

FILE HISTORY

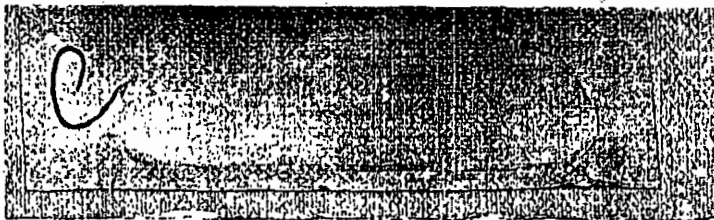
US 6,092,080

PATENT: 6,092,080
INVENTORS: Gustman, Samuel
TITLE: Digital library system
APPLICATION NO: US1998184796A
FILED: 02 NOV 1998
ISSUED: 18 JUL 2000
COMPILED: 13 OCT 2014

JC540 U.S. PTO
09/184796



11/02/98	707	103
Class	Class	Subclass
ISSUE CLASSIFICATION		



PATENT NUMBER
6092080

6092080

U.S. UTILITY PATENT APPLICATION

SCANNED *RM* O.I.P.E. *CB* G.A. *CS* PATENT DATE *JUL 2 8 2000*

SECTOR	CLASS <i>707</i>	SUBCLASS <i>103</i>	ART UNIT <i>2511</i>	EXAMINER <i>MIZRAHI</i>
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PREPARED AND APPROVED FOR ISSUE

ISSUING CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)			
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)		
<i>707</i>	<i>103</i>	<i>707</i>	<i>3</i>	<i>6</i>	<i>103</i>
INTERNATIONAL CLASSIFICATION					
<i>G06F</i>	<i>17</i>	<i>30</i>			

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<input type="checkbox"/> TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg. <i>9</i>	Figs. Drwg. <i>9</i>	Print Fig. <i>2</i>	Total Claims <i>16</i>	Print Claim for O.G. <i>19</i>
<input type="checkbox"/> a) The term of this patent subsequent to _____ (date) has been disclaimed.	<i>Disare D. Mizrahi 12-12-99</i> (Assistant Examiner) (Date)			NOTICE OF ALLOWANCE MAILED	
<input type="checkbox"/> b) The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____	<i>Thomas G. Black</i> THOMAS G. BLACK SUPERVISORY PATENT EXAMINER GROUP 2700 <i>1/3/00</i> (Primary Examiner) (Date)			<i>12/16/99</i> ISSUE FEE Amount Due <i>605.00</i> / Date Paid <i>3/16/00</i>	
<input type="checkbox"/> c) The terminal _____ months of this patent have been disclaimed.	_____ (Legal Instruments Examiner) (Date)			ISSUE BATCH NUMBER <i>F72</i>	

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Form PTO-438A
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703-306-2826

ISSUE AREA
(LABEL AREA) **NO FILE**

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6,092,080

DIGITAL LIBRARY SYSTEM

Transaction History

Date	Transaction Description
11/2/1998	Preliminary Amendment
11/2/1998	Preliminary Amendment
11/5/1998	Initial Exam Team nn
11/13/1998	IFW Scan & PACR Auto Security Review
11/24/1998	Notice Mailed--Application Incomplete--Filing Date Assigned
2/3/1999	Application Is Now Complete
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
6/7/1999	Non-Final Rejection
6/16/1999	Mail Non-Final Rejection
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
12/16/1999	Notice of Allowance Data Verification Completed
2/3/2000	Workflow - File Sent to Contractor
3/16/2000	Issue Fee Payment Verified
3/16/2000	Workflow - Drawings Finished
3/16/2000	Workflow - Drawings Matched with File at Contractor
3/16/2000	Workflow - Drawings Received at Contractor
3/16/2000	Workflow - Drawings Sent to Contractor
5/2/2000	Workflow - Complete WF Records for Drawings
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
7/3/2012	Petition Decision - Granted

PATENT APPLICATION



09184796

JC540 U.S. PTO
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INITIALS _____

CONTENTS

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	Date received (Incl. C. of M.) or Date Mailed		Date received (Incl. C. of M.) or Date Mailed
1. Application <i>Ptts.</i> papers.		42.	
2. <i>Ltr. Fee</i>	<i>4/24/98</i>	43.	
3. <i>Search fee</i>	<i>1-22-99</i>	44.	
4. <i>PRE-AMST/A</i>	<i>11-2-98</i>	45.	
5. <i>Inf (3 mos)</i>	<i>6-16-99</i>	46.	
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11. <i>Formal Drawings (9 sheets) set 1</i>	<i>3-16-00</i>	52.	
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ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION	<i>MG</i>		<i>2/6</i>
O.I.P.E. CLASSIFIER		<i>10</i>	<i>11-10-98</i>
FORMALITY REVIEW	<i>AD</i>	<i>687,98</i> <i>59158</i>	<i>11-17-98</i> <i>2-3-99</i>

INDEX OF CLAIMS

- ✓ Rejected
- Allowed
- (Through numeral)... Canceled
- ± Restricted
- N Non-elected
- I Interference
- A Appeal
- O Objected

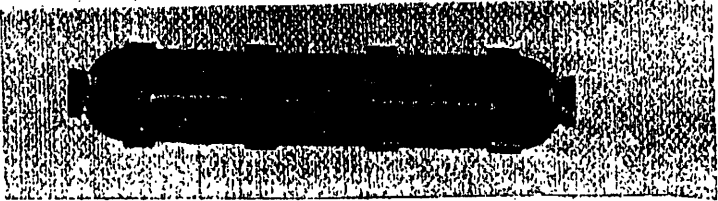
Claim	Date
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SEARCHED

Class	Sub.	Date	Exmr.
707	3	6-6-99	DM
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	102		
	103		
708	26		
↓	39		
	44		
709	103		
380	4		
345	356		
713	200		
714	20		
	26		
702	186		

updated search 12-11-99 DM

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

Inventor Search	Date	Exmr.
APS	6-6-99	DM
Dialog	6-6-99	DM
updated search	12-11-99	DM
	↓	↓

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
707	3	12-11-99	DM
↓	6	↓	↓
	102		
	103		

(RIGHT OUTSIDE)



US006092080A

United States Patent [19]

[11] Patent Number: **6,092,080**

Gustman

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

[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; 707/102**

[58] Field of Search **707/3; 6; 102, 707/103; 708/26, 39, 44; 709/103; 380/4; 345/356; 713/200; 714/20, 26; 702/186**

[56] References Cited

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Ramaiah, CK, Multimedia systems in libraries and their applications, , Defence Scientific Information and Documentation, vol. 18, issue 6, pp 25-40/, Nov. 1998.

The Gale Group, IBM Digital Library Unveils Products, Partners, Plans, Newsbytes, pp. 1-5, Jul. 1997.

