTRY SHEETS DRAWING TOTAL CLAIMS pr 1 9 CĂ Verified and Acknowledged Examinar's Initial GARY A HECKER HECKER & HARRIMAN 2029 CENTURY PARK EAST ADDR SUITE 1600 LOS ANGELES CA 90067 DIGITAL LIBRARY SYSTEM JILL FILING FEE RECEIVED All Fees FEES: Authority has been given in Paper 1.16 Féés (Filing, ____ to charge/credit DEPOSIT ACCOUNT No. 1.17 Fees (Proce _ for the following: NO. \$460 1.18 Fees (Issue Other Credit Page 28 of 199 **MINDGEEK EXHIBIT 1005**

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(Insert Customer No. or Attach bar code label here) :	
Name HECKER & HARRIMAN	
Address 1925 Century Park East	
Suite 2300	
Chy Los Angeles State CA Zip Code 9006	•
U.D.A. [elephone] (310) 286-0377 [Fax (310)	
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UNITED STATES PATENT APPLICATION

FOR

A DIGITAL LIBRARY SYSTEM

INVENTOR:

SAMUEL GUSTMAN

PREPARED BY:

HECKER & HARRIMAN 2029 Century Park East Suite 1600 Los Angeles, CA 90067

(310) 286-0377

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BACKGROUND OF THE INVENTION OF THE INVENTION 7/10/96 PATONT 5,832, 499, 7/10/96 pendina application and This application is a Divisional of 09/076, 504 FIELD OF 1. Continuation fo 8/18/40, 504 2/8/96 Portant 5,832, 495, This invention relates to a system for cataloguing, storing, retrieving, and distributing multimedia data.

BACKGROUND 2.

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Increasingly, computer systems are being used to present multimedia material. Such material is usually in the form of text, graphics, video, animation, and sound. (Other examples include books, manuscripts, pictures, film, audio recordings.) Two or more of these data types are usually combined to form the multimedia data presented by the computer system. A computer system that is used to present multimedia material is called a multimedia system.

The multimedia material must be captured before it can be used by a multimedia system. For example, some or all of the multimedia data is in an analog format and must be converted to digital form before it can be used by a multimedia system. The multimedia data converted from analog must be managed. A management facility is needed to manage and maintain the data. An access capability is needed to search and retrieve stored multimedia data. Once it is retrieved, a distribution facility is needed to distribute the data to a multimedia system. Thus, a system is needed to capture, access,

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manage, and distribute multimedia material. Such a system is digital library system.

A number of patents that describe software and/or hardware systems are provided below. These systems do not provide a digital library system that can capture, access, manage, and distribute multimédia material.

A search system is described in United States Patent No. 5,241,671, Reed et al., issued on August 31, 1993 relates to a multimedia system that includes a database that is comprised of words, phrases, numbers, letters, maps, charts, pictures, moving images, animations, and audio information. A search capability is provided that provides a series of entry paths for locating information in the database. An entry path allows a user to enter a search request that consists of a set of valid terms or stop terms. A stop term is a term that exists on a stop term list and may be the words "the" or "a", for example. Valid terms are linked to related terms using a stem index. A 15 stem index contains a root term and a set of stems for each term that is related to the root word. For example, the word leaf is linked to terms "leaves" and "leafing".

A repetitive analysis event system that accesses data using a time-based number is described in U.S. Patent No. 5,414,644, Seaman et al., issued on May 9, 1995. The system uses an information library that consists of visual data storage and a textual database for storing written descriptions of the visual data and a glossary of keywords that identify repetitive events

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or behavior. A behavioral label is used to define a behavioral activity. A series of images or video clips are associated with the behavioral label. A user can retrieve images by identifying a subject, a behavioral activity, or other type of descriptive text. A chronological timeline is used to control the order in which the images are displayed. That is, the images are displayed in sequential order using the time-based number.

A method for storing and retrieving information that uses a "three file" concept is described in U. S. Patent No. 3,670,310, Bharwani et al., issued on June 13, 1972. This concept is so named because it uses three files: an index file, a search file, and a data file. The index file contains a keyword record for each keyword. A keyword is a word that exemplifies the meaning or value of information. The search file contains a search record for each data record in the data file. A search record contains an address for its associated data record in the data file, the keywords for the data record. Each keyword in the search record has an associated link address to another search record that contains the same keyword. <u>Bharwani</u> states that it improves on the "three file" concept by: 1) using an adjustable keyword length in the index file to conserve space, 2) providing a means for marking items as deleted so that they can be bypassed, 3) automatically generating keywords based on field values contained in a data record, and 4) providing continuous searching even during a database update procedure.

A knowledge based information retrieval system is described in U. S. Patent No. 5,404,506, Fujisawa et al., issued on April 4, 1995. The system

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provides a visual interface for local searching and a natural language interpreter for global search. The natural language interpreter is used to infer the meaning of a noun phrase or a nominal phrase. The inferred meaning is used to retrieve information.

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A system for distributed data from a centralized location to a remote location is described in U. S. Patent No. 4,974,149, Valenti, November 27, 1990. The centralized system generates a descriptor that describes the data and its source location. The descriptor may further define when the data is to be retrieved. The remote systems use the descriptor to retrieve the data. A preferred embodiment uses the descriptor to distribute software (i.e., executable and data files).

A system for database retrieval wherein entries in different databases are retrieved by a process of matching key words of the databases is described in U. S Patent No. 5, 210, 868, Shimada et al., issued on May 11, 1993. Examples of two such databases are a mapping database and a customer attribute database. A dictionary is used to separate a keyword from a first database into common and proper noun subparts. Common and proper noun synonyms are inferred according to a set of rules. The synonyms are combined using a combination rule and then compared with keywords in a second database to generate a final matching result.

A system for assembling documents, or files is disclosed in U. S. Patent No. 5,222,236, Potash et al., issued on June 22, 1993. Documents are

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stored in a library that is composed of a series of volumes. A volume is a logical grouping of documents such as legal documents. A volume is decomposed into a set of chapters. For example, a chapter within a "legal documents" volume might contain documents related to commercial law. The system further provides a series of user interface screens that prompt a user for input that is used to update a data field in a document (e.g., addressee).

A process for creating a search query from a natural language query is described in U. S. Patent No. 5,265,065, Turtle, issued on November 23, 1993. A database contains a plurality of stopwords and phrases. The database is used to eliminate stopwords from the natural language query. The remaining words are stemmed to their basic roots, or words. The stemmed words are compared against the database to identify phrases. The phrases and any remaining stemmed roots form the search query and are referred to as query nodes of a query network. The query nodes are also representation nodes of a document. A synonym database is used for finding synonyms.

A service for managing hypertext/hypermedia links is described in U.S. Patent No. 5,297,249, Bernstein et al., issued on March 22, 1994. A Link Manager Services (LMS) component provides a universal End User Interface (EUI) including menus and dialog boxes that can be called by an application program when a link, or marker, is selected by an application user. The LMS accesses a database that contains information about markers and their associated "presenters" (e.g., application or program). In addition, the LMS

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includes a viewer capability for viewing and maintaining existing links and creating new links. The LMS is used at runtime to generate menus and dialog boxes and manage the hypertext/hypermedia links.

A system that interconnects audio-video equipment such as video tape record or video production switcher using one or more "AV LANs" in U. S. Patent No. 5,307,456, Mackay, issued on April 26, 1994. Generic device commands are communicated over an AV LAN to a device translator. The device translator translates the generic command into a device-specific command. The AV LANs are interconnected using bridges. The AV LANs can further be used to interconnect workstations, minicomputers, mainframes and personal computers. The workstations can be used to display information about the resources attached to an AV LAN.

A text searching system that includes: 1) a morphological analyzer that generates a set of words that are lexically related to an input word and that together with the input word constitute a set of search words and 2) a search engine for searching an index to detect the occurrence of any of the search words in the index is described in U. S. Patent No. 5,369,577, Kadashevich et al., issued on November 29, 1994. The morphological analyzer includes a recognition engine that identifies derivational information for a given input word. A thesaurus database is used to generate a list of synonyms for the lexically related words. The synonyms and variations of the synonyms (i.e., words formed by adding a suffix to a synonym) are included in the set of search words. The system can further be used to expand an input word into

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related words by removing suffixes. Further expansion is accomplished by using the thesaurus database to obtain synonyms for the related words.

A system for dynamically loading software libraries. A service requester of an application program sends a request to a loader module of an application program is described in U. S. Patent No. 5,410,698, Danneels et al., issued on April 25, 1995. The application's loader module forwards the request to a second loader module outside the application program. The service requester can be a media services manager of a multicast application program that issues a request to load a media service provider library. A global dynamic loader receives the request as part of the multicast application program and forwards it to the global dynamic loader executable. (i.e., the second loader module) that loads the media service provider library.

A method for manipulating video data that allow for the definition of frames in a string of isochronous data using frame numbers or names is described in U. S. Patent No. 5,414,808, Williams et al., issued on May 9, 1995. Frames can be grouped into segments. Frames can be referenced and operations performed on frames using the frame definitions.

A method for storing data in data stores at various locations in a network is described in U. S. Patent No. 5,442,771, Filepp et al., issued on August 15, 1995. These locations can be the user system and network concentrator facilities hierarchically located between the user system and the network host. Data is cached in either a temporary cache (e.g., RAM) or a

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variable-content permanent stage (e.g., variable-content, fixed disk file). A least-recently-used approach is used to determine the data that is retained in a store. In addition, storage candidacy and version control parameters are used to insure currency if maintained for time-sensitive data (e.g., news or pricing data).

An image data filing system consisting of a library for storing a plurality of image storage media (e.g., optical disks), a disk array for storing image data retrieved from the image storage media, a console for entering user instructions, and an output device for displaying image data is described in U. S. Patent No. 5,463,771, Sotoyanagi et al., issued on October 31, 1995. A control device is used to control the retrieval and storage operations.

A system for storing and retrieving digital images is described in U. S. Patent No. 5,493,677, Balogh et al., issued on February 20, 1996. A caption or other metadata can be associated with a digital image. A natural language capability removes ambiguities from the metadata input by a user prior to its storage. The natural language capability determines matches between a user query and the stored metadata. The system allows a user to select an image, review licensing terms for the selected image, and order the image.

A technique for dynamically optimizing the processing of a database query execution plan is described in U. S. Patent No. 5,495,608, Antoshenkov et al., issued on February 27, 1996. A decision is made during processing to

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either retrieve records using indexed keys or by retrieving all records based on which approach is optimal.

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SUMMARY OF THE INVENTION

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality.

A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. In addition to the data output from the transfer system, the cataloguing system can also receive textual data as input. The cataloguing system catalogues the multimedia and textual data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. Data is stored by the transfer system independent of content. The cataloguing systems creates a catalogue that specifies the content of the data. The catalogue includes one or more catalogue elements which can be complex multimedia assets. A complex multimedia asset can consist of one or more attribute elements. An attribute element is an attribute that can have attributes (i.e., pieces of information). A catalogue element is associated with a portion of multimedia data (e.g., one or more frames of video data).

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An asset management system is used to access the data using the catalogue created by the cataloguing system. The asset management system identifies data having the desired content. The asset management system includes search tools to query the catalogue to identify a set of catalogue elements having attributes that satisfy a search criteria. The data associated with the catalogue elements have the desired content.

The asset management system includes a browser, an indexing server, an archive server, a tertiary storage manager, and a method player. Generalized interfaces define a communication protocol that can be used by any vendor-supplied browser, indexing server, archive server, tertiary storage manager, and/or method player to communicate with another asset management system component.

A request for data is received by a browser. The browser in combination with the indexing server locates a set of catalogue elements that satisfy criteria specified in the request. The set of catalogue elements are sent to an archive server for retrieval. The archive server maintains an identification of the location of the multimedia data. Thus, when a set of catalogue elements is received from the browser, the archive server can identify the location of the portions of multimedia data having the desired content (i.e., the portions of multimedia data associated with the catalogue elements contained in the set).

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The multimedia data associated with a catalogue element is retrieved by the archive server in conjunction with a tertiary storage manager. A tertiary storage manager manages a store that contains multimedia data. The system can consist of multiple instances of tertiary storage manager to manage each data store. The tertiary storage manager can manage various types of data store. The archive server identifies the tertiary storage manager that manages the store containing the requested multimedia data. The tertiary storage manager retrieves the data and transmits the data to a method player. The method player prepares the data (converts the data from MPEG to video format) and transmits the prepared data to the browser. The browser formats a display region and displays the data in the display region.

A caching mechanism is implemented by the asset management facility to store retrieved data locally. Preferably, cache is used to store multimedia data that is being or will be played on the browser. The asset management facility locates the data and, if necessary, stores the data in local cache. Preferably, cache management is supplied by an instance of tertiary storage manager. The tertiary storage manager that manages the data denormalizes the data allowing for faster access.

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A tertiary storage manager that manages the cache uses a least recently used (LRU) scheme. Thus, multimedia data that has the oldest access time is purged to make room for newly accessed data. The archive server determines whether the local cache contains the multimedia data associated with the catalogue elements. If the multimedia data is not stored in local

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cache, the archive server can query other archive servers to determine, whether the data is stored in a remote cache. If the archive server cannot find a cached copy of the data, it will attempt to retrieve the data from permanent storage (e.g., a tape system).

A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location. Multimedia data is permanently stored at a centralized location. Multimedia data that is requested by a user is cached from the centralized location to the user site. A wide area network can be used to interconnect user sites with the main site. The WAN can be used to transmit data that resides at the main site or another user site to a requesting user site. In addition, data can be transferred between sites via the Internet.

Either a centralized or decentralized distribution architecture can be used with the invention to distribute functionality (e.g., asset management functionality). In a centralized architecture, the asset management facility is located at a centralized site. Users connect to the asset management facility via the Internet, for example. The catalogue and multimedia data are stored at the central site. The catalogue is accessed at the central, or main site to identify the requested data. The data is then transmitted to the user via the Internet.

In a decentralized architecture, an instance of the asset management system is located at the user's site. A copy of the catalogue is resident at the

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user site. The multimedia data is permanently stored at a main site with copies of data that has accessed stored at the user's site. The local catalogue is accessed to identify the data requested in a user request. If a copy of the requested data does not exist at the local site, a search is made for the data at another site. The search first examines the cache at the other sites. If the data cannot be found in cache at the local or another site. The local site accesses the main site to retrieve the requested data. A vehicle such as a WAN or the Internet can be used to transmit the data between sites.

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The asset management system can include various access levels (i.e., simple to complex) each of which is associated with a level of interface to access the data based on the type of audience. The audience can be an individual or a group of people, for example. At the complex access level, the audience must be able to understand the catalogue structure (i.e., catalogue element and associated attributes and attribute elements).

At a programmer's level, an interface consisting of low-level software routines are available to query the catalogue and its associated attributes and attribute elements. The low-level software routines can be used to create a higher level of abstraction of objects. These objects can become selectable elements in a graphical user interface (GUI) for a development tool that can be used to create a higher-level interface. The GUI can include a drag and drop capability to create a GUI and associate GUI objects to objects that supply functionality (e.g., objects contained in a higher-level interface.)

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A development tool can be used to create a browser, for example. A browser can include the ability to view instances contained in a catalogue and its associated attributes and attribute elements. The user can create a query by dragging these instances into a search box and specifying conjunction information (e.g., "and" or "or).

At the simplest access level, predefined sets are created and stored for viewing by individuals using a single video viewing station or in a virtual reality environment or video display kiosks for viewing by groups of people.

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BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 provides an example of a general purpose computer to be used with the present invention.

Figure 2 provides a block overview of the data capture and interface subsystems according to an embodiment of the present invention.

Figure 3 provides a block overview of the data distribution subsystem according to an embodiment of the present invention.

Figure 4 provides a process flow for cache management and retrieval according to an embodiment of the invention.

Figure 5 provides a data retrieval into cache process flow according to an embodiment of the invention.

Figure 6 provides examples of access levels and audiences that can be accommodated by interfaces provided by an asset management system according to an embodiment of the invention.

Figure 7A provides an example of catalogue and attribute elements and their attributes according to an embodiment of the invention.

Figure 7B illustrates relationships formed between the elements identified in Figure 7A according to an embodiment of the invention.

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Figure 7C provides an illustration of instances of keyword 710 and a plurality of associated label attributes according to an embodiment of the invention.

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DETAILED DESCRIPTION OF THE INVENTION

A digital library system is described. In the following description, numerous specific details are set forth in order to provide a more thorough description of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known features have not been described in detail so as not to obscure the invention.

An embodiment of the invention can be implemented as computer software in the form of computer readable program code executed on a general purpose computer such as illustrated in Figure 1. A keyboard 110 and mouse 111 are coupled to a bi-directional system bus 118. The keyboard and mouse are for introducing user input to the computer system and communicating that user input to central processing unit (CPU) 113. Other suitable input devices may be used in addition to, or in place of, the mouse 111 and keyboard 110. I/O (input/output) unit 119 coupled to bi-directional system bus 118 represents such I/O elements as a printer, network communications card, modem, A/V (audio/video) I/O, etc.

The computer system of Figure 1 also includes a video memory 114, main memory 115 and mass storage 112, all coupled to bi-directional system bus 118 along with keyboard 110, mouse 111 and CPU 113. The mass storage 112 may include both fixed and removable media, such as magnetic, optical or magnetic optical storage systems or any other available mass storage

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technology. Bus 118 may contain, for example, thirty-two address lines for addressing video memory 114 or main memory 115. The system bus 118 also includes, for example, a 32-bit data bus for transferring data between and among the components, such as CPU 113, main memory 115, video memory 114 and mass storage 112. Alternatively, multiplex data/address lines may be used instead of separate data and address lines.

In one embodiment of the invention, the CPU 113 is a microprocessor manufactured by Motorola, such as the 680X0 processor or a microprocessor manufactured by Intel, such as the 80X86, or Pentium processor, or a SPARC microprocessor from Sun Microsystems. However, any other suitable microprocessor or microcomputer may be utilized. Main memory 115 is comprised of dynamic random access memory (DRAM). Video memory 114 is a dual-ported video random access memory. One port of the video memory 114 is coupled to video amplifier 116. The video amplifier 116 is used to drive the cathode ray tube (CRT) raster monitor 117. Video amplifier 116 is well known in the art and may be implemented by any suitable apparatus. This circuitry converts pixel data stored in video memory 114 to a raster signal suitable for use by monitor 117. Monitor 117 is a type of monitor suitable for displaying graphic images.

The computer system described above is for purposes of example only. An embodiment of the invention may be implemented in any type of computer system or programming or processing environment.

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The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality.

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The data capture system captures multimedia data in whatever format (e.g., analog or digital) and stores it in permanent storage independent of its content. An asset management system uses a content specification to identify data captured by the transfer system to satisfy a data request. Figure 2 provides a block overview of the data capture and asset management systems according to an embodiment of the present invention.

Data Capture

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The data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia data from analog to digital format. The cataloguing system catalogues the multimedia data output from the transfer system as well as textual input.

Transfer System

Referring to Figure 2, multimedia data 250 is input to transfer system 246 in data capture subsystem 234. Multimedia data 250 is video and/or audio data, for example. Transfer system 246 consists of one or more transfer stations. A system comprised of multiple transfer stations with an interface

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is available from Electrosonics, Los Angeles, California. Each transfer station is capable of taking analog input such as a videotape and converting it into multiple types of output.

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The conversion capabilities of transfer system 246 can be used to convert analog data for use with the invention. For example, multimedia data 250 is converted by transfer system 246 to Digital Betacam version 258. Digital Betacam version 258 is sent to long term storage 260 for preservation. A timecoded VHS version 256 is also created from multimedia data 250 and sent to cataloguing system 240. MPEG version 252 is also created from multimedia data 250. MPEG is a digital data format used to store video data in a compressed form.

An MPEG version of the analog input (multimedia data 252) is sent to non-line storage 242 via a network that interconnects transfer system 246 and a computer system including non-line storage 242. For example, non-line storage is an E-MASS tape system. The MPEG version can be transmitted over the network using the File Transfer Protocol (FTP), for example.

Data is sent to storage by transfer system 246 independent of its content. For example, MPEG version 252 is stored in non-line storage 242 without the need to determine its content. The cataloguing system creates a catalogue that can be used to perform content-based searches. A

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content-based search retrieves data based on the ideas or concepts contained in the data.

Cataloguing System

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Cataloguing system 240 catalogues multimedia data input (e.g., timecoded VHS 256) received from transfer system 246 and other data 254 that includes data in the form of text. A catalogue is generated by cataloguing system 240. The catalogue created by cataloguing system 240 is stored in indexing server 216.

The catalogue includes one or more catalogue elements which can be a complex multimedia asset. A complex multimedia asset can consist of one or more attribute elements. An attribute element is an attribute that can have attributes. An attribute is a piece of information. A catalogue element is associated with a portion of multimedia data (e.g., one or more frames of video data). The result of a search operation performed by the browser identifies a set of catalogue elements that can satisfy a search request. Each catalogue element has an associated ID (e.g., an integer ID) that uniquely identifies the catalogue element. A set of IDs that represent the set of catalogue elements identified in a search operation are sent to the archive server component for retrieval of the associated multimedia data. The section entitled Catalogue Instance below provides an instance of a catalogue that can be used with the invention. A detailed discussion of a cataloguing scheme is provided in a co-pending U.S. Patent Application entitled

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"Method and Apparatus for Cataloguing Multimedia Data", Serial No. 0.6/680, 504, filed on July 8, 1996 and incorporated herein by reference.

Asset Management System

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Referring to Figure 2, asset management system 232 is used to access the data using the catalogue created by cataloguing system 240. Asset management system 232 identifies data having the desired content using search tools to query the catalogue to identify a set of catalogue elements having attributes that satisfy a search criteria. The data associated with the catalogue elements provide the content specified by the search criteria. The following provides a brief summary of asset management system 232. A more detailed discussions of an asset management system is provided in a $\mu \psi = \rho_{e} \mu \mu \omega$ co-pending U.S. Patent Application entitled "Method and Apparatus for Management of Multimedia Assets", Serial No. <u>09</u> <u>D76</u>, <u>504</u>, filed on July 10, 1996 and incorporated herein by reference.

Asset management system 232 includes browser 218, indexing server 216, archive server 206, tertiary storage manager 204, and method player 202. Generalized interfaces 210, 214, and 212 define a communication protocol that can be used by any vendor-supplied browser, indexing server, archive server, tertiary storage manager, and/or method player to communicate with another asset management system component.

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Browser 218 includes a user interface in which a user can formulate a search request for data. The search request contains search criteria that can be used to identify catalogue elements that identify portions of multimedia data. Attributes and/or attribute elements associated with the catalogue elements contain information that can be compared against the search criteria contained in the request. The comparison identifies catalogue elements that satisfy the search criteria. That is, catalogue elements are selected that have attributes and/or attribute elements that satisfy the search criteria.

A request for data is received by browser 218. Browser 218 in combination with indexing server 216 locates a set of catalogue elements that satisfy criteria specified in the request. The set of catalogue elements are sent to archive server 206 for retrieval. Archive server 206 maintains an identification of the location of each piece of multimedia data. Thus, when a set of catalogue elements is received from browser 218, archive server 206 can identify the location of the portions of multimedia data having the desired content (i.e., the portions of multimedia data associated with the catalogue elements contained in the set).

The multimedia data associated with a catalogue element is retrieved by archive server 206 in conjunction with tertiary storage manager 204. Tertiary storage manager 204 manages a store that contains multimedia data. Asset management system 232 can consist of multiple instances of tertiary storage manager 204 to manage each data store. Tertiary storage manager 204

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can manage various types of data store. Archive server 206 identifies the instance of tertiary storage manager 204 that manages the store containing the requested multimedia data. Tertiary storage manager 204 retrieves the data based on a request from archive server 206 and transmits the data to method player 202. Method player 202 prepares the data (converts the data from MPEG to video format) and transmits the prepared data to browser 318. Browser 218 formats a display region and displays the data in the display region.

Access Levels

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Asset management system 232 can include various access levels each of which is associated with a level of interface to access the data based on the type of audience. Figure 6 provides examples of access levels and audiences that can be accommodated by interfaces provided by an asset management system according to an embodiment of the invention.

The vertical axis is used for access level. An access level ranges from simple to complex. Audience examples are depicted along the horizontal axis. The audience can be an individual or a group of people, for example. At the complex access level, the audience must be able to understand the catalogue structure (i.e., catalogue element and associated attributes and attribute elements). An interface used at this level that requires knowledge of the catalogue structure is research interface 616. At the next access level (e.g., a programmer's level), an interface consisting of low-level software

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routines are available to query the catalogue and its associated attributes and attribute elements. The low-level software routines can be used to create a higher level of abstraction of objects. These objects can become selectable elements in a graphical user interface (GUI) for a development tool that can be used to create a higher-level interface used in the next access level. Such a higher-level interface is teacher's design tool 614. The GUI in teacher's design tool 614 can include a drag and drop capability to create other GUIs and associate GUI objects to objects that supply functionality (e.g., objects contained in a higher-level interface.)

Teacher's design tool 614 is an example of a development tool that can be used to create browser 612, for example. Browser 612 provides tools for interfacing with the multimedia data that make it simpler to user than teacher's design tool 614. For example, this level includes an ability to view instances contained in a catalogue and its associated attributes and attribute elements. The user can create a query by dragging these instances into a search box and specifying conjunction information (e.g., "and" or "or).

At the simplest access level, predefined sets are created and can be replayed by an individual using single video viewing screen (video screen 610). Virtual environments or video display kiosks 618 can be created using predefined sets for viewing by groups of people.

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Cache

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A caching mechanism is implemented by asset management system 232 to store retrieved data locally. Preferably, cache is used to store multimedia data that is being or will be played on browser 218. Asset management system 232 locates the data and, if necessary, stores the data in local cache (e.g., cache 244). Asset management system 232 manages cache and the retrieval of data using cache.

Cache Management

Preferably, cache management is supplied by an instance of tertiary storage manager 204. The instance of tertiary storage manager 204 that manages the data denormalizes the data allowing for faster access. Tertiary storage manager 204 that manages cache 244 uses a least recently used (LRU) scheme. Thus, multimedia data that has the oldest access time is purged to make room for newly accessed data.

Preferably cache 244 is a size that can meet user demand requested by a user. That is, cache 244 is a size that can temporarily store requested data such to optimize retrieval transparently (e.g., requested data can be cached for use by the user). For example, cache 1 through N can each have a one terabyte (Tb) capacity. Preferably, tertiary storage manager 204 uses a least recently used (LRU) scheme for managing the cache. That is, data copies that are the least recently used can be purged to make room for new data. The ID attribute of a catalogue element can be used to maintain a log for the cached

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data. The log can identify the data contained in cache 244 and its use history as well as a pointer to the data in cache 244.

Retrieval and Cache Management

The multimedia data associated with catalogue elements can be retrieved from offline storage such as a tape system. The invention also provides the ability to temporarily store multimedia data in cache such as cache 244 in Figure 2. Cache can be local (i.e., cache that resides at the local site) or remote (i.e., cache at a remote site). In most cases, retrieval time is fastest when the data is retrieved from cache (either local or remote). When a tape system must be accessed to retrieve the data, retrieval time will most likely be slower. Therefore, it is preferable to determine whether the data is resident in cache before accessing a storage system such as a tape system. Further, it is preferable to manage the cache such that the data that is most likely to be needed is resident in cache.

Archive server 206 determines whether the portion of cache 244 resident at the same site (i.e., local cache) contains the multimedia data associated with the catalogue elements. If the multimedia data is not stored in local cache, the archive server can query other archive servers to determine whether the data is stored in the portion of cache 244 that resides at the other site (i.e., remote cache). If the archive server cannot find a copy of the data in cache 244, it will attempt to retrieve the data from permanent

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storage (e.g., non-line storage 242). Figure 4 provides a process flow for cache management and retrieval according to an embodiment of the invention.

At step 402, archive server 206 searches for the data associated with the catalogue elements received from browser 218. When a set of catalogue elements is received, archive server 206 determines whether the associated data is stored in a local cache. For example, ID attributes associated with each catalogue element in the set can be compared against a log that contains the ID attributes for catalogue elements whose data is stored in the local cache. At step 404 (i.e., "all data found in local cache. If so, the data is available and can be retrieved from local cache. Therefore, processing for this cache management request ends at step 418.

If all of the data does not reside in local cache, processing continues at step 406. At step 406 (i.e., "any data in another cache?"), the local instance of archive server 206 can query other (remote) instances of archive server 206 to determine whether any of the requested data is resident in a remote cache. If not, processing continues at step 410. If data is found in a remote cache, processing continues at step 408 to retrieve the data from the remote cache into the local cache. Processing continues at step 410.

At step 410 (i.e., all data located?"), a determination is made whether all of the requested data has been found at either a local or remote cache. If so, processing for this cache management request ends at step 418. If all of

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the data is not found in cache, processing continues step 412. At step 412 (i.e., "remaining data offline?"), offline storage is examined to obtain the remaining data. If all of the remaining data is not found offline, processing continues at step 414 to raise an error. If the remaining data is found offline, processing continues at step 416 to retrieve the offline data into local cache. Processing ends at step 418.

At steps 408 and 416, data found at a remote cache or in offline storage is retrieved into cache. As new data is cached, older data may need to be purged from cache to make room for the new data. In addition, tertiary storage manager 204 must update the cache log to reflect additions to or deletions from cache. Figure 5 provides a data retrieval into cache process flow according to an embodiment of the invention.

At step 502 (i.e., "space available in cache?"), tertiary storage manager 204 determines the total amount of space available in cache. If there is available space for the data that is being retrieved, processing continues at step 510 to cache the data. If there isn't enough space available, processing continues at step 504. At step 504 (i.e., "can space be freed?"), a determination is made whether enough space can be freed for the data by purging data from cache that is currently not in use (e.g., not being played on a browser). If not, processing continues at step 506 to raise and error and processing ends at step 514. If enough data can be purged to make room for the new data, processing continues at step 508 to purge the unused data.

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At step 510 the new data is retrieved into cache. At step 512, cache, management information is updated. For example, the IDs associated with the purged data are removed from the cache management information (e.g., a cache log) and the IDs associated with the newly retrieved data are added to the log. LRU information can be set for the new data (e.g., the time of access of the data). In addition, tertiary storage manager 204 can perform operations that maintain information about the total amount of space used and/or available. Processing ends at step 514.

Named Cache

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In addition to the regular cache that can be managed as discussed above, the invention includes a plurality of named caches. A named cache can be used to store data on a more permanent basis. A named cache is a portion of cache (e.g., cache 318) that is can be managed separate from the general cache pool. A named cache may be used for data that is accessed or has the potential for access on a more permanent basis. For example, one or more searches can yield a sub-catalogue (e.g., a subset of the set of catalogue elements associated with multimedia data 252) that contains data pertinent to a particular subject area or group of users. The named cache can be used to store the portions of multimedia data 252 associated with the sub-catalogue at a remote site such that it is not purged despite its LRU statistics. The portions of multimedia data 252 associated with a sub-catalogue can be retained permanently or semi-permanently. That is,

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the contents of the named cache can be retained for a specified period of time and is not subject to purge.

Referring to Figure 5, step 504 can be expanded to include the notion of named cache. In determining whether space can be freed, a determination is made whether the cache that is currently being consumed is named cache. If so, the space cannot be freed to make room for the new data. Processing would continue at step 506 to raise an error. However, it is determined that the space is not named cache and it does not contain data that is currently in use, processing can continue at step 508 to purge the data.

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A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location. Multimedia data is permanently stored at a centralized location. Multimedia data that is requested by a user is cached from the centralized location to the user site. A wide area network can be used to interconnect user sites with the main site. The WAN can be used to transmit data that resides at the main site or another user site to a requesting user site. In addition, data can be transferred between sites via the Internet.

Either a centralized or decentralized distribution architecture can be used with the invention to distribute functionality (e.g., asset management functionality). In a centralized architecture, the asset management facility is located at a centralized site. Users connect to the asset management facility

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via the Internet, for example. The catalogue and multimedia data are stored at the central site. The catalogue is accessed at the central, or main site to identify the requested data. The data is then transmitted to the user via the Internet.

In a decentralized architecture, an instance of the asset management system is located at the user's site. A copy of the catalogue is resident at the user site. The multimedia data is permanently stored at a main site with copies of data that has accessed stored at the user's site. The local catalogue is accessed to identify the data requested in a user request. If a copy of the requested data does not exist at the local site, a search is made for the data at another site. The search first examines the cache at the other sites. If the data cannot be found in cache at the local or another site. The local site accesses the main site to retrieve the requested data. A vehicle such as a WAN or the Internet can be used to transmit the data between sites.