Primary Examiner—Thomas G. Black

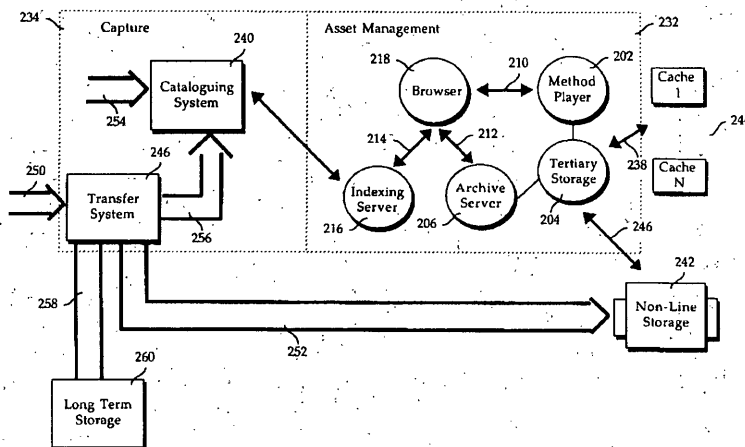
Assistant Examiner—Diane D. Mizrahi

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



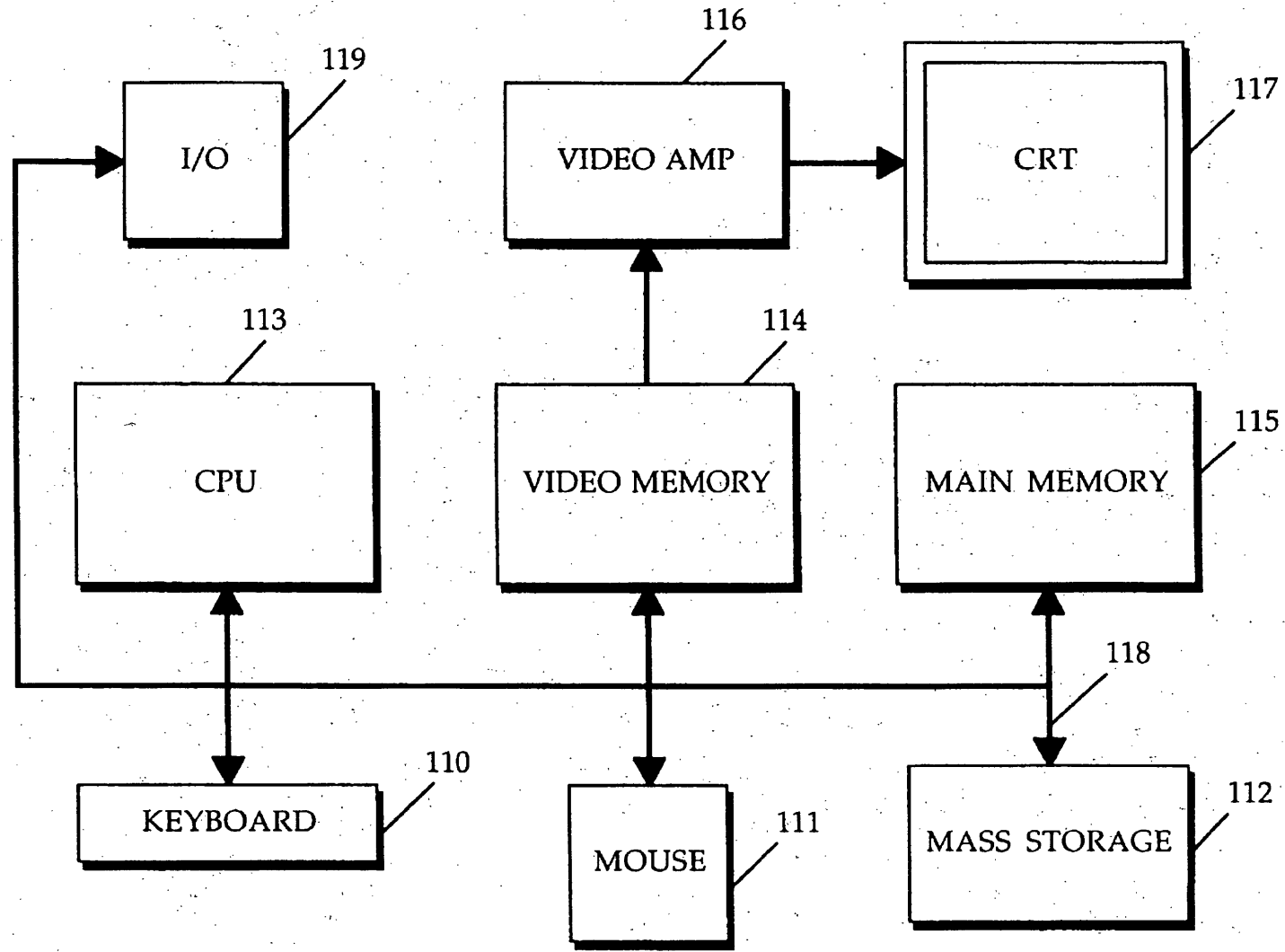


Figure 1

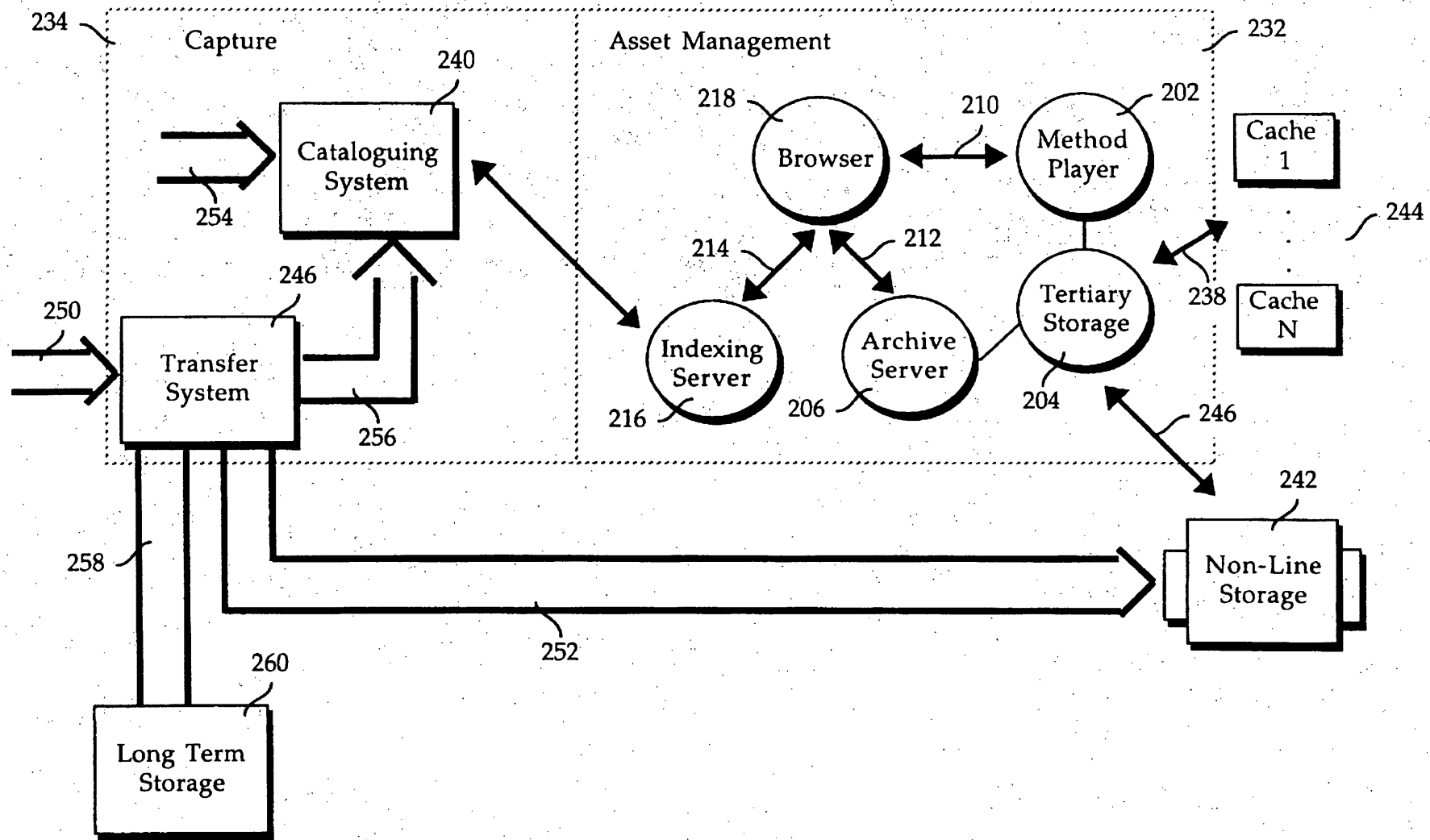


Figure 2

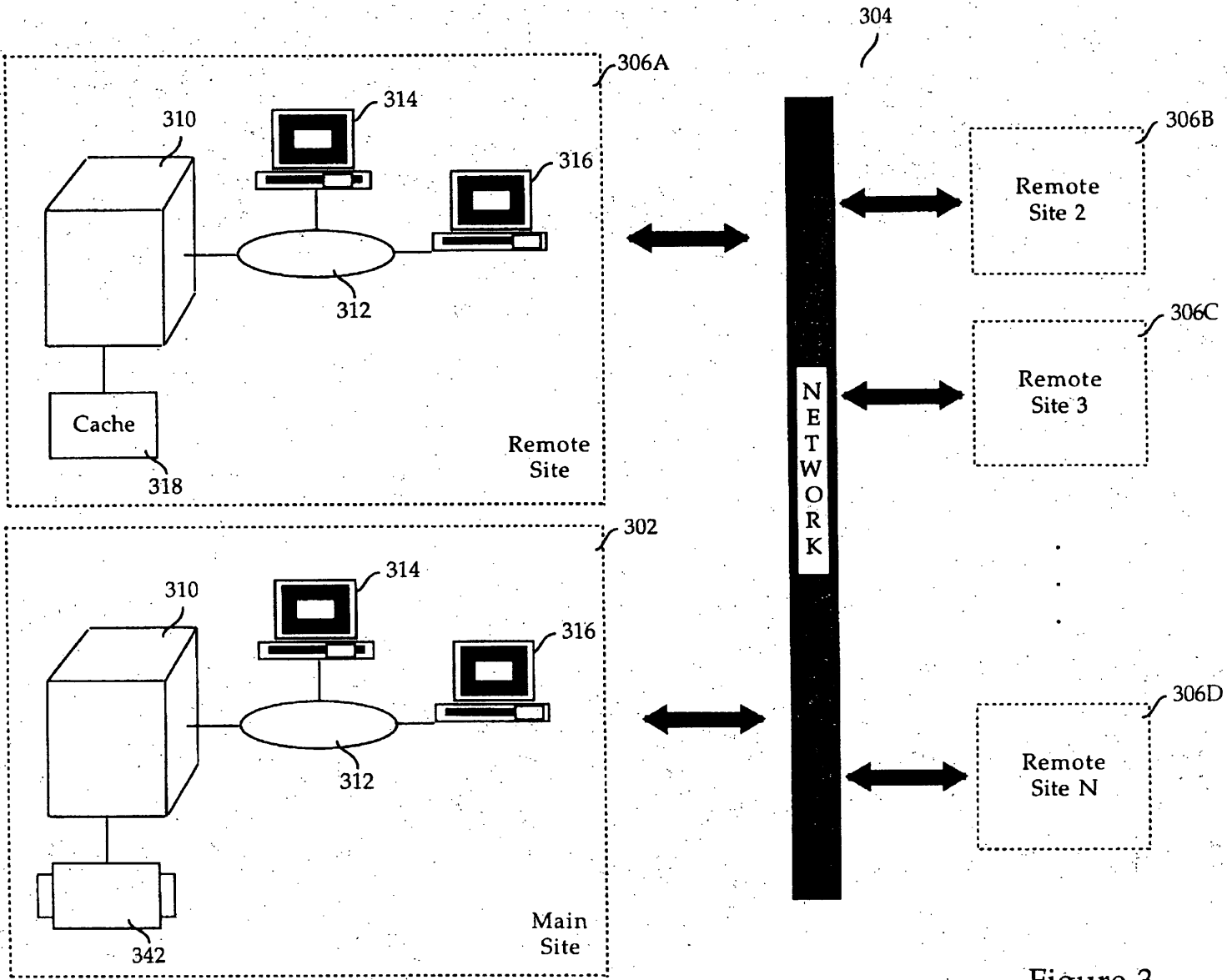


Figure 3

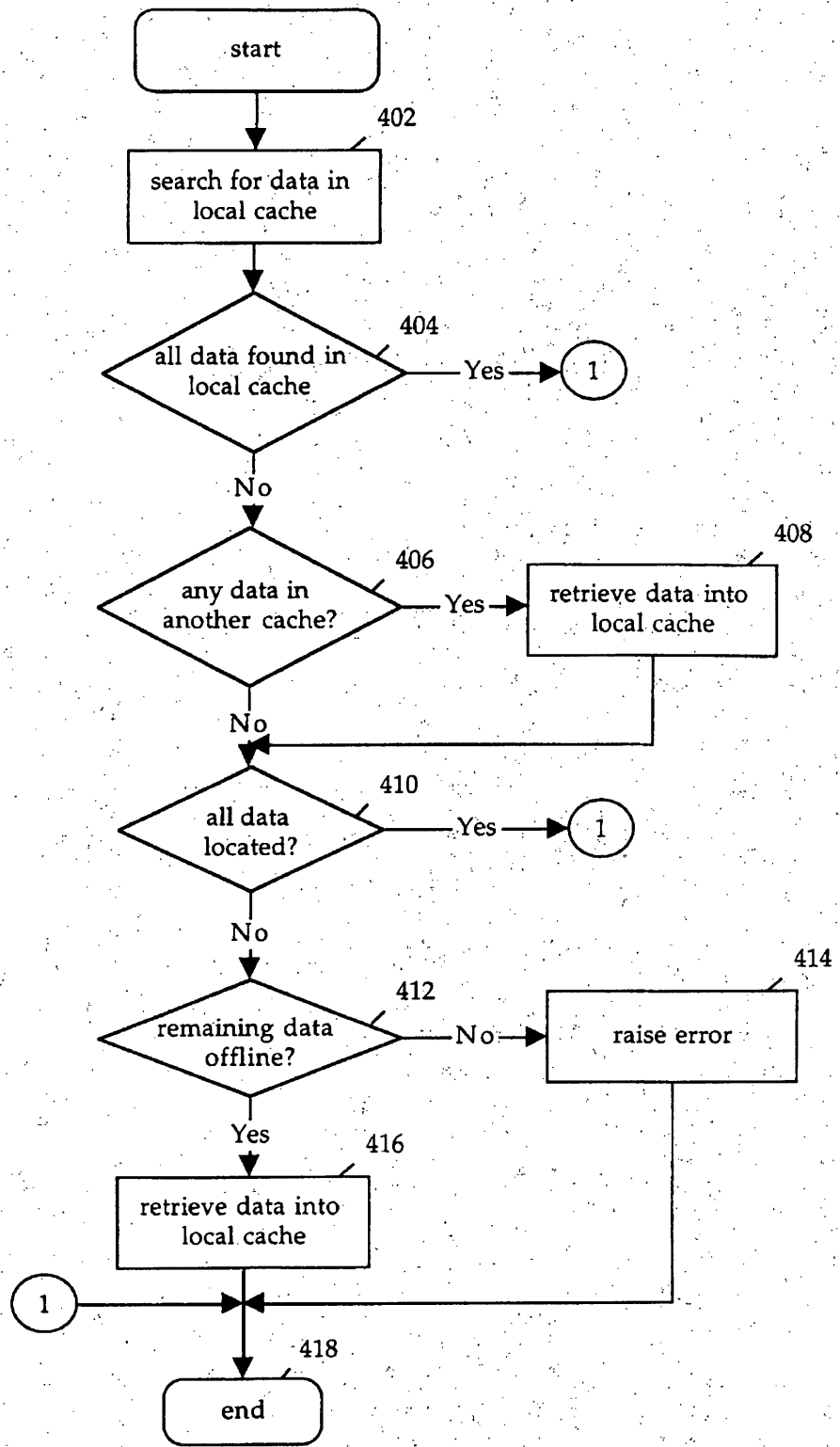


Figure 4

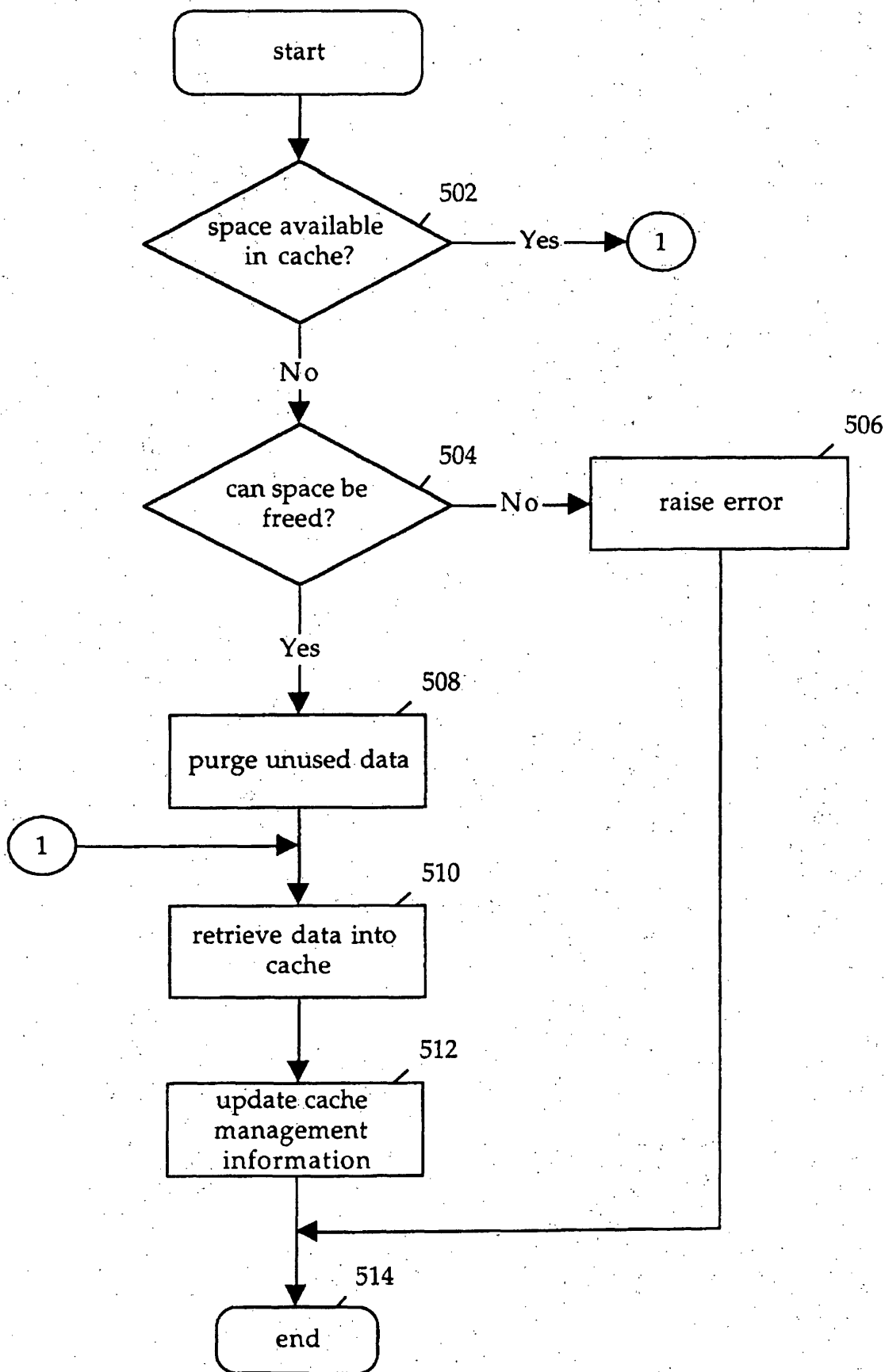


Figure 5

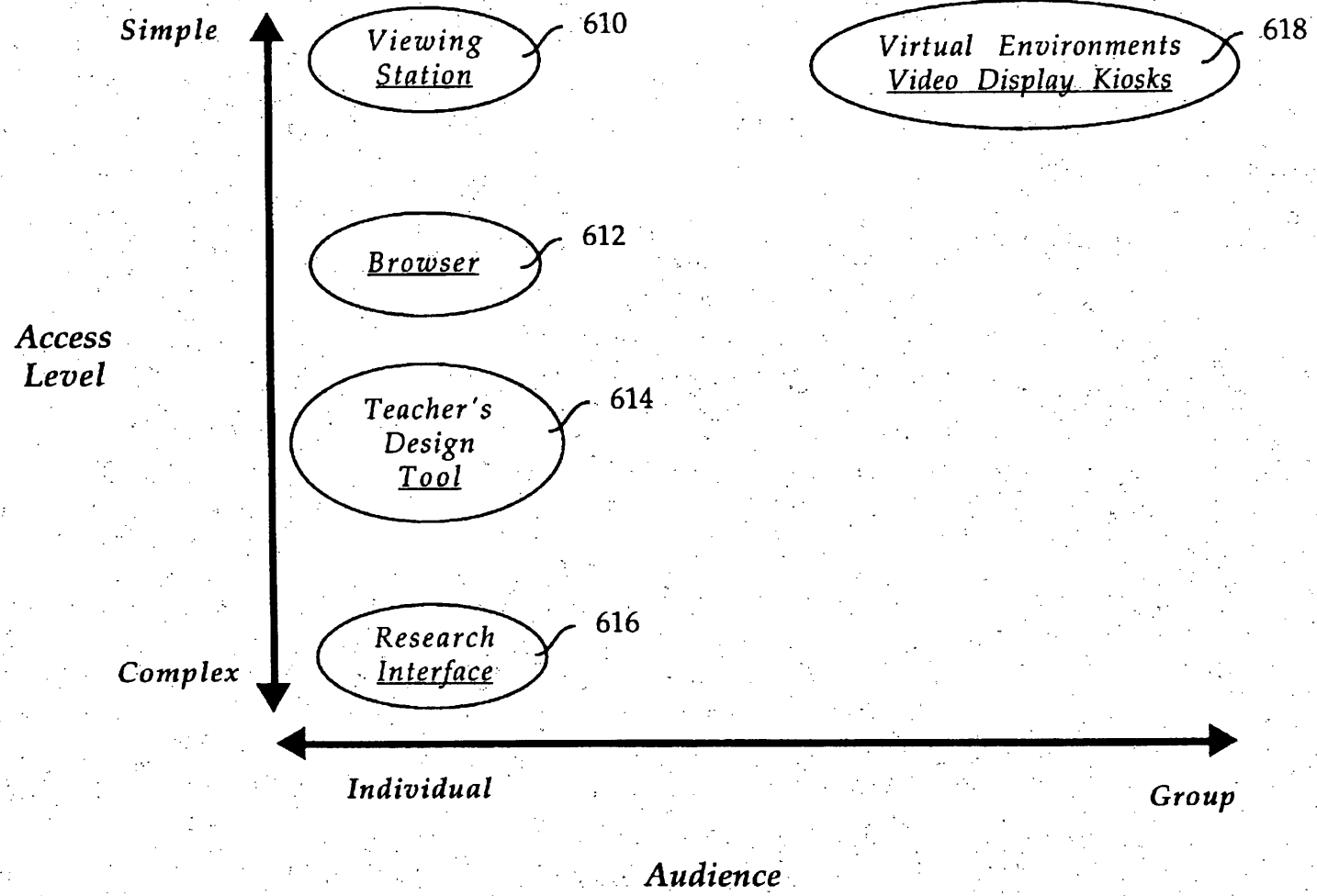


Figure 6

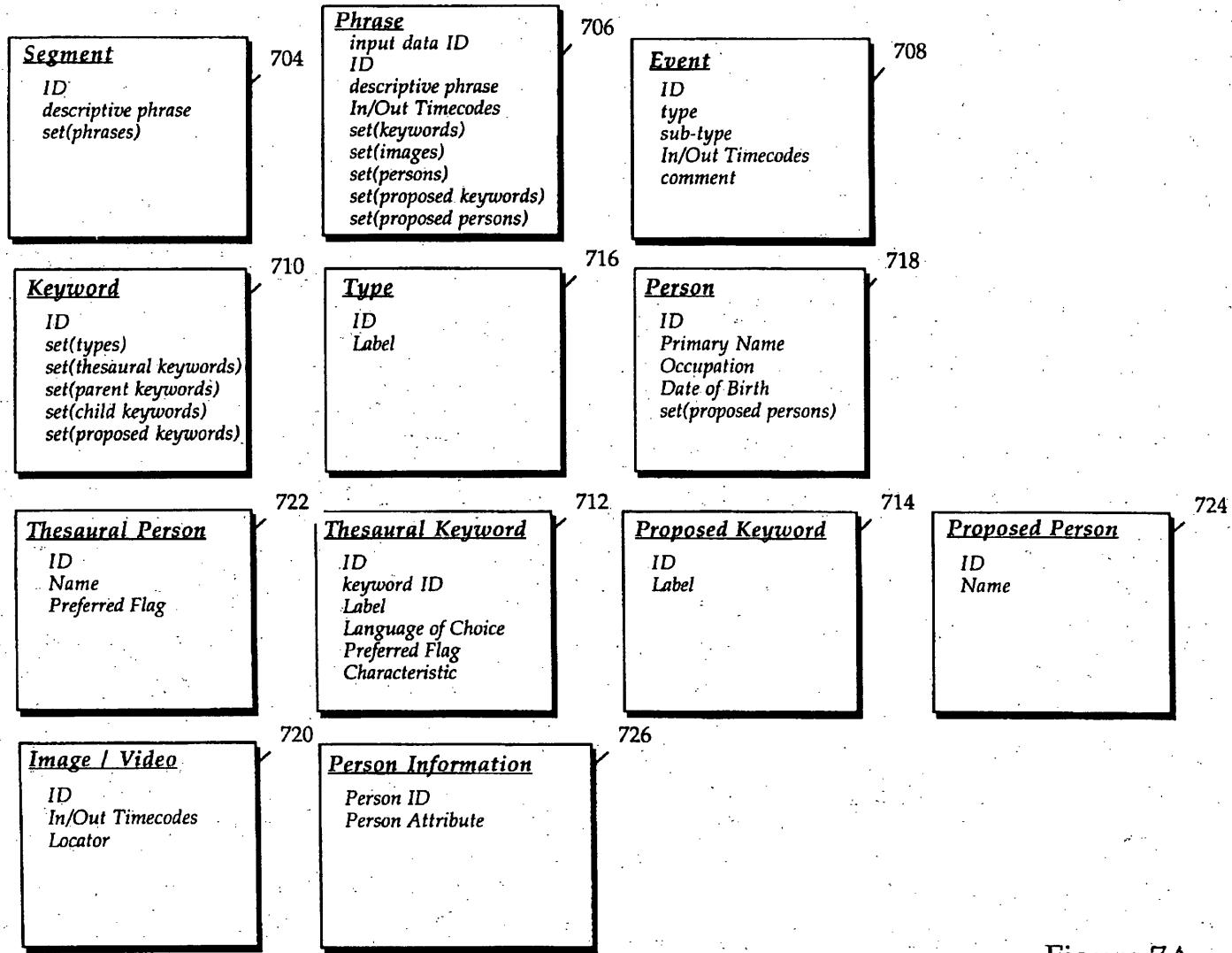


Figure 7A

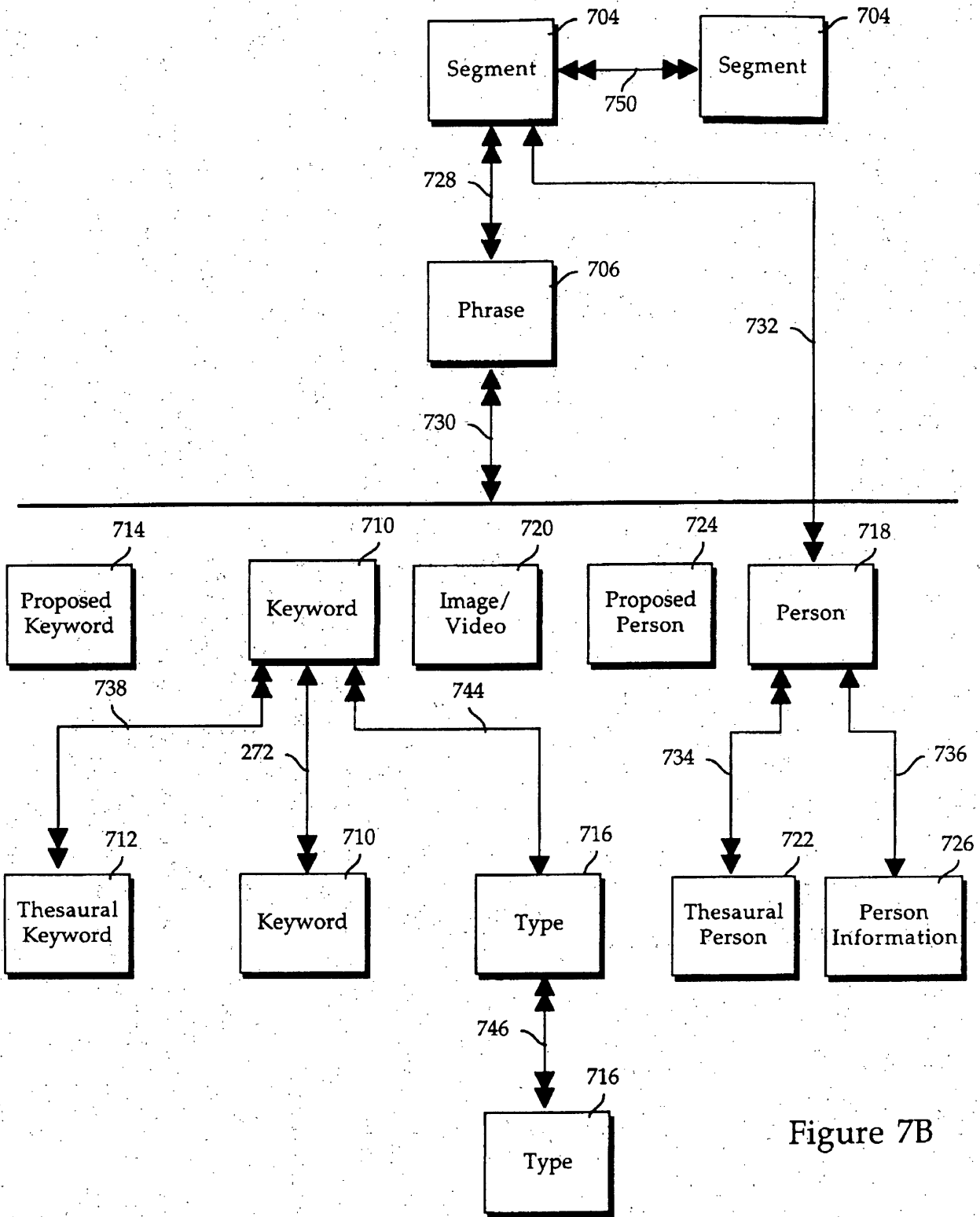


Figure 7B

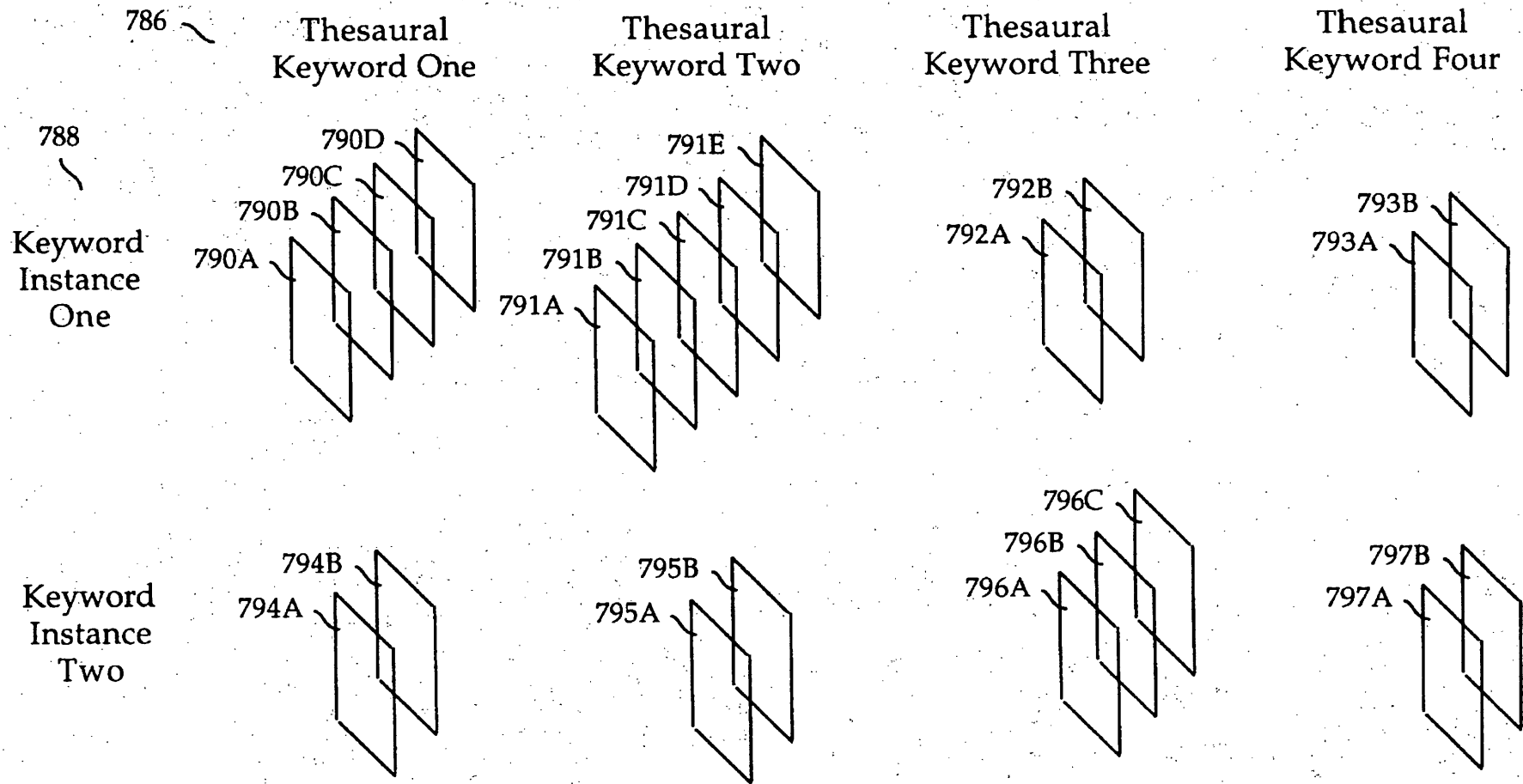


Figure 7C

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 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, 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 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, 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 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, 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 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. 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 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 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. 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 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. 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 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 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).

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).

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.

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 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 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 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.)

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.

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

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

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 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 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.

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

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 "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 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 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

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 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 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 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?"), 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 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 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 (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 an 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 sub-catalogue 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.

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 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 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. 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 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 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).

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.

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 788 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 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 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.