Figure 3 provides a block overview of the data distribution subsystem having centralized permanent storage for multimedia data and decentralized functionality according to an embodiment of the present invention.

A network is used to establish a link between a plurality of remote sites and a main site. Preferably, data distribution system 300 includes main site 302 and a plurality of remote sites (e.g., remote sites 306A-306D). These sites can be located around the world. For example, main site 302 is located

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in California with remote sites in Israel, Washington, D.C., New York, Connecticut and California. Each site (i.e., main site 302 and remote sites 306A-306D) includes asset management system 232. A site (i.e., main 302 or remote sites 306A-306D) is depicted having a processing unit 310 interconnected with terminals 314 and 316 via network 312. However, any site configuration having processing, storage and display capabilities can be used.

Network 312 is preferably a local area network (LAN). Network 304 is a wide area network that connects main site 302 with remote sites 306A-306D. Asynchronous Transfer Mode (ATM) switches are preferably used at each site (e.g., main site 302 and remote sites 306A-306D) to interconnect the sites. The ATM switches are available from various vendors such as FORE Technology, for example. In addition, sites 302 and 306A-306D can be interconnected via the Internet. The Internet can be used to send information from main site 302 to one or all of remote sites 306A-306D. In addition, a version of asset management system 232 can be placed on the Internet to allow access by Internet users.

Main site 302 has storage capacity sufficient to store a copy of all of the system's multimedia data. For example, permanent storage 342 is a tape robot mass storage device manufactured by EMASS. It has a capacity of 100 Terabytes (Tb), for example. A file system such as the AMASS file system available from EMASS is used as an interface to permanent storage 342. The file system runs on processing unit 310. Processing unit 310 is, for example, a

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supercomputer such as the Challenge supercomputer available from Silicon Graphics, Inc. A file containing a digital form (e.g., MPEG) of an analog tape is transferred to processing unit 342 and then stored in permanent storage 342.

Preferably, each site (e.g., main site 302 and remote sites 306A-306D) is capable of running asset management system 232. Preferably, a copy of the catalogue created by data collection subsystem 234 is resident at each site as well. When a user request is made at a site, asset management system 232 queries the catalogue resident at that site to identify the catalogue elements that satisfy the request. The selected catalogue elements are used to locate the associated portions of multimedia data 236. Cache 318 that is resident at the site is examined to determine whether it contains a copy of the portions of multimedia data 236 that satisfies the request. If so, the data is retrieved from the site's cache 318.

If the data is not resident in local cache, a check is made of each remote site's cache until the data is located or all of the remote sites have been examined. To facilitate the search, an index of each remote site's cache is replicated at the other remote sites. A site can therefore examine a locally stored index to determine what data is resident in cache at each site. If the data is not resident at a remote site (sites 306A-306D), the data is retrieved from main site 302 and a copy is sent to the remote site. The data is therefore retrieved first from a local cache, then, if necessary, from a remote cache or permanent storage.

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Catalogue Instance

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The multimedia data catalogue used in the invention preferably consists of one catalogue element that is referred to as a phrase. A phrase is associated with a portion of multimedia data. A phrase has a plurality of attributes some of which are attribute elements. The attribute elements that are attributes of a phrase include keyword, person, image, video (e.g., documentary footage), proposed person, and proposed keyword. The keyword, person, image, proposed person and proposed keyword attribute elements can have attributes that are also attribute elements. For example, attribute elements that are attributes of the keyword attribute element include thesaural keyword, thesaural person, keyword, and type. An index is built on the attributes and attribute elements. The index can be used to navigate through the catalogue (e.g., search for phrases).

Figure 7A provides an example of catalogue and attribute elements and their attributes according to an embodiment of the invention. Segment 704 is a container element. It can contain other elements. For example, segment 704 can contain one or more instances of phrase 706. In the invention, input data is decomposed into one or more pieces, or fragments. An instance of phrase 706 is associated with each input data fragment. Phrase 706 is a catalogue element. Phrase 706 has one or more attributes and/or attribute elements on which an index is built. The index can be used to navigate through the catalogue.

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An attribute of phrase 706 is keyword 710. An instance of phrase 706 can be associated with one or more instances of keyword 710. Keyword 710 further defines aspects of an input data fragment. Preferably, an attribute of keyword 710 identifies content, or substance, for an input data fragment. The content or substance identified by keyword 710 is preferably expressed as a single word. However, content or substance can be expressed using multiple words.

To illustrate, the input data can be a videotape. The videotape is, for example, that of an interview conducted with a survivor of the Holocaust. The interview is broken down into the interviewee's pre-war, war-time, and post-war experiences. The interviewee's pre-war experience can be broken down into topics. A pre-war topic might be the interviewee's personal life, for example. Each topic can be broken down into sub-topics. In the example of the interviewee's personal life, a sub-topic might be the interviewee's relationship with family members, experiences at school, etc. Each sub-topic contains an information item. To further illustrate using the current example, an information item might be home, brother, sister, teacher, etc. In this example, the topic of the interviewee's personal life becomes an instance of segment 704. The interviewee's relationship with family members and experiences at school become instances of phrase 706. The words home, brother, sister, and teacher become instances of keyword 710. The words home, brother, sister and teacher provide information regarding the content or substance of an input data fragment.

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An instance of keyword 710 can be associated with one or more instances of thesaural keyword 712. An instance of thesaural keyword 712 is an instantiation of an instance of keyword 710. Thesaural keyword 712 specifies a value or label for its associated instance of keyword 710. Thesaural keyword 712 can be one or more words. Thesaural keyword 712 can be used, for example, to specify a value for an instance of keyword 710 in a particular language. Multiple instances of thesaural keyword 712 can be used to express the value of an instance of keyword 710 in multiple languages. Alternative expressions for the value of an instance of keyword 710 can be retained by instances of thesaural keyword 712 as well. Thus, the content or substance of an input data fragment can be expressed in multiple languages with a plurality of alternative expressions in each language. A preference can be associated with an instance of thesaural keyword 712 to identify it as a preferred alternative in a given language.

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Figure 7C provides an illustration of instances of keyword 710 and a plurality of associated label attributes according to an embodiment of the invention. A grid is displayed with axes 786 and 788. Instances of keyword 710 are displayed along a vertical axis, axis 786. A horizontal axis, axis 786 contains examples of languages in which a label associated to an instance of keyword 710 can be represented. Instances of thesaural keyword 712 are depicted at the intersections of these two axes.

Each instance of thesaural keyword 712 is an instantiation for an associated instance of keyword 710. Each instance of thesaural keyword 712

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contains a label that can be used as the label for an instance of keyword 710. For example, thesaural keywords 790A-790D, 791A-791E, 792A-792B, and 793A-793B are instantiations of Keyword Instance One. Similarly, thesaural keywords 794A-794B, 795A-795B, 796A-796C, 797A-797B are instantiations of Keyword Instance Two.

An instance of thesaural keyword 712 can be an instantiation of an instance of keyword 710 in a particular language. For example, thesaural keywords 791A-791E are English instantiations of Keyword Instance One. Thesaural keywords 791A-791E provide alternate instantiations for Keyword Instance One. That is, each contains a English-language label for Keyword Instance One. Thus, Keyword Instance One can be associated with a different English-language label based on which instance of thesaural keywords 791A-791E is used to supply the label for Keyword Instance One. Similarly, Keyword Instance is associated with English-language alternatives contained in thesaural keywords 795A-795B.

Thus, within a language, an instance of keyword 710 can have alternate instantiations of thesaural keyword 712. An instance of keyword 710 can also have alternate instantiations of thesaural keyword 712 across multiple languages as exemplified in Figure 7E. Alternate instantiations for Keyword Instance One exist in French (e.g., thesaural keywords 790A-790D), German (e.g., thesaural keywords 792A-792B), and Russian (e.g., thesaural keywords 793A-793B), for example. Similarly, Keyword Instance Two has alternative instantiations in French (e.g., thesaural keywords 794A-794B),

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German (e.g., thesaural keywords 794A-794C), Russian (e.g., thesaural keywords 797A-797B).

A preferred alternate instantiation of an instance of keyword 710 can be identified in each of the languages in which the keyword instance is represented. Thus, for example, thesaural keyword instance 790C can be identified as the preferred instantiation of Keyword Instance One for the French language. Similarly, thesaural keyword instances 791B, 792A, and 793B can be the preferred English, German, and Russian (respectively) instantiations for Keyword Instance One. Thesaural keyword instances 794A, 795B, 796C, and 797A can be the preferred French, English, German, and Russian instances (respectively) for Keyword Instance Two.

Referring to Figure 7A, type 716 is associated with keyword 710. Type 716 provides attribute information for keyword 710. Type 716 can be used to include instances of keyword 710 in a classification or category. In other words, an instance of keyword 710 is an instantiation of an instance of type 716. For example, an instance of keyword 710 having an attribute of "Ford Bronco" could be associated with a type instance having an attribute of "car". Another instance of keyword 710 having an attribute of "Mustang" can also be associated with the same instance of type 716. Both instances of keyword 710 are instances of a car. One or more instances of type 716 can be associated with an instance of keyword 710. In the preferred embodiment, a hierarchy is established for instances of type 716. An instance of type 716 can be a parent to or a child of another other instances of type 716. An instance of

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keyword 719 that is associated with an instance of type 716 is also associated with the hierarchy of the instance of type 716.

Other attribute elements that can be associated with an input data fragment via phrase 706 include person 718, and image 720. Person 718 identifies an individual associated with an input data fragment. In the previous example, a personal life experience may contain a reference to a person. An instance of person 718 can be used to identify the reference. Person information 726 provides attribute information for an instance of person 718. An instance of image 720 is used for data such as a still photograph that is referenced in the input data.

In the preferred embodiment of the invention, some elements, such as keyword 710 and person 718, must be approved before becoming actual instances. Prior to approval, the instances are considered to be proposed instances. For example, proposed keyword 714 and proposed person 724 are attribute elements used to identify instances of keyword 710 and person 718 that have not yet been approved as actual instances. Proposed instances are reviewed and a determination is made whether to transform the proposed attribute element into an actual attribute element or to otherwise dispose of the proposed attribute element.

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Person Information 726 is an attribute element associated with person 718. A "one-to-one" relationship (relationship 736) exists between person information 726 and person 718. Person information 726 contains attributes

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for person 718. The attributes of person information 726 contain information for a person having an instance of person 718.

Events can also be associated with input data. Each event becomes an instance of event 708. As previously described, input data can be decomposed into input data fragments each of which is associated with an instance of phrase 706. Input data can also be decomposed into input data fragments that are associated with instances of event 708. A type attribute is associated with event 708. Examples of an event type in the preferred embodiment include a segment, phrase, break between tapes, quality assurance details, facts, and miscellaneous (or other). An event can be used to access the associated input data fragment. An instance of event 708 can be used to access an input data fragment. For example, an instance of event 708 of type phrase can be used to locate the input data fragment associated with an instance of phrase 706.

Another example of an event type is a quality assurance event. In the preferred embodiment of the invention, a quality assurance mechanism can be used to monitor the quality of the input data and provide feedback. Quality assurance events are used to mark the input data. An event can mark a positive, negative, or neutral quality assurance event. For example, video input data is being collected in multiple interviews. Each interview can be reviewed to identify parts of the interview process that are noteworthy. Where, for example, an interviewer does not follow-up with an interviewee to obtain additional details, a negative quality assurance

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event can be created. A positive event can be similarly created. An event \times that is neither positive nor negative (i.e., informational or neutral) can also be created. A report of quality assurance events can be generated and used to provide feedback to the persons involved in collecting the input data.

Relationships of Elements

In the preferred embodiment, catalogue and attribute elements are interrelated. Relationships are formed between two or more elements using the invention. Figure 7B illustrates relationships formed between the elements identified in Figure 7A according to an embodiment of the invention. A "many" relationship is signified using a double arrow. A "one" relationship is identified using a single arrow. Relationship 728, for example, is a "many-to-many" relationship. That is, one or more instances of segment 704 can be related to many instances of phrase 706. Alternatively stated, segment 704 contains one or more instances of phrase 706. One 15 instance of phrase 706 can be related to multiple instances of segment 704. That is, an instance of phrase 706 is contained within one or more instances of segment 704. As illustrated by relationship 746, one or more instances of type 716 can be related to other instances of type 716.

A "many-to-many" relationship (relationship 730) exists between phrase 706 and proposed keyword 714, keyword 710, image/video 720, proposed person 724 and person 718. An instance of phrase 706 can be related to a set of proposed keywords, a set of keywords, a set of images

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and/or video, a set of proposed persons, and a set of persons, each set having zero or more members. Further, an instance of proposed keyword 714, keyword 710, image 720, proposed person 724 or person 718 can be related to more than one instance of phrase 706.

Relationship 738 illustrates a "many-to-many" relationship between keyword 710 and thesaural keyword 712. An instance of keyword 710 can be associated with one or more instances of thesaural keyword 712. The same instance of thesaural keyword 712 can be associated with one or more instances of keyword 710.

As previously stated, instances of type 716 can be interrelated with other instances of type 716 via a type hierarchy. Relationship 744 identifies an instance of type 716 as a parent or child of another instance of type 716. Similarly, the instances of keyword 710 are interrelated via a keyword hierarchy. Keyword 710 can be related to other instances of keyword 710 via relationship 742. Relationship 742 identifies an instance of keyword 710 as a parent or child of another instance of keyword 710. Relationship 744 relates keyword 710 and type 716. That is, one instance of keyword 710 is related to an instance of type 716. Conversely, an instance of type 716 can be associated with multiple instances of keyword 710.

Further, an instance of keyword 710 can be related to many instances of type 716 via relationships 742 and 746. That is, an instance of keyword 710 has a type that is associated with an instance of type 716. In addition, the

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instance of keyword 710 inherits the types associated with the children of its associated instance of type 716.

Person 718 and person information 726 have a "one-to-one" relationship via relationship 728. Person 718 and thesaural person 722 are related via relationship 734. Person 718 can be associated with multiple instances of thesaural person 722. An instance of thesaural person 722 can be related to multiple instances of person 718 via relationship 734.

Segment 704 is a container element. That is, as illustrated by relationship 728, segment 704 can contain multiple instances of phrase 706. Segment 704 is defined by the set of elements that it contains. For example, segment 704 is, for example, a chapter segment, a testimony segment, or a general segment. Instances of phrase 706 can be grouped in the order in which they occur in the input data in a chapter segment. As a testimony segment, segment 704 contains a grouping of instances of 704 associated with the input data. For example, a testimony segment can contain all instances of segment 704 that are associated with a videotaped interview. Person 718 can be related to segment 704 via relationship 732. At least one instance of person 718 is related to an instance of segment 704 that is a testimony segment via relationship 732.

Relationship 750 illustrates the relationship between instances of segment 704 (i.e., a testimony segment) that act as a container for other instances of segment 704. A general segment contains a set of instances of

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phrase 706 that are not necessarily related to particular input data. A general segment can be a collection of phrases that meet a certain criteria. For example, a general segment can contain instances of phrase 706 that are related to an instance of keyword 710 having a value of "teacher".

Segment 704 therefore identifies a group of catalogue elements (e.g., phrase 706. An instance of segment 704 can identify all catalogue element instances. Other instances of segment 704 can identify a subset of catalogue elements. Thus, for example, an instance of segment 704 can identify all instances of phrase 706 or a some subset of all of the instances of phrase 706. The set including all instances of phrase 706 is a catalogue. A smaller catalogues that contain a subset of all instances of phrase 706 is also a catalogue. Within a catalogue, a smaller catalogue can be created by, for example, a query operation or user designation.

A set of catalogue elements can be identified by querying the attribute elements, for example. A query operation can be performed on the attribute elements to examine other attribute elements associated with a catalogue element. A query operation identifies a set of cataloguing elements (e.g., instances of phrase 706) that satisfy the criteria specified in the query. A set of cataloguing elements identified in a query are grouped in an instance of segment 704. A user can also specify a collection of phrases 706 that can be grouped in an instance of segment 704.

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Attributes

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Figure 7A provides examples of attributes for catalogue and attribute elements according to an embodiment of the invention. Segment 704 contains an identifier (ID), a descriptive phrase, and a set of phrases, for example. The phrases related to an instance of segment 704 are included in the segment instance's set of phrases. A set is formed by creating relationships between the elements. Figure 7B illustrates examples of the relationships that exist between elements in an embodiment of the invention. The relationships that form a set can be implemented using any of the known techniques known in the art. For example, the relationships can be implemented in a programming language using pointers. In a relational database management system, for example, the relationships can be formed using relations and primary and foreign keys.

Referring to Figure 7A, phrase 706 includes an input data ID (e.g., identifies the input data from which the phrase was generated), an ID, a descriptive phrase, In/Out timecodes (i.e., a corresponding location within the input data), a set of keywords, images, persons, proposed keywords, and proposed persons. Keyword 710 includes an ID, and sets of types, thesaural keywords, child keywords and parent keywords. The child and parent keyword set form relationships for the keyword hierarchy. The set of thesaural keywords related to keyword 710 contain keyword values or labels for keyword instance.

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Person 718 includes an ID, a primary name, an occupation, date of birth, and a set of proposed persons. Person information 726 contains a person ID for the associated instance of person 718. Person information 726 contains one or more attributes for the associated instance of person 718. The attribute information can vary depending on the multimedia information being catalogued. For example, the catalogued multimedia data may consist of interviews with individuals. An instance of person 718 can be instantiated and associated with an interviewee. Person information 726 associated with the instance of person 718 can then include biographical information of the interviewee. The multimedia data videotaped sporting events. In this case, an instance of person 718 can be created for a person associated with the sporting event (e.g., player, referee, and broadcasting personnel). An instance of person information 726 associated with the instance of person 718 can include statistical information associated with the instance of person 718 can include statistical information associated with the participant.

An event 708 includes an ID, type (e.g., segment, phrase, interviewer, videographer, fact, or other), sub-type (e.g., a positive, negative, or informational event), timecodes, and a comment (or descriptive note).

Thesaural keyword 712 includes an ID, a keyword ID (i.e., the ID for an instance of keyword 710 for which the thesaural keyword instance is an alternative), a label (i.e., the value of the keyword instance to which the thesaural instance is related), a language of choice identifier (or language ID), a preferred flag, and a characteristic (or class). If set, the preferred flag

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specifies that the thesaural keyword instance is the preferred alternative for the related keyword instance in the language specified by the language ID. The characteristic attribute further defines the thesaural keyword instance. It can be used to identify that thesaural keyword instance is a slang word, for example.

An ID, timecode and locator are included as attributes for image 720. The locator attribute is used to locate the digitized image, for example. Proposed keyword 714 includes an ID and a label. It is also possible to include the attributes contained in keyword 710 in proposed keyword 714. Thus, the user that is proposing a new keyword can enter as much information regarding the proposed keyword. Proposed person 724 includes an ID and name attribute. Like proposed keyword 714, the attributes associated with person 718 can be included in proposed person 724. Type 716 includes an ID and a label.

Elements and their relationships can be managed using a cataloguing mechanism and a relationship management mechanism. The cataloguing mechanism includes a user interface that includes a series of screens. During cataloguing, a user (e.g., a cataloguer) reviews the input data and causes elements to be instantiated and associated with the input data and other elements. Elements that already exist can be associated with the input data during cataloguing. In addition, a cataloguer can propose new elements and relationships. The relationship management facility is used to review the elements and relationships proposed by a cataloguer. The relationship

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management facility can also be used to create new elements and relationships.

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Thus, a digital library system has been provided.

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A digital library system comprising:

a data capture system;

1.

an access management system coupled to said data capture system; a distribution system coupled to said access management system

CLAIMS

2. The digital library system of claim 1 wherein said data capture system further comprises:

a transfer system;

cataloguing system coupled to said transfer system.

3. The digital library system of claim 1 wherein said access management system further comprises:

a browser;

a text interface coupled to said browser;

an indexing server coupled to said text interface;

a first media interface coupled to said browser;

an archive server coupled to said media interface;

a second media interface coupled to said browser;

a method player coupled to said second media interface.

4. The system of Naim 3 wherein said indexing server comprises:

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a database management system (DBMS);

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a plurality of catalogue elements coupled to said DBMS; a plurality of attributes and attribute elements coupled to said plurality of catalogue elements.

5. The system of claim 4 wherein said text interface contains operations for querying said plurality of catalogue elements and said plurality of attributes and attribute elements.

6. The system of claim 3 further comprising a tertiary storage manager coupled to said archive server.

7. The system of claim 6 wherein said tertiary storage managér is a10 cache manager.

8. The system of chaim 1 wherein said distribution system comprises:

a main site, said main site permanently storage containing the data in said digital library system;

a plurality of remote sites coupled to said main site, said remote sites temporary storage containing some or all of said data in said digital library system.

9. The system of claim 8 wherein said plurality of remote sites further comprise an instance of said asset management system.

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10. The system of claim 8 wherein said main site further comprises an instance of said asset management system.

The system of claim 8 wherein said temporary storage is cache.
 The system of claim 8 wherein said temporary storage is named cache.

13. A method of retrieving data in a digital library system.

searching a local cache for a portion of said multimedia data stored in said digital library system;

retrieving said portion of multimedia data into said local cache from a remote cache, if said portion of multimedia data is resident in said remote cache and is not found in said local cache;

retrieving said portion of multimedia data into said local cache from permanent storage, if said portion of multimedia data is resident on permanent storage and is not found in said local cache or said remote cache;

14. The method of claim 13 wherein said steps of retrieving into local cache further comprise the steps of:

determining whether there is space available in said local cache for said portion of multimedia data;

freeing space in said local cache for said portion of multimedia data, if there is not enough space available;

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updating cache management information.

15. The method of claim 14 wherein said step of determining further comprises the steps of:

determining whether said cache contains information that is currently being used;

determining whether said cache contains information that is marked for semi-permanent retention

freeing said cache, if said cache does not contain information currently in use and said cache is not marked for semi-permanent retention.

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16. An article of manufacture comprising:

a computer usable medium having computer readable program code embodied therein for retrieving data in a digital library system, the computer readable program code in said article of manufacture comprising:

computer readable program code configured to cause a computer to search a local cache for a portion of said multimedia data stored in said digital library system;

computer readable program code configured to cause a computer to retrieve said portion of multimedia data into said local cache from a remote cache, if said portion of multimedia data is resident in said remote cache and is not found in said local cache;

computer readable program code configured to cause a computer to retrieve said portion of multimedia data into said local cache from

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permanent storage, if said portion of multimedia data is resident on permanent storage and is not found in said local cache or said remote cache;

17. The article of manufacture of claim 16 wherein said program code configured to cause a computer to retrieve into local cache further comprises:

computer leadable program code configured to cause a computer to determine whether there is space available in said local cache for said portion of multimedia data;

computer readable program code configured to cause a computer to free space in said local cache for said portion of multimedia data, if there is not enough space available;

computer readable program code configured to cause a computer to update cache management information.

18. The article of manufacture of claim 17 wherein said program code configured to cause a computer to determine further comprises:

computer readable program code configured to cause a computer to determine whether said cache contains information that is currently being used;

computer readable program code configured to cause a computer to
 determine whether said cache contains information that is marked for semi-permanent retention;

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computer readable program code configured to cause a computer to free said cache, if said cache does not contain information currently in use and said cache is not marked for semi-permanent retention.

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ABSTRACT OF THE INVENTION

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location.

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Attorney Docket No. 84300.911

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

A DIGITAL LIBRARY SYSTEM

the specification of which

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Is attached hereto. was filed on _____July 10, 1996 Application Serial No. _____ and was amended on _____

(If applicable)

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I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I do not know and do not believe that the same was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119, of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application	(<u>s)</u>			ímed
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

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Attorney Docket No. 84300.911

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status patented, pending, abandoned)
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(Application Serial No.)	(Filing Date)	(Status patented,

I hereby appoint HECKER & HARRIMAN, a firm including: Gary A. Hecker, Reg. No. 31,023; J. D. Harriman II, Reg. No. 31,967; Christopher A. Mathews, Reg. No. 35,944; Frank Weyer, Reg. No. 33,050; Ross D. Snyder, Reg. No. 37,730; Michael Farjami, Reg. No. 38,135; Carole A. Quinn, Reg. No. 39,000 and Jason Feldmar, Reg. No. 39,187 with offices located at 2029 Century Park East, Suite 1600, Los Angeles, California 90067, telephone (310) 286-0377, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements made on information and belies are believed to be true, and informatic mede are statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of	Joint Inventor SAMUEL GUSTMAN	
Inventor's Sig	nature: Se ul that	Date:
Residence:	1338 14th Street, #201	Citizens
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Date: 9/2/6/96

Cilizenship: United States

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(CI	ty, State)		

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Santa Monica, CA 90404, U.S.A

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1338 14th Street, #201

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Signature Mario Federis



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UNITED STATES DEPARTMENT OF COMMERCE Patent and Trademark Offica ASSISTANT SECRETARY AND COMMISSIONER OF PATENTS AND TRADEMARKS Washington, D.C. 20231 u.s. 18479

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DECEMBER 17, 1996

HECKER & HARRIMANN J.D. HARRIMAN 2029 CENTURY PARK EAST **SUITE 1500** LOS ANGELES, CA 90067

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RECORDATION DATE: 09/27/1996

REEL/FRAME: 8183/0296 NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR: GUSTMAN, SAMUEL

DOC DATE: 09/26/1996

ASSIGNEE:

SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION 10345 W. OLYMPIC BLVD., 2ND FLOOR LOS ANGELES, CALIFORNIA 90064-2524

SERIAL NUMBER: 08677539 PATENT NUMBER:

FILING DATE: 07/10/1996 ISSUE DATE:

TARA WASHINGTON, EXAMINER ASSIGNMENT DIVISION Бу _ OFFICE OF PUBLIC RECORDS

tal. 1 2 Herriman COCKETRO ATTY.

Signature

Mario Federis

November 2, 1998 mun

Date

Page 101 of 199

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To The Honorabil of the second	100234823 ginal documents or copy thereof. 2. Name and address of receiving party(les) Name: Survivors of the Shoeh Visual History Foundation Internal Address: 10345 W. Olympic Bivd. 2nd Floor Los Angeles. California 90064-2524 3
Nature of conveyance: X Assignment Merger. Security Agreement Change of Name Other Execution Date: September 26, 1996	Street Address: <u>10345 W. Olympic Blvd., Znd Floor</u>
 Application number(s) or patent number(s): If this document is being filed together with a new application, the A. Patent Application No.(s) 08/677,539 	a execution date of the application is: B. Patent No.(s)
Additional numbers atta 5. Name and address of party to whom correspondence concerning document should be mailed: Name: J.D.Haniman Internal Address: HECKER & HAPPIMAN Street Address: 2029 Century Park East Suite 1600 State Zp	 6. Total number of applications and patents involved:1 6. Total number of applications and patents involved:1 7. Total fee (37 CFR 3.41)\$ 40,00 X Enclosed Authorized to be charged to deposit account 8. Deposit account number:091520 (Attach duplicate copy of this page if paying by deposit account)
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Page 102 of 199

ASSIGNMENT

Altorney

čket No. 84300.911

In consideration of good and valuable consideration, the receipt of which is hereby acknowledged, <u>I/We</u>, the undersigned, <u>SAMUEL GUSTMAN</u> Hereby sell, assign, and transfer to: <u>SURVIVORS OF THE SHOAH VISUAL HISTORY</u> FOUNDATION

a corporation of <u>California</u>, having a principal place of business at: <u>10345</u> <u>W. Olympic Blvd.</u>, <u>2nd Floor</u>, <u>Los Angeles</u>, <u>CA 90064-252</u> ("Assignee") its successors, assigns and legal representatives, the entire right, title and interest for the United States and all foreign countries, in and to any and all improvements which are disclosed in the application for United States Letters Patent

[____] which has been executed by the undersigned concurrently herewith,

[XX] which was filed July 10, 1996 and assigned Serial No. 08/677.539

and is entitled:

A DIGITAL LIBRARY SYSTEM

and in and to said application and all divisional, continuing, substitute, renewal, reissue, and all other applications for Letters Patent which have been or shall be filed in the United States and all foreign countries on any of said improvements; and in and to all original and reissued patents which have been or shall be issued in the United States and all foreign countries on said improvements; and in and to all rights of priority resulting from the filing of said United States application;

Agree that said Assignee may apply for and receive Letters Patent for said improvements in its own name; and that, when requested, without charge to, but at the expense of, said Assignee, its successors, assigns and legal representatives, to carry out in good faith the intent and purpose of this Assignment, the undersigned will execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications on any and all said improvements; execute all rightful oaths, assignments powers of attorney and other papers; communicate to said Assignee, its successors, assigns, and representatives, all facts known to the undersigned relating to said improvements and the history thereof; and generally do everything possible which said Assignee, its successors, assigns or representatives shall consider desirable for aiding in securing and maintaining proper patent protection for said improvements and for vesting title to said improvements, in said Assignee, its successors, assigns and all patents on said improvements, in said Assignee, its successors, assigns and legal representatives; and

1.

Attorney Docket No. 84300.911

Covenant with said Assignee, its successors, assigns and legal representatives that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by the undersigned, and that full right to convey the same as herein expressed is possessed by the undersigned.

412 Date: SAMUEL GUSTMAN

FREN State of OS ANGELL County of _

On this 24 day of <u>SEPT</u> 19%, before me, <u>MARIANN FORTUNA</u> the undersigned Notary Public, personally appeared______ SAMUEZ GUSTMAN

[_] personally known to me [_] proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) <u>/5</u> subscribed to the within instrument, and acknowledged that, executed it.

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WITNESS my hand and official seal.

Notary 's

MARY ANN FORTUNA COMM. #995482 NOTARY PUBLIC - CALIFORNIA LDS ANGELES COUNTY My Conum. Expires Dec. 10, 1997

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Page 108 of 199
Attorney Docket No.: 84300.911C

Examiner: D. Mizrahi

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

GUSTMAN, S.

Serial No: 09/ 184, 796

Filed: 11-2-98

For: DIGITAL LIBRARY SYSTEM

This is a continuation of application Serial No. 08/677,539, filed July 10, 1996

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents and Trademarks Washington, D.C. 20231

Sirs:

(¢

This preliminary amendment is directed to the above-referenced

continuation patent application filed under 37 CFR 1.53(b). Please make the following changes to the continuation patent application.

IN THE CLAIMS:

Please delete claims 1-18.

Please add the following new claim(s):

Gub Bi -19. (NEW) A digital library/system comprising: a cataloguing system having a catalogue of multimedia data comprising at least one catalogue element associated with a plurality of keywords identifying said multimedia data; an access management system coupled to said cataloguing system; a distribution system coupled to said access management system.--

84300.911C

Page 110 of 199

REMARKS

In this preliminary amendment to the continuation patent application, applicant deletes Claims 1-18 and adds new Claim 19. Applicant submits that Claim 19 is fully supported by the specification, claims, and figures as originally filed, and that no new matter is added. Applicant respectfully requests examination and consideration of pending Claim 19.