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 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 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 "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 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

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 inter-related 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-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 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.

Attributes

FIG. 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. 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 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.

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, 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 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 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 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; 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 of 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 manager is a cache manager.

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 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 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 cataloguing 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 cataloguing 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.

* * * * *

SERIAL NUMBER	FILING DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/184,796 /	11/02/98	707	2771	84300.911c

APPLICANT

SAMUEL GUSTMAN, SANTA MONICA, CA.

****CONTINUING DOMESTIC DATA*******

VERIFIED THIS APPLN IS A CON OF 08/677,539 07/10/96 PATENT 5,832,499
 DIV 07/07/96, 504 7/10/96 pending application,
 CON application 08/680,504 7/8/96 patent 5,832,495
SM

****371 (NAT'L STAGE) DATA*******

VERIFIED
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****FOREIGN APPLICATIONS*******

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FOREIGN FILING LICENSE GRANTED 11/17/98

***** SMALL ENTITY *****

Foreign Priority claimed 35 USC 119 (a-d) conditions met.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<input type="checkbox"/> Met after Allowance	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS
Verified and Acknowledged	<i>SM</i>		CA	9	1

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TITLE

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PATENT APPLICATION SERIAL NO. _____

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PATENT AND TRADEMARK OFFICE
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K. Ward
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11/06/1998 NGORDON 00000039 09184796

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UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>	Attorney Docket No.	84300.911C
	First Inventor or Application Identifier	GUSTMAN, Samuel
	Title	DIGITAL LIBRARY SYSTEM
	Express Mail Label No.	EL111266727US

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APPLICATION ELEMENTS <small>See MPEP chapter 600 concerning utility patent application contents.</small>	ADDRESS TO: Assistant Commissioner for Patents Box Patent Application Washington, DC 20231
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<p>1. <input checked="" type="checkbox"/> * Fee Transmittal Form (e.g., PTO/SB/17) <small>(Submit an original, and a duplicate for fee processing)</small></p> <p>2. <input checked="" type="checkbox"/> Specification <small>(Total Pages 58)</small> <small>(preferred arrangement set forth below)</small></p> <ul style="list-style-type: none"> - Descriptive title of the invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the invention - Brief Summary of the invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure <p>3. <input checked="" type="checkbox"/> Drawing(s) (35 U.S.C. 113) <small>(Total Sheets 9)</small></p> <p>4. Oath or Declaration <small>(Total Pages)</small></p> <p>a. <input type="checkbox"/> Newly executed (original or copy)</p> <p>b. <input checked="" type="checkbox"/> Copy from a prior application (37 C.F.R. § 1.63(d)) <small>(for continuation/divisional with Box 17 completed)</small> <small>[Note Box 5 below]</small></p> <p style="margin-left: 20px;"><input type="checkbox"/> DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).</p> <p>5. <input checked="" type="checkbox"/> Incorporation By Reference (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.</p>	<p>6. <input type="checkbox"/> Microfiche Computer Program (Appendix)</p> <p>7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)</p> <p>a. <input type="checkbox"/> Computer Readable Copy</p> <p>b. <input type="checkbox"/> Paper Copy (identical to computer copy)</p> <p>c. <input type="checkbox"/> Statement verifying identity of above copies</p>
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ACCOMPANYING APPLICATION PARTS	
8. <input checked="" type="checkbox"/> Copy of Assignment Papers (cover sheet & document(s))	
9. <input type="checkbox"/> 37 C.F.R. §3.73(b) Statement <input type="checkbox"/> Power of Attorney <small>(when there is an assignee)</small>	
10. <input type="checkbox"/> English Translation Document (if applicable)	
11. <input checked="" type="checkbox"/> Information Disclosure Statement (IDS/YPTO-1449) <input type="checkbox"/> Copies of IDS Citations	
12. <input checked="" type="checkbox"/> Preliminary Amendment	
13. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) <small>(Should be specifically itemized)</small>	
14. <input checked="" type="checkbox"/> Statement(s) <input checked="" type="checkbox"/> Statement filed in prior application, Status still proper and desired (PTO/SB/09-12)	
15. <input type="checkbox"/> Certified Copy of Priority Document(s) <small>(if foreign priority is claimed)</small>	
16. <input checked="" type="checkbox"/> Other: (1) Supplemental Util. Patent Appln. Trans., (2) EXPRESS MAIL Cert.	

* A new statement is required to be entitled to pay small entity fees, except where one has been filed in a prior application and is being relied upon.

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

Continuation Divisional Continuation-in-part (CIP) of prior application No: 08/677,539

Prior application information: Examiner D. Mizrahi Group / Art Unit: 2771

18. CORRESPONDENCE ADDRESS

Customer Number or Bar Code Label or Correspondence address below

(Insert Customer No. or Attach bar code label here)

Name	HECKER & HARRTMAN		
Address	1925 Century Park East Suite 2300		
City	Los Angeles	State	CA
Zip Code	90067		
Country	U.S.A.	Telephone	(310) 286-0377
Fax	(310) 286-0377		

Name (Print/Type)	J. P. Harrtman II	Registration No. (Attorney/Agent)	31,967
Signature		Date	11/2/98

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FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1. These are the fees effective October 1, 1997. Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12.

Complete if Known

Application Number		
Filing Date		
First Named Inventor		GUSTMAN, Samuel
Examiner Name		D. Mizrahi
Group / Art Unit		2771
Attorney Docket No.		84300.911C
TOTAL AMOUNT OF PAYMENT	(\$)	305.00

METHOD OF PAYMENT (check one)

1. The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number: _____
 Deposit Account Name: _____

Charge Any Additional Fee Required Under 37 CFR 1.18 and 1.17 Charge the Issue Fee Set in 37 CFR 1.18 at the Mailing of the Notice of Allowance

2. Payment Enclosed:
 Check Money Order Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101	201	Utility filing fee	\$ 305.00
106	206	Design filing fee	
107	207	Plant filing fee	
108	208	Reissue filing fee	
114	214	Provisional filing fee	
SUBTOTAL (1)			(\$) 305.00

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
1	0		
1	0		
Multiple Dependent			

**or number previously paid, if greater; For Reissues, see below

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
103	203	Claims in excess of 20	
102	202	Independent claims in excess of 3	
104	204	Multiple dependent claim, if not paid	
109	209	** Reissue independent claims over original patent	
110	210	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)			(\$) -0-

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105	205	Surcharge - late filing fee or oath	
127	227	Surcharge - late provisional filing fee or cover sheet	
139	239	Non-English specification	
147	247	For filing a request for reexamination	
112	212	Requesting publication of SIR prior to Examiner action	
113	213	Requesting publication of SIR after Examiner action	
115	215	Extension for reply within first month	
116	216	Extension for reply within second month	
117	217	Extension for reply within third month	
118	218	Extension for reply within fourth month	
128	228	Extension for reply within fifth month	
119	219	Notice of Appeal	
120	220	Filing a brief in support of an appeal	
121	221	Request for oral hearing	
138	238	Petition to institute a public use proceeding	
140	240	Petition to revive - unavoidable	
141	241	Petition to revive - unintentional	
142	242	Utility issue fee (or reissue)	
143	243	Design issue fee	
144	244	Plant issue fee	
122	222	Petitions to the Commissioner	
123	223	Petitions related to provisional applications	
128	228	Submission of Information Disclosure Stmt	
581	581	Recording each patent assignment per property (times number of properties)	
148	248	Filing a submission after final rejection (37 CFR 1.129(a))	
149	249	For each additional invention to be examined (37 CFR 1.129(b))	
Other fee (specify)			
Other fee (specify)			
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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

This application is a continuation of 08/677,539 7/10/96 PATENT 5,832,499,
Division of 09/076,504 7/10/96 pending application and
1. FIELD OF THE INVENTION continuation of 08/818,504 7/8/96 patent 5,832,495.