Respectfully submitted,

Hecker & Harriman

11/2/92 Date:

1925 Century Park East Suite 2300 Los Angeles, CA 90067 (310) 286-0377 File No.: 84300.911C

09104706 110200

By: D. Harriman II

Reg. No. 31,967

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the owner of the small business concern identified below:	I hereby declare that I am:	· .
An anticlai of the small business concern empowered to act on behalf of the concern identified below: NAME OF CONCERN:	the owner of the small business concern identified below:	
NAME OF CONCERN: SUBJYYORS OF THE SHOAH VISUAL HISTORY FOUNDATION ADDRESS OF CONCERN:: 10345 W. Olympic Blvd., 2nd El., Los Angelae, CA. 90064–2524 Ihereby declare that the above-dentilled small business concern qualifies as a small business concern as defined in 13 CFR 121.31.41, and reproduced in 37 CFR 13(6), for purposes of paying reduced less under \$41(a) and (b) of Tills 35, Unlied States Code, in that the number of employees of the concern, including these of its astaments (1) the number of employees of the business concern is the average over the payoutus liscal year of the concern, including these of its astaments (1) the number of employees of the business concern to the average over the payoutus liscal year of the concern is an additioned of an end of the pay periods of the liscal year, and (2) concerns are additioned of each other when either, directly on idout city, one econcern concerns or has the payon occurs of the pay periods of the part of the invention, entitlet: Iheraby declare that the rights under contract of law have been conveyed to and remain with the small business concern listed bow? Adsorbed in Implementation of the part of the invention, entitlet: Application Serial. No:	[X] an official of the small business concern empowered to act on behalf of the concern identified below:	
ADDRESS OF CONCERN; 10345 W. Olympic Blvd., 2nd Fl., Los Angeles, CA. 90064-2524	NAME OF CONCEPN:	• •
I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 123-18, and reproduced in 37 CFR 1.5(d), for purposes of paying reduced less under §41(a) and (b) of Tile 35. United States Code, in that the number of employees of the concern, including these concerns is the average over the provide declare that prove that concerns are smalled on a builting, pay-time or temporary basis during such of the pay products of a bind part or parties concilous or the payer to concorn the prevent concorn to the strenge over the concorn bubit. I heraby declare that the rights under contract or isw have been conveyed to and remain with the small business concern I carried above with regard to the invention, entitled: ADDGITAL LIBRARY SYSTEM by hventor(s):	ADDRESS OF CONCERN: 10345 W. Olympic Blvd., 2nd Fl., Ios Angeles, CA. 90064-2524	
I haraby declare that the rights under contract or law have been conveyed to and remain with the small business concern Identified above with regard to the invention, entitled:	I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under §41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.	
ADGITAL LIBRARY SYSTEM by hventor(s): SAMUEL GUSTMAN	I hereby declare that the rights under contract or law have been conveyed to and remain with the small business concern Identified above with regard to the invention, entitled.	
by inventor(s): SAMUEL GUSTMAN		•
by hventor(s):	A DIGITAL LIBHARY SYSTEM	
Image: Second	hu hvortor(c) SAMUSI CLISTMAN described in	
The specification filed nerewith. [
Image: Application serial: No:		· ·
Patent No.:		
If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below ² and no rights to the invention are held by any person, other than the invention, who could not quality as a mindlependent invention under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not quality as a small business concern under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not quality as a small business concern under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not quality as a small business concern under 37 CFR 1.9(c) if that person made the invention, or by any concern invention averning to their status as small entities. (37 CFR 1.27)	[] Patent No.:, Issued:	
INDIVIDUAL [] SMALL BUSINESS CONCERN [] NONPROFIT ORGANIZATION NAME:	If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below [*] and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e). * NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27) NAME: 	
NAME:	[] INDIVIDUAL [] SMALL BUSINESS CONCERN [] NONPROFIT ORGANIZATION	
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[]]INDIVIDUAL	ADDESS conduct and the Addition of the Additio	
Lacknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b)) I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful faise statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States, Code, and that such willful faise statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed. NAMEOFFERSONSCONG_Michael_Rutman	[] INDIVIDUAL, -, [,] SMALL BUSINESS CONCERN [] NONPROFIT ORGANIZATION	
I hereby declare that all stalements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed. NAMEOF PERSON SENNG Michael Director/Secretary/CFO TITLE OF PERSON OTHER THAN OWNER: Director/Secretary/CFO ADDRESS OF PERSON SENNG: 10345 15. Olympic Blvd., 2nd Fl., L.A., CA 90064-2524 SENATURE DATE MITHER	Lacknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))).
NAMEOFPERSONSCINNGMichael_Rutman	I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States, Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.	
TITLE OF PERSON OTHER THAN OWNER: DIFECTOR / SECRETARY/CFO ADDRESS OF PERSON SCHWAR: 10345 W. Olympic Blvd., 2nd Fl., L.A., CA 90064-2524 SCHATLE: DATE	NAMEOFPERSONSCINIC Michael Rutman	•
ADDRESS OF PERSON SIGNING 10345 1. Olympic Blvd., 2nd Fl., L.A., CA 90064-2524 SCHATLE DATE DATE	TILE OF PERSON OTHER THAN OWNER:	
SCNATLEE DATE 9/21/190	ADDRESS OF PERSONSIGNING 10345 M. Olympic Blvd., 2nd Fl., L.A., CA 90064-252	4
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	Page 112 of 199 MINDGEEK EXHIBIT 1	005

`Docket No._84300.911C_

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Assistant Commissioner for Patents BOX PATENT APPLICATION Washington, D.C. 20231

SUPPLEMENTAL UTILITY PATENT APPLICATION TRANSMITTAL

Sir:

·X.

This is a request for filing a

X. Continuation application Divisional application

under 37 CFR 1.53(b), of pending prior application

July 10, 1996 ----

Serial No. 08/677,539

filed: July 10, 1996

of: Samuel GUSTMAN

for: DIGITAL LIBRARY SYSTEM

<u>X</u> 1.	Please enter the preliminary amendment, enclosed herewith.
<u>X</u> 2.	Please cancel claims <u>Claims 1-18</u>
<u>X</u> 3.	Please amend the Specification by inserting after the title, the sentence:
	This is a continuation of application Serial No. <u>D8/677,539</u> , filed

The prior application is assigned to: <u>SURVIVORS OF THE SHOAH VISUAL</u> HISTORY FOUNDATION

Docket No. 84300,911C

<u>X</u> 5.

The Power of Attorney in the prior application is to:

HECKER & HARRIMAN

The Power appears in the original papers of the prior application.

<u>X</u> (a)

(b)

<u>X</u>

١Ö

10

6.

7.

8.

Since the Power does not appear in the original papers, a copy of the Power in the prior application is enclosed.

Recognize as associate attorney and address all future communications to:

GARY A. HECKER HECKER & HARRIMAN 2029 Century Park East, Suite 1600 Los Angeles, CA 90067 (310) 286-0377

It is hereby requested that any request for a convention priority made in the prior application be transferred to the present application.

Applicant hereby petitions for an extension of time of _____ pursuant to Rule 1.136, if one is needed, for the above-noted prior application. A duplicate copy of this sheet is enclosed for filing in the proper application file.

The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account Number 08-1520. A duplicate of this authorization is enclosed.

Respectfully submitted,

Date: 11/2/91

1925 Century Park East Suite 2300 Los Angeles, California 90067 (310) 286-0377

HECKER & H By . D. HARRIMAN II

Reg. No. 31,967
 Inventor(s)
 Assignee of Complete Interest
 X Attorney of Record in prior application.

CERTIFICATE OF MAILING I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as Express Mail (Label No. <u>EL111266727US</u> in an envelope addressed to: Assistant Commissioner for Patents, BOX PATENT APPLICATION, Washington, D.C. 20231, on:

November 2 1998 Signature Mario Federia

Page 2

Page 114 of 199

93 Transaction History Date <u>1973-11-</u> Date information retrieved from USPTO Patent Application Information Retrieval (PAIR) system records at www.uspto.gov

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FORM PTO-1533 (REV.9-97)

SECTOR

Attorney Docket No. 84300.911C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

JAN 22 199

In re the Application of:

GUSTMAN, Samuel

Serial No: 09/184,796

Filed: November 2, 1998

For: DIGITAL LIBRARY SYSTEM

Examiner:

Group Art Unit: 2771

RESPONSE TO NOTICE TO FILE MISSING PARTS

Assistant Commissioner for Patents BOX MISSING PARTS Washington, D. C. 20231

Sir:

1.

3.

4.

Responsive to the Notice to File Missing Parts of Application with a mailing date of November 24, 1998, Applicant has enclosed the following:

A check in the total amount of \$155.00, as payment for deficiency in the basic filing fee (\$90.00), and surcharge fee (\$65.00) set forth in 37 C. F. R.§ 1.16(e), all fees being paid under a Small Entity Status;

2. A copy of Missing Parts Notice;

Certificate of Mailing by EXPRESS MAIL, and

A return receipt postcard.

EXPRESS MAIL CERT. NO. EL227788159US

Attorney Docket No. 84300.911C

The Commissioner is hereby authorized to charge any additional fees, or credit any overpayment associated with this communication to Hecker & Harriman Deposit Account No. 08-1520. A duplicate copy of this authorization is also enclosed.

2

Respectfully submitted,

Date: 1/22/99

By: . D. Harriman II Reg. No. 31,967

1925 Century Park East, Suite 2300 Los Angeles, CA 90067 (310) 286-0377

CERTIFICATE OF MAILING

This is to certify that this correspondence is being deposited with the United States Postal Service as EXPRESS MAIL. No. EL227788159US in an envelope with sufficient postage addressed to: Assistant Commissioner for Patents, BOX MISSING PARTS, Washington, D. C., 20231 on :

C 2 2499 Mario Federis Date

EXPRESS MAIL CERT. NO. EL227788159US

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UNITED STATE DEPARTMENT OF COMMERCE Patent and Trademark Office

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APPLICATION NO.	FILING DATE	FIRST NAMED IN	ENTOR		ATTORNEY DOCKET NO.
09/184,796	11/02/98	GUSTMAN		S	84300.9110
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GARY A HECKE	'D	LM01/0616		MT7RAH	T. D.
HECKER & HAR	RIMAN			ART UNIT	PAPER NUMBER
2029 CENTURY SUITE 1600 LOS ANGELES	PARK EAST			DATE MAILE	5
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Commissioner of Patents and Trademarks

Page 119 of 199

PTO-90C (Rev. 2/95)

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На 1</td><td>Diane Mizra</td><td>hi</td><td>2771</td><td></td><td></td></tr><tr><td>Presensive to communication(s) filled on Nov 2, 1998 This action is FINAL. Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordence with the precise under <i>Ex parte Queryle</i>, 1935 C.D. 11, 453 D.G. 213. shortened statutory period for response to this action is set to expire</td><td></td><td></td><td></td><td></td><td></td><td></td><td>,
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Page 120 of 199

Application/Control Number: 09/184,796

Art Unit: 2771

III. DETAILED ACTION

1. Claim 1 is presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

 Claim 19 is rejected under 35 U.S.C. 102(e) as being anticipated by Grasso et al. (5,892,909 and Grasso hereinafter).
 Regarding Claim 19, Grasso teaches a digital library system (col 8, lines 7-33); a caloguing system of multimedia data. (col 2, lines 34-53); cataloguing element associated with keywords identifying multimedia data (col 8, lines 23-32); an access management system (i.e. database) (col 6, lines 11-55); and a distribution system (Figures 3A-4E).

Page 2

Application/Control Number: 09/184,796 Art Unit: 2771

Prior Art Made of Record

a. Diaz (5,689,648) discloses a method and apparatus for publication of information;

b. Ferrel (5,907,837) discloses an information retrieval system in an on-line network including separate content and layout of published titles;

c. Gustman (5,832,495) discloses a method and apparatus for cataloguing multimedia data;

d. Stefik (5,638,443) discloses a system for controlling the distribution and use of composite digital works;

e. Ramaiah, C.K. discloses multimedia systems in libraries and their application; and

f. The Gale Group discloses IBM Digital Library Unveils Products, Partners and Plans.

Points of Contact

7. Any inquiry concerning this communications from the examiner should be directed to Diane Mizrahi whose telephone number is (703) 305-3806. The examiner can normally be reached on Monday to Thursday from 7:30 AM. to 5:00 PM.

If any attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Thomas Black can be

Page 3

Application/Control Number: 09/184,796

Art Unit: 2771

reached on (703) 305-9707. The fax phone number for this group is (703) 308-5403.

Diane Mizrahi Patent Examiner

June 7, 1999

Nuce R Ding

Page 4

Paul R. Liniz Primary Examiner

MINDGEEK EXHIBIT 1005

Page 123 of 199

Notice of References Cited Application No. 09/184,796 Application No. 09/184,796 Examiner Diane Mizrahi U.S. PATENT DOCUMENTS NAME A 5,689,648 11-18-97 B 5,907,837 5-25-99 Ferrel 0	Samuel GUSTMAI Group Art Unit 2771 CLASS 707	V Page 1 of 1 SUBCLASS
Notice of References Cited Examiner Diane Mizrahi U.S. PATENT DOCUMENTS Document no. DATE NAME A 5,689,648 11-18-97 Diaz B 5,907,837 5-25-99 Ferrel	Group Art Unit 2771 CLASS 707	Page 1 of 1 SUBCLASS
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U. S. Patent and Trademark Office PTO-892 (Rev. 9-95)

Notice of References Cited

Part of Paper No. ____

Page 124 of 199

U.S. DEPARTMENT OF COMMERCE - Patent and Trademark Office

Application No. 09/184,796

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

1.1.2.

A. D approved by the Draftsperson under 37 CFR 1.84 or 1.152. B. 12 objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. The Examiner will require submission of new, corrected drawings when necessary. Corrected drawing must be sumitted according to the instructions on the back of this notice. 1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink. Color. Color drawings are not acceptable until petiton is granted. Fig(s) Pencil and non black ink not permitted. Fig(s) PHOTOGRAPHS. 37 CFR 1.84 (b) 2. 1 full-tone set is required. Fig(s) Photographs not properly mounted (must use brystol board or photographic double-weight paper). Fig(s)_____ Foor quality (half-tone). Fig(s) 3. TYPE OF PAPER. 37 CFR 1.84(e) Paper not flexible, strong, white, and durable Fig(s) Erasures, alterations, overwritings, interlineations, folds, copy machine marks not accepted. Fig(s) Mylar, velum paper is not acceptable (too thin). Fig(s) 4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes: 21.0 cm by 29.7 cm (DIN size A4) 21.6 cm by 27.9 cm (8 1/2 x 11 inches) All drawing sheets not the same size. Sheet(s) Drawings sheets not an acceptable size. Fig(s) MARGINS. 3DCFR 1.84(g): Acceptable margins: Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm SIZE: A4 Size Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm SIZE: 8 1/2 x 11 SIZE: 8 1/2 x 11 Margins not acceptable. Fig(a) 2 3-5 Ton (T) 1/ (Aft (L) 3-5,7A-7C _____ Top (T) ______ ____ Right (R) ______ Bottom (B) VIEWS. 37 CFR 1.84(h) REMINDER: Specification may require revision to correspond to drawing changes. ۰ ۲-Partial views. 37 CFR 1.84(h)(2) Brackets needed to show figure as one entity. Fig(s) Views not labeled separately or properly. Fig(s) Enlarged view not labeled separetely or property. Fig(s) 7. SECTIONAL VIEWS. 37 CFR 1.84 (h)(3) Hatching not indicated for sectional portions of an object. Fig(8) Sectional designation should be noted with Arabic or Roman numbers. Fig(s)

Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Flg(s) 9. SCALE. 37 CFR 1.84(k) Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s) 10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(i) Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (poor line quality). Solid black areas pale. Fig(s) Solid black shading not permitted. Fig(s) Shade lines, pale, rough and blurred. Fig(s)______ 12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p) Numbers and reference characters not plain and legible. Fig(s) Figure legends are poor. Fig(s) Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(1) Fig(s) English alphabet not used. 37 CFR 1.84(p)(2) .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Lead lines cross each other. Fig(s), Lead lines missing. Fig(s) 14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(1) Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Sheet(s) 15. NUMBERING OF VIEWS. 37 CFR 1.84(u) Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s)_____ 16. CORRECTIONS. 37 CFR 1.84(w) _ Corrections not made from prior PTO-948 dated _____ 17. DESIGN DRAWINGS. 37 CFR 1.152 Surface shading shown not appropriate. Fig(s) Solid black shading not used for color contrast. Fig(s)

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

COMMENTS

Form PTO 948 (Rev. 8-98)

The drawing(s) filed (insert date) 11/02/98_are:

REVIEWER_LAM

DATE 02/22/99 TELEPHONE NO. (703) 308-0366

6 ATTACHMENT TO PAPER NO.

Page 125 of 199



UNITED S ES DEPARTMENT OF COMMERCE Patent and Trademark Office

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ASSISTANT SECRETARY AND COMMISSIONER OF PATENTS AND TRADEMARKS Washington, D.C. 20231

CHANGE OF ADDRESS/POWER OF ATTORNEY

LOCATION 27C1 SERIAL NUMBER 09184796 PATENT NUMBER THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 22804 THE FEE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 22804 ON 07/29/99 THE ADDRESS OF RECORD FOR CUSTOMER NUMBER 22804 IS:

HECKER & HARRIMAN SUITE 2300 1925 CENTURY PARK EAST LOS ANGELES CA 90067

PTO INSTRUCTIONS: PLEASE TAKE THE FOLLOWING ACTION WHEN THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER NUMBER: RECORD, ON THE NEXT AVAILABLE CONTENTS LINE OF THE FILE JACKET, 'ADDRESS CHANGE TO CUSTOMER NUMBER'. LINE THROUGH THE OLD ADDRESS ON THE FILE JACKET LABEL AND ENTER ONLY THE 'CUSTOMER NUMBER' AS THE NEW ADDRESS. FILE THIS LETTER IN THE FILE JACKET. WHEN ABOVE CHANGES ARE ONLY TO FEE ADDRESS AND/OR PRACTITIONERS OF RECORD, FILE LETTER IN THE FILE JACKET.

рто-ғыр тацвот- 1/97 Page 126 of 199

Case/Docket No. 84300.911C

RECEIVE

In re the Application of: Samuel Gustman Serial No.: 09/184,796 Filed: November 2, 1998

For: DIGITAL LIBRARY SYSTEM

Assistant Commissioner for Patents Washington, D.C. 20231

Sirs:

Transmitted herewith is an Amendment and Response in the above-identified application. Small entity status of this Application under 37 CFR 1.9 and 1.27 has been established by a

verified statement previously submitted.

A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed. No additional fee is required.

NOV 2 2 759

PRAD

The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL	ENTITY	OTHER SMALL F		NON
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If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3. If the "Highest No. Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space. If the "Highest No. Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space The "Highest No. Previou

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The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account Number 08-1520. A duplicate of this authorization is enclosed.

Applicant hereby petitions for an extension of time of TWO months, pursuant to Rule XXX 1.136(a) A check in the amount of \$190.00 is attached for processing fees under 37 CFR

XXX 1.17(a)

XXX

11 FC:216

A check in the amount of <u>s</u> is attached for presentation of additional claim(s).

.1/24/1999 NBERHE 00000033 09184796

Respectfully submitted HECKER HARRIN

Date: November 16, 1999_

190.00 DP

1925 Century Park East Suite 2300 Los Angeles, California 90087 (310) 286-0377

J.D. Harriman Ik Reg. No. 31,967 CERTIFICATE OF MAILING

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MINDGEEK EXHIBIT 1005

-16-99

T& TRADE the Application of: Samuel Gustman Serial No.: 09/184,796

Filed: November 2, 1998

For: DIGITAL LIBRARY SYSTEM

Assistant Commissioner for Patents Washington, D.C. 20231

The fee has been calculated as shown below:

Sirs:

XXX

Transmitted herewith is an Amendment and Response in the above-identified application. Small entity status of this Application under 37 CFR 1.9 and 1.27 has been established by a verified statement previously submitted.

A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed. No additional fee is required.

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If the entry in Col. 1 is less than the entry in Col. 2, write "0" in Col. 3. If the "Highest No. Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space. If the "Highest No. Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space The "Highest No. Previously Paid For" (Total or Independent) is the highest number , found from the equivalent box in Col. 1 of a prior amendment or the number

af c na originally filed. The Commissioner is hereby authorized to charge payment of any additional fees associated with this communication, or credit any overpayment, to Deposit Account

Number 08-1520. A duplicate of this authorization is enclosed. Applicant hereby petitions for an extension of time of <u>TWQ</u> months, pursuant to Rule

xxx 1.136(a) XXX

A check in the amount of \$190,00 is attached for processing fees under 37 CFR 1.17(a).

A check in the amount of s is attached for presentation of additional claim(s).

Respectfully submitted

HECKER & Ĵ.D. Harriman Ľ Reg. No/31.96

Date: November 16, 1999

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0 Signatur : Ellan E. Roddguez

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Case/Docket No. 84300.911C

MINDGEEK EXHIBIT 1005

Page 128 of 199



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of SAMUEL GUSTMAN Serial No. 09/184,796 Filed: November 2, 1998

Examiner: DIANE MIZRAHI

Group Art Unit: 2771

For: DIGITAL LIBRARY SYSTEM

AMENDMENT AND RESPONSE

Assistant Commissioner for Patents Washington, D.C. 20231

Sir:

This is in response to the outstanding Office Action (paper number 5) mailed on June 16, 1999. Claim 19 is pending in the present application. The Examiner has rejected this claim under 35 U.S.C. § 102(e) as being anticipated by Grasso, et al. (U.S. Pat. #5,892,909) ("Grasso"). In a telephonic interview, the Examiner agreed not to make the next office action final. Please amend the present application as follows.

Page 129 of 199

AMENDMENTS

IN THE CLAIMS

Please add claims 20-34.

Please amend claim 19 as provided.

(-19. (ONCE AMENDED) A digital library system comprising:
 a catalouging system having a catalogue of multimedia data
 comprising at least one catalogue element associated with a plurality of
 keywords identifying said multimedia data;

an access management system coupled to said cataloguing system; and a distribution system coupled to said access management system.

PLEASE ADD CLAIMS

 $\stackrel{\checkmark}{\sim}$ 20. The digital library system of claim 19 wherein said access management system further comprises:

a browser;

a text interface coupled to said browser;

an indexing server coupled to said text interface;

a first media interface coupled to said browser;

an archive server coupled to said media interface;

a second media interface coupled to said browser; and

a method player coupled to said second media interface. -

--21. The system of claim 20 wherein said indexing server comprises: a database management system (DBMS);

a plurality of catalogue elements coupled to said DBMS; and

a plurality of attributes and attribute elements coupled to said plurality of catalogue elements. --

-- 22. The system of claim 21 wherein said text interface contains operations for querying said plurality of catalogue elements and said plurality af attributes and attribute elements. --

5 --23. The system of claim 20 further comprising a tertiary storage manager coupled to said archive server. --

-- 24. The system of claim 23 wherein said tertiary storage manager is a cache manager. --

-25. The system of claim 19 wherein said distribution system further comprises:

a main site wherein said main site comprises permanent storage for the multimedia data in said digital library system; and

a plurality of remote sites coupled to said main site wherein said remote sites comprise temporary storage for some or all of said multimedia data in said digital library system. --

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-26. The system of claim 25 wherein said plurality of remote sites further comprise an instance of said asset management system. --

-- 27. The system of claim 25 wherein said main site further comprises an instance of said asset management system. --

10 7
 - 28: The system of claim 25 wherein said temporary storage is a cache. --

-29. The system of claim 25 wherein said temporary storage is a named cache. -

relationships;

an access management system coupled to said cataloguing system; and a distribution system coupled to said access management system. --

-- 31. The digital library system of claim 30 wherein said catalouging system is configured to perform the step of:

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receiving textual information as input. --

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-- 32. The digital library of claim 30 further comprising a transfer system configured to convert said multimedia data from analog format to digital format. --

-- 33. The digital library of claim 25 wherein said plurality of remote sites are connected over a wide area network. --

12 1.3 -34. The digital library of claim 38 wherein said wide area network is the internet.

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REMARKS

Claim rejections under 35 U.S.C. § 102(e)

The examiner has rejected claims 19 under 35 U.S.C. § 102(e) as being anticipated by <u>Grasso</u>. Applicant contends that claim 19 is not anticipated by <u>Grasso</u> because <u>Grasso</u> is not prior art under 35 U.S.C. § 102(e).

Grasso, filed on January 31, 1997, claims priority from provisional patent application, Ser. No. 60/027,567, filed September 27, 1996. The present application was filed on November, 2, 1998 and is a continuation of issued U.S. Patent #5,832,499 ("Gustman-499"), filed on July 10, 1996. The present application claims priority from Gustman-499. Therefore, the present application has an effective filing date prior to <u>Grasso</u>. As such, <u>Grasso</u> is not prior art under 35 U.S.C. § 102(e).

CONCLUSION

For at least the foregoing reasons, Applicant submits that the Examiner's rejection under 35 U.S.C. 102(e) has been overcome. Applicant respectfully requests that pending claim 19 and new claims 20 through 34 of the present application be allowed.

7

Respectfully submitted, HECKER & HARRIMAN

Date:__11/16/99

HECKER & HARRIMAN 1925 Century Park East Suite 2300 Los Angeles, California 90067 (310) 286-0377 By: J.D. Harriman II Reg. No. 31,967

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November 16, Signature Lillian E. Rodriguez



UNITED STATES DEPARTMENT OF COMMERCE Patent and Trademark Office Address: COMMISSIONER OF PATENTS AND TRADEMARKS

ddress: COMMISSIONER OF PATENTS AND TRADEMARKS Washington, D.C. 20231

APPLICATION NO. FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	
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HECKER & HARRIMAN		MIZ	RAHI, D
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LOS ANGELES CA 900	57	277	1 /0
		DATE MAILED	12/16/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks



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	Diane Mizra	ahl i	2771	
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MINDGEEK EXHIBIT 1005

Page 137 of 199

Application/Control Number: 09/184,796

Art Unit: 2771

DETAILED ACTION

1. Claims 19-34 are presented for examination.

Allowable Subject Matter

2. Claims 19-34 are allowed.

3. The following is an examiner's statement of reasons for allowance:

As in independent claims 19 and 20, Applicant's particular digital library system comprising of a catalogue of multimedia comprising of at least one catalogue element associated with keywords identifying multi-media data; an access management system coupled to the catalogue system and a distribution system coupled to the access management system in combination with the other limitations of the claims, was not disclosed by, would not have been obvious over, nor would have been fairly suggested by the prior art of record.

The dependent claims, being further limiting to the independent claims, definite and enabled by the Specification are also allowed.

4. Since allowance subject matter has been indicated, Applicant is encouraged to submit, <u>formal drawings</u> in response to this Office action. Applicant is reminded of the provisions of MPEP 608.02(q) and 608.02(r) regarding a separate draftsman's letter.

Page 2

Application/Control Number: 09/184,796 Art Unit: 2771

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. As allowable subject matter has been indicated, Applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CRF 1.111(b) and MPEP section 707.07(a).

Points of Contact

7. Any inquiry concerning this communications from the examiner should be directed to Diane Mizrahi whose telephone number is (703) 305-3806. The examiner can normally be reached on Monday to Thursday from 7:30 AM. to 5:00 PM.

If any attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703) 305-9707. The fax phone number for this group

is (703) 308-5403.

Mizrahi Patent Examiner

December 13, 1999

THOMAS G. BLACK THOMAS G. BLACK SUPERVISORY PATENT EXAMINER GROUP 2700

Page 3

Page 139 of 199

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1.

UNITED STATES DEPARTMENT OF COMMERCE Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

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APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER A	ND GROUP ART UNIT	DATE MAILE	D .
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THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN <u>THREE MONTHS</u> FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. <u>THIS STATUTORY PERIOD CANNOT BE EXTENDED.</u>

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above. If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:	If the SMALL ENTITY is shown as NO:	
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III. All communications regarding this application must give Please direct all communications prior to issuance to Bo	application number and batch number. ox ISSUE FEE unless advised to the contrary.	
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Atty. Docket No: 84300.911C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

GUSTMAN, Samuel

Serial No: 09/184,796

Filed: November 2, 1998

For: DIGITAL LIBRARY SYSTEM Examiner: D. MIZRAHI Group Art Unit: 2771

Batch No.: F72

SUBMITTAL OF FORMAL DRAWINGS

BOX ISSUE FEE (DRAWINGS) c/o Technology Center 2700 U.S. PATENT AND TRADEMARK OFFICE Washington, D. C. 20231

Sirs:

This is in response to the Notice of Allowability dated December 16, 1999. Applicant has enclosed the following:

1. Nine (9) sheets of formal drawings;

2. A Certificate of Mailing by EXPRESS MAIL; and

3. A return receipt postcard.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 08-1520. A duplicate copy of this transmittal letter is enclosed for this purpose.

Respectfully submitted,

Date: March 16, 2000

THE HECKER LAW GROUP By: Sary K. Hecker Reg. No. 31,023

1925 Century Park East, Suite 2300 Los Angeles, CA 90067 (310) 286-0377

CERTIFICATE OF MAILING

This is to certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as EXPRESS MAIL w/label No. EL551405405US in an envelope addressed to: BOX ISSUE FEE (DRAWINGS), c/o Technology Center 2700, USPTO,, Washington, D. C., 20231 on :

March 16, 2000 03 Mario Pederis Date






Page 145 of 199



Page 146 of 199



Page 147 of 199







Page 150 of 199

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2012-05-14

Document Title - Petition Re:

Additional Comments Petition Entered

File History Content Report

The following content is missing from the original file history record obtained from the United States Patent and Trademark Office. No additional information is available.

Document Date - 2012-07-03

Document Title - Petition Decision



Patent and Trader-& Office ASSISTANT SEC1 RY OF COMMERCE AND COMMISSIONER. ATENTS AND TRADEMARKS Washington, D.C. 20231

NOTICE OF FILING/CLAIM FEE(S) DUE TO ENSURE PROPER CREDIT OF FEES, PLEASE RETURN A COPY OF THIS FEE CALCULATION SHEET WITH YOUR RESPONSE.

APPLICATION NUMBER:

· · · · · · · · · · · · · · · · · · ·		Total Fee	e Calculat	non :			•
	Fee Code	Total # Claims	Number Extra	X	Fec	Fec =	Total
	Sm./Lg.				Sm. Entity	Lg. Entity	
Basic Filing Fee	201/101						<u></u>
Total Claims >20	203/103	-20	= 	X	. 		
Independent Claims >3	202/102	-3		X	·		
Mult. Dep Claim Present	204/104						
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MEN	Independent	•	Minus	***	-] x41=	1	OR	x82=	
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Table of Contents

1. US6092080A Digital library system

Family 1/1 22 record(s) per family, collapsed by 15 record(s)

Record 1/15 CA2259610A1 METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA | PROCEDE ET APPAREIL DE CATALOGAGE DE DONNEES MULTIMEDIA

Publication Number: CA2259610A1 19980115

Title: METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA | PROCEDE ET APPAREIL DE CATALOGAGE DE DONNEES MULTIMEDIA Title - DWPI: Priority Number: US1996680504A Priority Date: 1996-07-08 Application Number: CA2259610A Application Date: 1997-07-08 Publication Date: 1998-01-15 IPC Class Table:

IPC Section Class Subclass **Class Group** Subgroup G G06 G06F001200 G06F G06F0012 G06F001200 G G06 G06F G06F0017 G06F001730 G06F001730

IPC Class Table - DWPI:

Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION,LOS ANGELES,US

JP F Terms:

JP FI Codes:

Assignee - Original: SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E

Abstract:

The invention catalogues data such as multimedia data. A catalogue is a collection of one or more catalogue elements. An index is used to access a catalogue. An element of a catalogue has one or more attributes. An attribute provides information that can be used to search for, answer questions about, and navigate through a catalogue. An attribute of a catalogue element can be an element that has attributes. A catalogue element attribute that is an element is referred to as an attribute element. Attribute elements and attributes are used to build an index that can be used to facilitate catalogue access. Within a catalogue, smaller catalogues can be created by, for example, querying and user designation.

L'invention a pour objet le catalogage de données, telles les données multimédia. Un catalogue est constitué d'une collection d'un ou de plusieurs éléments de catalogue. On utilise un index pour accéder au catalogue. Un élément d'un catalogue est doté d'un ou de plusieurs attributs. Un attribut fournit des informations pouvant être utilisées pour rechercher, parcourir un catalogue, répondre à des questions sur un catalogue. Un attribut d'un élément d'un catalogue peut être un élément doté d'attributs. Un attribut d'un élément d'un catalogue étant un élément est appelé élément d'un attribut. Des éléments d'un attribut et des attributs sont utilisés pour constituer un index pouvant être utilisé pour faciliter l'accès au catalogue. Dans un catalogue, des catalogues de moindre taille peuvent être créés, par exemple, par interrogation et désignation de l'utilisateur. Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact		
2004-07-08	FZDE	-		
Description: DEAD				
2002-07-08	EEER	+		
Description: EXAMINATION REQUEST				

Post-Issuance (US):	
Reassignment (US) Table:	
Maintenance Status (US):	
Litigation (US):	
Opposition (EP):	

License (EP): EPO Procedural Status: EX-RQ 2002-07-08 2002 Request for examination Front Page Drawing:

(No drawing/image available)

Record 2/15 AU199738804A Digital library system

Publication Number: AU199738804A 19980202

Title: Digital library system

Title - DWPI: Digital library system for cataloguing, storing and retrieving and distributing multimedia data has cataloguing system that creates catalogue that can be used to perform content-based searches and content-based search retrieves data based on ideas or concepts contained in data

Priority Number: US1996677539A | WO1997US11597A

Priority Date: 1996-07-10 | 1997-07-10

Application Number: AU199738804D

Application Date: 1997-07-10

Publication Date: 1998-02-02

IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
G06F001730	G	G06	G06F	G06F0017	G06F001730
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000

Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/917	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99933	20130101	EP
Current		Y10S 707/99936	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99944	20130101	EP

ECLA: G06F001730E

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Abstract:

Language of Publication: EN INPADOC Legal Status Table: Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



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Record 3/15 WO1998001849A3 DIGITAL LIBRARY SYSTEM | SYSTEME DE BIBLIOTHEQUE NUMERIQUE

Publication Number: WO1998001849A3 19980319 WO1998001849A2 19980115

Title: DIGITAL LIBRARY SYSTEM | SYSTEME DE BIBLIOTHEQUE NUMERIQUE Title - DWPI: Priority Number: US1996677539A Priority Date: 1996-07-10 Application Number: WO1997US11597A Application Date: 1997-07-10 Publication Date: 1998-03-19 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI: Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL | GUSTMAN SAMUEL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/917	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99933	20130101	EP
Current		Y10S 707/99936	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99944	20130101	EP

ECLA: G06F001730E

Abstract:

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to

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transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location. 00000

00000 Language of Publication: XX INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact		
2005-02-01	www	-		
Description: WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE EP 1997936038				
1999-06-04	NENP	-		
Description: NON-ENTRY INTO THE NA	TIONAL PHASE IN: JP 1998505273			
1999-05-12	REG	-		
Description: REFERENCE TO NATIONA GERMAN PHASE	L CODE DE 8642 IMPACT ABOLISHEI	D FOR DE - I.E. PCT APPL. NOT ENT.		
1999-05-06	WWP	+		
Description: WIPO INFORMATION: PUB	LISHED IN NATIONAL OFFICE EP 1997	7936038		
1999-03-10	NENP	-		
Description: NON-ENTRY INTO THE NA	TIONAL PHASE IN: CA			
1999-02-04	WWE	+		
Description: WIPO INFORMATION: ENT	RY INTO NATIONAL PHASE EP 199793	6038		
1998-06-04	CR1	-		
Description: CORRECTION OF ENTRY I	N SECTION I			
1998-06-04	CFP	-		
Description: CORRECTED VERSION OF A PAMPHLET FRONT PAGE				
1998-05-13	121	-		
Description: EP: THE EPO HAS BEEN INFORMED BY WIPO THAT EP WAS DESIGNATED IN THIS APPLICATION				
1998-04-02	DFPE	-		
Description: REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO EXPIRATION OF 19TH MONTH FROM				
Page 162 of 199 _ MINDGEEK EXHIBIT 1005				

PRIORITY DATE (PCT APPLICATION FILED BEFORE 20040101)				
1998-03-19	AL	+		
Description: DESIGNATED COUNTRIES FOR REGIONAL PATENTS WO 9801849 A3 GH; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ				
1998-03-19	AK	+		
Description : DESIGNATED STATES WO 9801849 A3 AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GE; HU; IL; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; TJ; TM; TR; TT; UA; UG; US; UZ; VN; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM				
1998-01-15	AL	+		
Description: DESIGNATED COUNTRIES FOR REGIONAL PATENTS WO 9801849 A2 GH; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ				
1998-01-15	AK	+		
Description : DESIGNATED STATES WO 9801849 A2 AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GE; HU; IL; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; TJ; TM; TR; TT; UA; UG; US; UZ; VN; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM				

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 4/15 WO1998001850A3 METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA

Publication Number: WO1998001850A3 19980625 WO1998001850A2 19980115

Title: METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA Title - DWPI: Priority Number: US1996680504A Priority Date: 1996-07-08 Application Number: WO1997US11811A Application Date: 1997-07-08 Publication Date: 1998-06-25 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI: Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL | GUSTMAN SAMUEL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E Abstract: Language of Publication: XX INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2004-02-03	www	-			
Description: WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE EP 1997934887					
	1	1			
2000-07-26	WWP	+			
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Description: WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE EP 1997934887					
1999-05-12	REG	-			
Description: REFERENCE TO NATIONAL CODE DE 8642 IMPACT ABOLISHED FOR DE - I.E. PCT APPL. NOT ENT. GERMAN PHASE					
1999-02-04	WWE	+			
Description: WIPO INFORMATION: E	NTRY INTO NATIONAL PHASE EP 1997	934887			
1999-01-07	ENP	-			
Description: ENTRY INTO THE NATIO	ONAL PHASE IN: CA 2259610 A				
1999-01-07	ENP	-			
Description: ENTRY INTO THE NATIO	ONAL PHASE IN: CA 2259610				
1998-07-16	DFPE	-			
Description: REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO EXPIRATION OF 19TH MONTH FROM PRIORITY DATE (PCT APPLICATION FILED BEFORE 20040101)					
1998-06-25	AL	+			
Description: DESIGNATED COUNTR ZW; AT; BE; CH; DE; DK; ES; FI; FR;	IES FOR REGIONAL PATENTS WO 9807 GB; GR; IE; IT; LU; MC; NL	1850 A3 GH; KE; LS; MW; SD; SZ; UG;			
1998-06-25	АК	+			
Description: DESIGNATED STATES DE; DK; EE; ES; FI; GB; GE; GH; HU; MX; NO; NZ; PL; PT; RO; RU; SD; SE MD; RU; TJ; TM	WO 9801850 A3 AL; AM; AT; AU; AZ; E IL; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; ; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UG; U	BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; LS; LT; LU; LV; MD; MG; MK; MN; MW; IS; UZ; VN; YU; ZW; AM; AZ; BY; KG; KZ;			
1998-05-13	121	-			
Description: EP: THE EPO HAS BEEN INFORMED BY WIPO THAT EP WAS DESIGNATED IN THIS APPLICATION					
1998-02-26	WD	-			
Description: WITHDRAWAL OF DES	GNATIONS AFTER INTERNATIONAL PUB	LICATION US			
1998-01-15	AL	+			
Description: DESIGNATED COUNTR ZW; AT; BE; CH; DE; DK; ES; FI; FR;	IES FOR REGIONAL PATENTS WO 980 ⁷ GB; GR; IE; IT; LU; MC; NL	1850 A2 GH; KE; LS; MW; SD; SZ; UG;			

1998-01-15	AK	+

Description: DESIGNATED STATES WO 9801850 A2 AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; DE; DK; EE; ES; FI; GB; GE; GH; HU; IL; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UG; US; UZ; VN; YU; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 5/15 US5832495A Method and apparatus for cataloguing multimedia data

Publication Number: US5832495A 19981103

Title: Method and apparatus for cataloguing multimedia data Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A Priority Date: 1996-07-08 Application Number: US1996680504A Application Date: 1996-07-08 Publication Date: 1998-11-03 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant: Survivors of the Shoah Visual History Foundation,Los Angeles,CA,US JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation **Any CPC Table:**

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP

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Current	Y10S 707/99943	20130101	EP
Current	Y10S 707/99945	20130101	EP

ECLA: G06F001730E

Abstract:

The invention catalogues data such as multimedia data. A catalogue is a collection of one or more catalogue elements. An index is used to access a catalogue. An element of a catalogue has one or more attributes. An attribute provides information that can be used to search for, answer questions about, and navigate through a catalogue. An attribute of a catalogue element can be an element that has attributes. A catalogue element attribute that is an element is referred to as an attribute element. Attribute elements and attributes are used to build an index that can be used to facilitate catalogue access. Within a catalogue, smaller catalogues can be created by, for example, querying and user designation.

Language of Publication: EN

INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2010-03-18	FPAY	+			
Description: FEE PAYMENT					
2010-03-12	AS	-			
Description: ASSIGNMENT UNIVERSITY OF SOUTHERN CALIFORNIA, CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRAME:024066/0834 2005-12-31					
2006-04-27	FPAY	+			
Description: FEE PAYMENT					
2002-05-21	REMI	-			
Description: MAINTENANCE FEE REMIN	IDER MAILED				
2002-05-07	SULP	+			
Description: SURCHARGE FOR LATE P	AYMENT				
2002-05-07	FPAY	+			
Description: FEE PAYMENT					
1996-09-30	AS	-			
Description: ASSIGNMENT SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION, ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:GUSTMAN, SAMUEL; REEL/FRAME:008183/0237 1996-09-26					

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date	
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: GARY A. HECKER 1925 CENTURY PARK EAST SUITE 2300 LOS ANGELES, CA 90067					
SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION,LOS ANGELES,CA,US	GUSTMAN, SAMUEL	1996-09-26	008183/0237	1996-09-30	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: HECKER & HARRIMAN J.D. HAMMAN II 2029 CENTURY PARK EAST SUITE 1600 LOS ANGELES, CA 90067					

Maintenance Status (US):

Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2012-09-14 2012 Preservation Technologies LLC ESPN, Inc C.D. California 8:12cv01542 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032 | 2013-10-11 2013 Preservation Technologies LLC Vimeo LLC Delaware 1:13cv01693 | 2013-10-11 2013 Preservation Technologies LLC New York Times Digital LLC Delaware 1:13cv01691 | 2013-10-11 2013 Preservation Technologies LLC Target Brands Inc. Delaware` 1:13cv01692 | 2013-10-11 2013 Preservation Technologies LLC Fox Broadcasting Company Delaware 1:13cv01690 **Opposition (EP):** License (EP): **EPO Procedural Status:** Front Page Drawing:



Record 6/15 US5832499A Digital library system

Publication Number: US5832499A 19981103

Title: Digital library system

Title - DWPI: Digital library system for cataloguing, storing and retrieving and distributing multimedia data has cataloguing system that creates catalogue that can be used to perform content-based searches and content-based search retrieves data based on ideas or concepts contained in data Priority Number: US1996677539A Priority Date: 1996-07-10 Application Number: US1996677539A Application Date: 1996-07-10

Publication Date: 1998-11-03

IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
G06F001730	G	G06	G06F	G06F0017	G06F001730
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000

Assignee/Applicant: Survivors of the Shoah Visual History Foundation,Los Angeles,CA,US JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation **Any CPC Table:**

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	FP
Current		Y10S 707/917	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99933	20130101	EP
Current		Y10S 707/99936	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99944	20130101	EP

ECLA: G06F001730E

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Abstract:

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location.

Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2010-03-18	FPAY	+			
Description: FEE PAYMENT					
2010-03-12	AS	-			
Description: ASSIGNMENT UNIVERSITY OF SOUTHERN CALIFORNIA, CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRAME:024066/0834 2005-12-31					
2006-04-17	FPAY	+			
Description: FEE PAYMENT					
2002-05-21	REMI	-			
Description: MAINTENANCE FEE REMIN	IDER MAILED				
2002-05-07	SULP	+			
Description: SURCHARGE FOR LATE P	AYMENT				
2002-05-07	FPAY	+			
Description: FEE PAYMENT					
1996-09-27	AS	-			
Description: ASSIGNMENT SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION, ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:GUSTMAN, SAMUEL; REEL/FRAME:008183/0296 1996-09-26					

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date	
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12	
Conveyance: ASSIGNMENT C	OF ASSIGNORS INTEREST (SE	E DOCUMENT FOR	DETAILS).		
Corresponent: GARY A. HECK	KER 1925 CENTURY PARK EAS	ST SUITE 2300 LOS A	ANGELES, CA 90067		
SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION,LOS ANGELES,CA,US	GUSTMAN, SAMUEL	1996-09-26	008183/0296	1996-09-27	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: HECKER & HARRIMANN J.D. HARRIMAN 2029 CENTURY PARK EAST SUITE 1500 LOS ANGELES, CA 90067					

Maintenance Status (US):

Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 8:11cv01860 | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2012-09-14 2012 Preservation Technologies LLC ESPN, Inc C.D. California 8:12cv01542 | 2012-09-14 2012 Preservation Technologies LLC Walmart Stores Inc Vudu, Inc C. D. California 8:12cv01541 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032 | 2013-10-11 2013 Preservation Technologies LLC Vimeo LLC Delaware 1:13cv01693 | 2013-10-11 2013 Preservation Technologies LLC Fox Broadcasting Company Delaware 1:13cv01690 | 2013-10-11 2013 Preservation Technologies LLC New York Times Digital LLC Delaware 1:13cv01691 | 2013-10-11 2013 Preservation Technologies LLC Target Brands Inc. Delaware` 1:13cv01692 **Opposition (EP):** License (EP): **EPO Procedural Status:** Front Page Drawing:



Publication Number: US6092080A 20000718

Title: Digital library system

Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A | US1996677539A | US199676504A Priority Date: 1996-07-08 | 1996-07-10 | 1996-07-10 Application Number: US1998184796A Application Date: 1998-11-02 Publication Date: 2000-07-18 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant: Survivors of the Shoah Visual History Foundation,Los Angeles,CA,US

JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/917	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99933	20130101	EP
Current		Y10S 707/99936	20130101	EP

Page 175 of 199

Current	Y10S 707/99943	20130101	EP
Current	Y10S 707/99944	20130101	EP

ECLA: G06F001730E

Abstract:

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location.

Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact					
2012-05-14	SULP	+					
Description: SURCHARGE FOR LATE P	Description: SURCHARGE FOR LATE PAYMENT						
2011-09-21	FPAY	+					
Description: FEE PAYMENT							
2010-03-12	AS	-					
Description: ASSIGNMENT UNIVERSIT INTEREST; ASSIGNOR:SURVIVORS OF 2005-12-31	Y OF SOUTHERN CALIFORNIA,CALIFOR THE SHOAH VISUAL HISTORY FOUNDA	NIA ASSIGNMENT OF ASSIGNORS TION; REEL/FRAME:024066/0834					
	-						
2008-01-09	FPAY	+					
Description: FEE PAYMENT							
2004-01-20	FPAY	+					
Description: FEE PAYMENT							

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date	
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: GARY A. HECKER 1925 CENTURY PARK EAST SUITE 2300 LOS ANGELES, CA 90067					

Maintenance Status (US):

Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 8:11cv01860 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2012-02-08 2012 Preservation Technologies LLC AT&T Cox Communications, Inc. Time Warner Cable Inc C.D. California 8:12cv00208 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2012-09-14 2012 Preservation Technologies LLC Walmart Stores Inc Vudu, Inc C. D. California 8:12cv01541 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032 | 2013-10-11 2013 Preservation Technologies LLC Vimeo LLC Delaware 1:13cv01693 | 2013-10-11 2013 Preservation Technologies LLC Fox Broadcasting Company Delaware 1:13cv01690 | 2013-10-11 2013 Preservation Technologies LLC New York Times Digital LLC Delaware 1:13cv01691 | 2013-10-11 2013 Preservation Technologies LLC Target Brands Inc. Delaware` 1:13cv01692 **Opposition (EP):**

License (EP):

EPO Procedural Status: Front Page Drawing:



Record 8/15 EP1021226A4 METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA | VERFAHREN UND VORRICHTUNG ZUR KATALOGISIERUNG MULTIMEDIADATEN | PROCEDE ET APPAREIL DE CATALOGAGE DE DONNEES MULTIMEDIA

Publication Number: EP1021226A4 20000726 EP1021226A2 20000726

Title: METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA | VERFAHREN UND VORRICHTUNG ZUR KATALOGISIERUNG MULTIMEDIADATEN | PROCEDE ET APPAREIL DE CATALOGAGE DE DONNEES MULTIMEDIA Title - DWPI: Priority Number: US1996680504A | WO1997US11811A Priority Date: 1996-07-08 | 1997-07-08 Application Number: EP1997934887A Application Date: 1997-07-08 Publication Date: 2000-07-26 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI: Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E Abstract: Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact
2004-08-25	18D	-

Page 178 of 199

Description: DEEMED TO BE WITHDRAWN 2004-02-03					
2000-07-26	АК	+			
Description: DESIGNATED CONTRACTI	NG STATES: EP 1021226 A2 BE; CH	; DE; FR; GB; IT; LI; LU; NL			
2000-07-26	AK	+			
Description: DESIGNATED CONTRACTING STATES: EP 1021226 A4 BE; CH; DE; FR; GB; IT; LI; LU; NL					
2000-07-26	A4	+			
Description: SUPPLEMENTARY SEARCH REPORT 1999-09-02					
2000-07-26	17P	+			
Description: REQUEST FOR EXAMINATION FILED 1999-02-04					

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Publication Number: JP2000514579A 20001031

Title:

Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A | WO1997US11811A Priority Date: 1996-07-08 | 1997-07-08 Application Number: JP1998505310A Application Date: 1997-07-08 Publication Date: 2000-10-31 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant:

JP F Terms: | 5B075ND03 | 5B075ND08 | 5B075ND12 | 5B075ND14 | 5B075ND16 | 5B075ND24 | 5B075NK02 | 5B075NK06 | 5B075NK46 | 5B075NK49 | 5B075NR02 | 5B075NR13 | 5B075P02 | 5B075P03 | 5B075PQ02 | 5B075QP03 | 5B075QT03 | 5B075UU35 | 5B082EA01 | 5B082EA08 | 5B082GA15 | 5B082GA20 JP FI Codes: | G06F001200-547D | G06F001540-370G | G06F0015401-310C | G06F001730-

170G | G06F001730-210C

Assignee - Original:

Any CPC Table:
Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E Abstract: Language of Publication: JA INPADOC Legal Status Table: Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 10/15 US6212527B1 Method and apparatus for cataloguing multimedia data

Publication Number: US6212527B1 20010403

Title: Method and apparatus for cataloguing multimedia data Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A Priority Date: 1996-07-08 Application Number: US1998184921A Application Date: 1998-11-02 Publication Date: 2001-04-03 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant: Survivors of the Shoah Visual History Foundation,Los Angeles,CA **JP F Terms:**

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation **Any CPC Table:**

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP

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MINDGEEK EXHIBIT 1005

Current	Y10S 707/99943	20130101	EP
Current	Y10S 707/99945	20130101	EP

ECLA: G06F001730E

Abstract:

The invention catalogues data such as multimedia data. A catalogue is a collection of one or more catalogue elements. An index is used to access a catalogue. An element of a catalogue has one or more attributes. An attribute provides information that can be used to search for, answer questions about, and navigate through a catalogue. An attribute of a catalogue element can be an element that has attributes. A catalogue element attribute that is an element is referred to as an attribute element. Attribute elements and attributes are used to build an index that can be used to facilitate catalogue access. Within a catalogue, smaller catalogues can be created by, for example, querying and user designation.

Language of Publication: EN

INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact		
2012-04-19	FPAY	+		
Description: FEE PAYMENT				
2010-03-12	AS	-		
Description: ASSIGNMENT UNIVERSIT INTEREST; ASSIGNOR:SURVIVORS OF 2005-12-31	Y OF SOUTHERN CALIFORNIA,CALIFOF THE SHOAH VISUAL HISTORY FOUNDA	RNIA ASSIGNMENT OF ASSIGNORS ATION; REEL/FRAME:024066/0834		
2008-09-25	FPAY	+		
Description: FEE PAYMENT				
2004-09-03	FPAY	+		
Description: FEE PAYMENT				

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).				

Page 183 of 199

Maintenance Status (US):

Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Facebook Inc C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2012-09-14 2012 Preservation Technologies LLC Walmart Stores Inc Vudu, Inc C. D. California 8:12cv01541 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032

Opposition (EP):

License (EP):

EPO Procedural Status:

Front Page Drawing:



Record 11/15 AU739249B2 Method and apparatus for cataloguing multimedia data

Publication Number: AU739249B2 20011004 AU199737947A 19980326

Title: Method and apparatus for cataloguing multimedia data Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A | WO1997US11811A Priority Date: 1996-07-08 | 1997-07-08 Application Number: AU199737947A Application Date: 1997-07-08 Publication Date: 2001-10-04 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

IPC Class Table - DWPI:

Assignee/Applicant: Survivors of The Shoah Visual History Foundation

JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of The Shoah Visual History Foundation **Any CPC Table:**

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP

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MINDGEEK EXHIBIT 1005

Current	Y10S 707/956	20130101	EP
Current	Y10S 707/99931	20130101	EP
Current	Y10S 707/99943	20130101	EP
Current	Y10S 707/99945	20130101	EP

ECLA: G06F001730E

Abstract:

The invention catalogues data such as multimedia data. A catalogue is a collection of one or more catalogue elements. An index is used to access a catalogue. An element of a catalogue has one or more attributes. An attribute provides information that can be used to search for, answer questions about, and navigate through a catalogue. An attribute of a catalogue element can be an element that has attributes. A catalogue element attribute that is an element is referred to as an attribute element. Attribute elements and attributes are used to build an index that can be used to facilitate catalogue access. Within a catalogue, smaller catalogues can be created by, for example, querying and user designation.

L'invention a pour objet le catalogage de données, telles les données multimédia. Un catalogue est constitué d'une collection d'un ou de plusieurs éléments de catalogue. On utilise un index pour accéder au catalogue. Un élément d'un catalogue est doté d'un ou de plusieurs attributs. Un attribut fournit des informations pouvant être utilisées pour rechercher, parcourir un catalogue, répondre à des questions sur un catalogue. Un attribut d'un élément d'un catalogue peut être un élément doté d'attributs. Un attribut d'un élément d'un catalogue étant un élément est appelé élément d'un attribut. Des éléments d'un attribut et des attributs sont utilisés pour constituer un index pouvant être utilisé pour faciliter l'accès au catalogue. Dans un catalogue, des catalogues de moindre taille peuvent être créés, par exemple, par interrogation et désignation de l'utilisateur. Language of Publication: EN

INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2004-02-12	MK14	-			
Description: PATENT CEASED SECTION 143(A) (ANNUAL FEES NOT PAID) OR EXPIRED					
2002-01-31	FGA	+			
Description: LETTERS PATENT SEALED OR GRANTED (STANDARD PATENT)					

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:

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Record 12/15 US6353831B1 Digital library system

Publication Number: US6353831B1 20020305

Title: Digital library system

Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1998184796A Priority Date: 1998-11-02 Application Number: US2000543519A Application Date: 2000-04-06 Publication Date: 2002-03-05 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant: Survivors of the Shoah Visual History Foundation, Los Angeles, CA

JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation **Any CPC Table:**

Туре	Invention	Additional	Version	Office
Current	G06F 17/30038	Y10S 707/913	20130101	EP
Current		Y10S 707/954	20130101	EP
Current		Y10S 707/99944	20130101	EP
Current		Y10S 707/99945	20130101	EP

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ECLA:

Abstract:

The invention is a digital library system that includes: 1) a data capture mechanism that includes data transfer and cataloguing mechanisms, 2) an asset management system for access and storage management of data, and 3) a distribution system for distributing the data and system functionality. A data capture system includes a transfer system and a cataloguing system. The transfer system converts multimedia material that exists in analog form to a digital format. The cataloguing system catalogues data. The cataloguing system creates a catalogue that can be used to perform content-based searches. A content-based search retrieves data based on the ideas or concepts contained in the data. An asset management system is used to access the data using the catalogue created by the cataloguing system. A distribution facility can be used to transmit the data thus giving a user access to all of the data contained in the digital library system despite the user's location.

Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2013-08-07	FPAY	+			
Description: FEE PAYMENT					
2010-03-12	AS	-			
Description: ASSIGNMENT UNIVERSIT INTEREST; ASSIGNOR:SURVIVORS OF 2005-12-31	Description: ASSIGNMENT UNIVERSITY OF SOUTHERN CALIFORNIA, CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRAME:024066/0834 2005-12-31				
2009-09-04	FPAY	+			
Description: FEE PAYMENT					
2005-08-03	FPAY	+			
Description: FEE PAYMENT					

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date	
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: GARY A. HECKER 1925 CENTURY PARK EAST SUITE 2300 LOS ANGELES, CA 90067					

Maintenance Status (US):

Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 8:11cv01860 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Facebook Inc C.D. California 2:11cv10701 | 2012-02-08 2012 Preservation Technologies LLC AT&T Cox Communications, Inc. Time Warner Cable Inc C.D. California 8:12cv00208 | 2012-09-14 2012 Preservation Technologies LLC Walmart Stores Inc Vudu, Inc C. D. California 8:12cv01541 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032 | 2013-10-11 2013 Preservation Technologies LLC Vimeo LLC Delaware 1:13cv01693 | 2013-10-11 2013 Preservation Technologies LLC Fox Broadcasting Company Delaware 1:13cv01690 | 2013-10-11 2013 Preservation Technologies LLC New York Times Digital LLC Delaware 1:13cv01691 | 2013-10-11 2013 Preservation Technologies LLC Target Brands Inc. Delaware` 1:13cv01692

Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 13/15 EP912951A4 DIGITAL LIBRARY SYSTEM | DIGITALES ARCHIVIERUNGSSYSTEM | SYSTEME DE BIBLIOTHEQUE NUMERIQUE

Publication Number: EP912951A4 20020828 EP912951A2 19990506

Title: DIGITAL LIBRARY SYSTEM | DIGITALES ARCHIVIERUNGSSYSTEM | SYSTEME DE BIBLIOTHEQUE NUMERIQUE Title - DWPI: Priority Number: US1996677539A | WO1997US11597A Priority Date: 1996-07-10 | 1997-07-10 Application Number: EP1997936038A Application Date: 1997-07-10 Publication Date: 2002-08-28 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI: Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/917	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99933	20130101	EP
Current		Y10S 707/99936	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99944	20130101	EP

ECLA: G06F001730E Abstract: Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2005-08-10	18D	-			
Description: DEEMED TO BE WITHDRAWN 2005-02-01					

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2002-08-28	АК	+
Description: DESIGNATED CONTRACT	NG STATES: EP 0912951 A4 BE; CH	; DE; FR; GB; IT; LI; LU; NL
2002-08-28	A4	+
Description: SUPPLEMENTARY SEARC	H REPORT 2002-07-12	
		-
1999-05-06	АК	+
Description: DESIGNATED CONTRACT	NG STATES: EP 0912951 A2 BE; CH	; DE; FR; GB; IT; LI; LU; NL
1999-05-06	17P	+
Description: REQUEST FOR EXAMINAT	ION FILED 1999-02-08	

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 14/15 IL127705A METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA

Publication Number: IL127705A 20021201 IL127705D0 19991028

Title: METHOD AND APPARATUS FOR CATALOGUING MULTIMEDIA DATA

Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1996680504A | WO1997US11811A Priority Date: 1996-07-08 | 1997-07-08 Application Number: IL127705A Application Date: 1997-07-08 Publication Date: 2002-12-01 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC Class Table - DWPI:

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

Assignee/Applicant: SURVIVORS OF THE SHOAH VISUAL JP F Terms: JP FI Codes: Assignee - Original: Any CPC Table:

Туре	Invention	Additional	Version	Office

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MINDGEEK EXHIBIT 1005

Current	G06F 17/30017	Y10S 707/913	20130101	EP
Current		Y10S 707/956	20130101	EP
Current		Y10S 707/99931	20130101	EP
Current		Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E Abstract: Language of Publication: EN INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2004-03-28	RH1	-			
Description: PATENTS NOT IN FORCE					
	1				
2003-06-24	КВ	+			
Description: PATENTS RENEWED					
2003-06-24	FF	+			
Description: PATENTS GRANTED					
2003-05-29	FF	+			
Description: PATENTS GRANTED					

Post-Issuance (US): Reassignment (US) Table: Maintenance Status (US): Litigation (US): Opposition (EP): License (EP): EPO Procedural Status: Front Page Drawing:



Record 15/15 US6549911B2 Method and apparatus for cataloguing multimedia data

Publication Number: US6549911B2 20030415 US20020052861A1 20020502

Title: Method and apparatus for cataloguing multimedia data Title - DWPI: Multimedia data cataloguing method for multimedia database system involves creating number of attributes and attribute elements and creating number of relationships between catalogue element and number of attributes and attribute elements Priority Number: US1998184921A Priority Date: 1998-11-02 Application Number: US2001788310A Application Date: 2001-02-16 Publication Date: 2003-04-15 IPC Class Table:

IPC	Section	Class	Subclass	Class Group	Subgroup
G06F001730	G	G06	G06F	G06F0017	G06F001730

IPC - DWPI	Section - DWPI	Class - DWPI	Subclass - DWPI	Class Group - DWPI	Subgroup - DWPI
A63B006900	A	A63	A63B	A63B0069	A63B006900
G06F001730	G	G06	G06F	G06F0017	G06F001730
G06F000700	G	G06	G06F	G06F0007	G06F000700
G11B000000	G	G11	G11B	G11B0000	G11B000000
G11B002000	G	G11	G11B	G11B0020	G11B002000
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001900	G	G06	G06F	G06F0019	G06F001900

IPC Class Table - DWPI:

Assignee/Applicant: Survivors of the Shoah Visual History Foundation, Los Angeles, CA

JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of the Shoah Visual History Foundation Any CPC Table:

Туре	Invention	Additional	Version	Office
Current	G06F 17/30017	Y10S 707/99943	20130101	EP
Current		Y10S 707/99945	20130101	EP

ECLA: G06F001730E

Abstract:

The mechanism catalogues data such as multimedia data. A catalogue is a collection of one or more catalogue elements. An index is used to access a catalogue. An element of a catalogue has one or more attributes. An attribute provides information that can be used to search for, answer questions about, and navigate through a catalogue. An attribute of a catalogue element can be an element that has attributes. A catalogue element attribute that is an element is referred to as an attribute element. Attribute elements and attributes are used to build an index that can be used to facilitate catalogue access. Within a catalogue, smaller catalogues can be created by, for example, querying and user designation.

Language of Publication: EN

INPADOC Legal Status Table:

Gazette Date	Code	INPADOC Legal Status Impact			
2011-02-16	SULP	+			
Description: SURCHARGE FOR LATE P	AYMENT				
2010-10-15	FPAY	+			
Description: FEE PAYMENT					
2010-03-12	AS	-			
Description: ASSIGNMENT UNIVERSITY OF SOUTHERN CALIFORNIA, CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRAME:024066/0834 2005-12-31					
2006-10-12	FPAY	+			
Description: FEE PAYMENT					

Post-Issuance (US): Reassignment (US) Table:

Assignee	Assignor	Date Signed	Reel/Frame	Date	
UNIVERSITY OF SOUTHERN CALIFORNIA,LOS ANGELES,CA,US	SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION	2005-12-31	024066/0834	2010-03-12	
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).					
Corresponent: GARY A. HECKER 1925 CENTURY PARK EAST SUITE 2300 LOS ANGELES, CA 90067					

Maintenance Status (US):

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Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2011-12-27 2011 Preservation Technologies LLC Dish Network Corporation C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Facebook Inc C.D. California 2:11cv10692 | 2011-12-27 2011 Preservation Technologies LLC Sony Corporation of America C.D. California 2:11cv10694 | 2012-09-14 2012 Preservation Technologies LLC Cablevision Systems Corp C.D. California 8:12cv01540 | 2013-01-03 2013 Preservation Technologies LLC Cablevision Systems Corp. Delaware 1:13cv00032 | 2013-10-11 2013 Preservation Technologies LLC Target Brands Inc. Delaware` 1:13cv01692

Opposition (EP): License (EP): EPO Procedural Status:

Front Page Drawing:





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USPTO Maintenance Report

Patent Bibliographic Data		10/13/2014 03:21 PM			
Patent Number:	6092080		Application Number:	09184796	
Issue Date:	07/18/2000		Filing Date:	11/02/1998	
Title:	DIGITAL LIBR	ARY SYSTEM			
Status:	4th, 8th and 12th	n year fees paid		Entity: LARGE	
Window Opens:	N/A	Surcharge Date:	N/A	Expiration:	N/A
Fee Amt Due:	Window not open	Surchg Amt Due:	Window not open	Total Amt Due:	Window not open
Fee Code:					
Surcharge Fee Code:					
Most recent events (up to 7):	05/14/2012 09/21/2011 01/09/2008 01/20/2004	Payment of Maintenance Fee under 1.28(c). Payment of Maintenance Fee, 12th Yr, Small Entity. Payment of Maintenance Fee, 8th Yr, Small Entity. Payment of Maintenance Fee, 4th Yr, Small Entity. End of Maintenance History			
Address for fee purposes:	THE HECKER LAW GROUP 1925 CENTURY PARK EAST SUITE 2300 LOS ANGELES CA 90067				