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

5 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
10 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
15 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
20 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 multimedia 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 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. 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, 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

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.

- 5 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.
- 10 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.

- 15 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
- 20 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

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.

5 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.

10 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
15 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
20 (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.

5 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
10 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.

15 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
20 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

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
5 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
10 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
15 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
20 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

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.

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).

5 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
10 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.

15 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
20 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
5 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.,
10 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).

15 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
20 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
5 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

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

5 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.

10 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.

15 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.

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
5 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
10 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
15 111 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
20 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
5 114 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
10 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
15 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.

20 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
5. 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. Figure 2
10 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
15 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
20 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, California. 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
5 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
10 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,
15 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
20 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

Cataloguing system 240 catalogues multimedia data input (e.g.,
5 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.

10 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
15 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
20 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. 05/680,504, filed on July 8, 1996 ^{now patent no. 5832495} and incorporated herein by reference.

Asset Management System

5 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 co-pending ^{and pending} U.S. Patent Application entitled "Method and Apparatus for Management of Multimedia Assets", Serial No. 09/076,504, filed on 15 July 10, 1996 and incorporated herein by reference.

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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 20 with another asset management system component.

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5 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.

10 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).

20 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
5 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

10 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.

15 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
20 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
5 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.)

10 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
15 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
20 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 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

5 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
10 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.

15 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
20 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?"), 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 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,
5 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
10 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
15 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
20 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 an 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

10 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
15 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
20 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,

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.

10 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 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.

5 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
10 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.

15 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.

20 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
5 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
10 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
15 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
20 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.

5 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
10 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.

15 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
20 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

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.

- 5 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.

- 10 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
15 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
20 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.

5 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
10 710 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.

15 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
20 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
5 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
10 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
15 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
20 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).

5 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 10 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 15 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 20 710 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
5 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
10 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
15 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.

20 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 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 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.

5 *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 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.

5 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.

10 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
15 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.

20 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-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".

- 5 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.
- 10 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.

- 15 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
- 20 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

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.

- 5 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
- 10 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
- 15 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
- 20 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

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

Thus, a digital library system has been provided.

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CLAIMS

1. A digital library system comprising:

a data capture system;

an access management system coupled to said data capture system;

5 a distribution system coupled to said access management system

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.

10 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;

15 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 claim 3 wherein said indexing server comprises:

20 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
5 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 manager is a
10 cache manager.

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

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

15 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.

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

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

13. A method of retrieving data in a digital library system comprising the steps of:

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:

5 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.

10 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:

15 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;

20 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 readable 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;

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.

ADD
A1

ADD B2

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ABSTRACT OF THE INVENTION

J.N. 09/184796

5 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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Ch B. Back

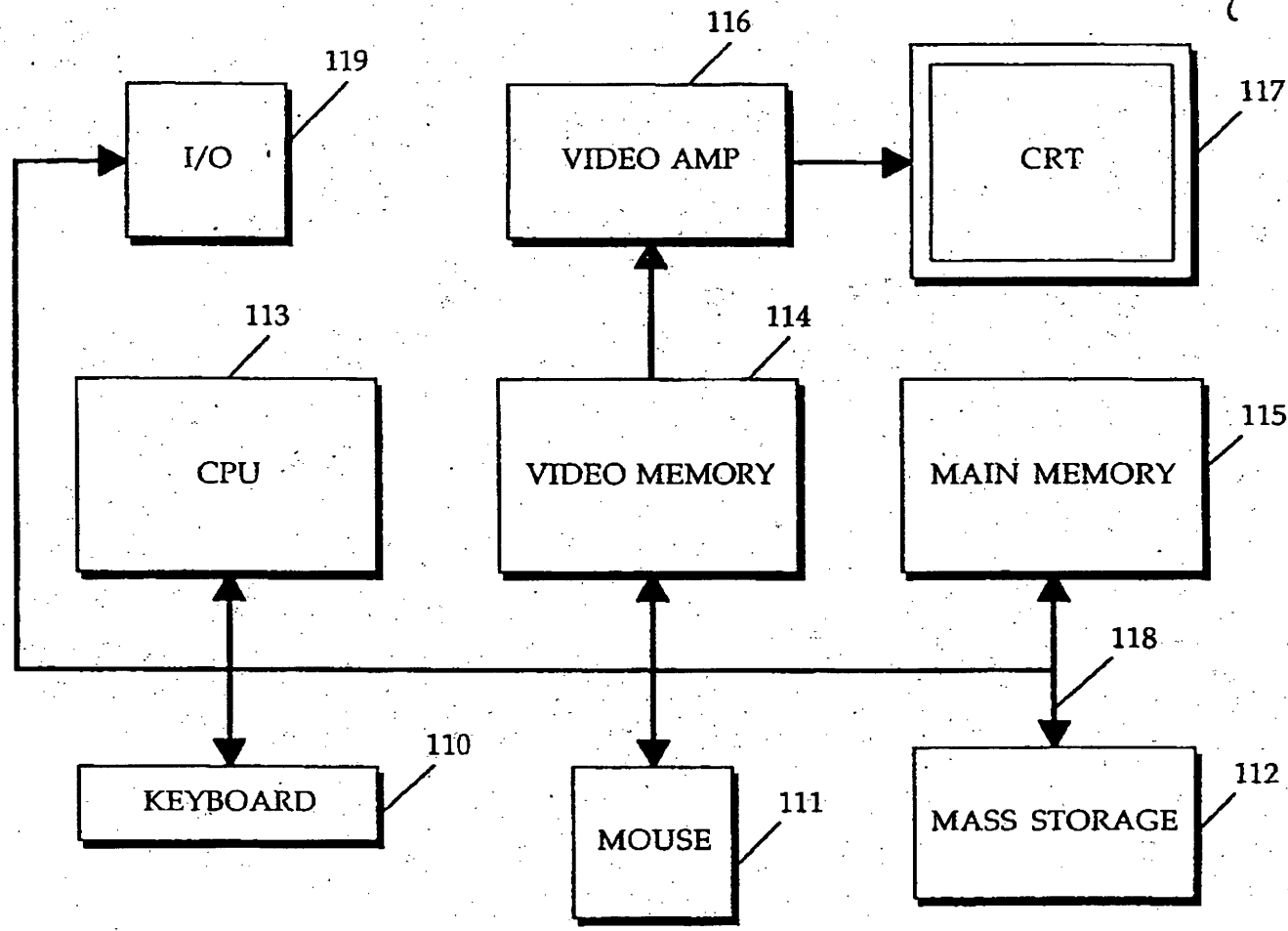


Figure 1

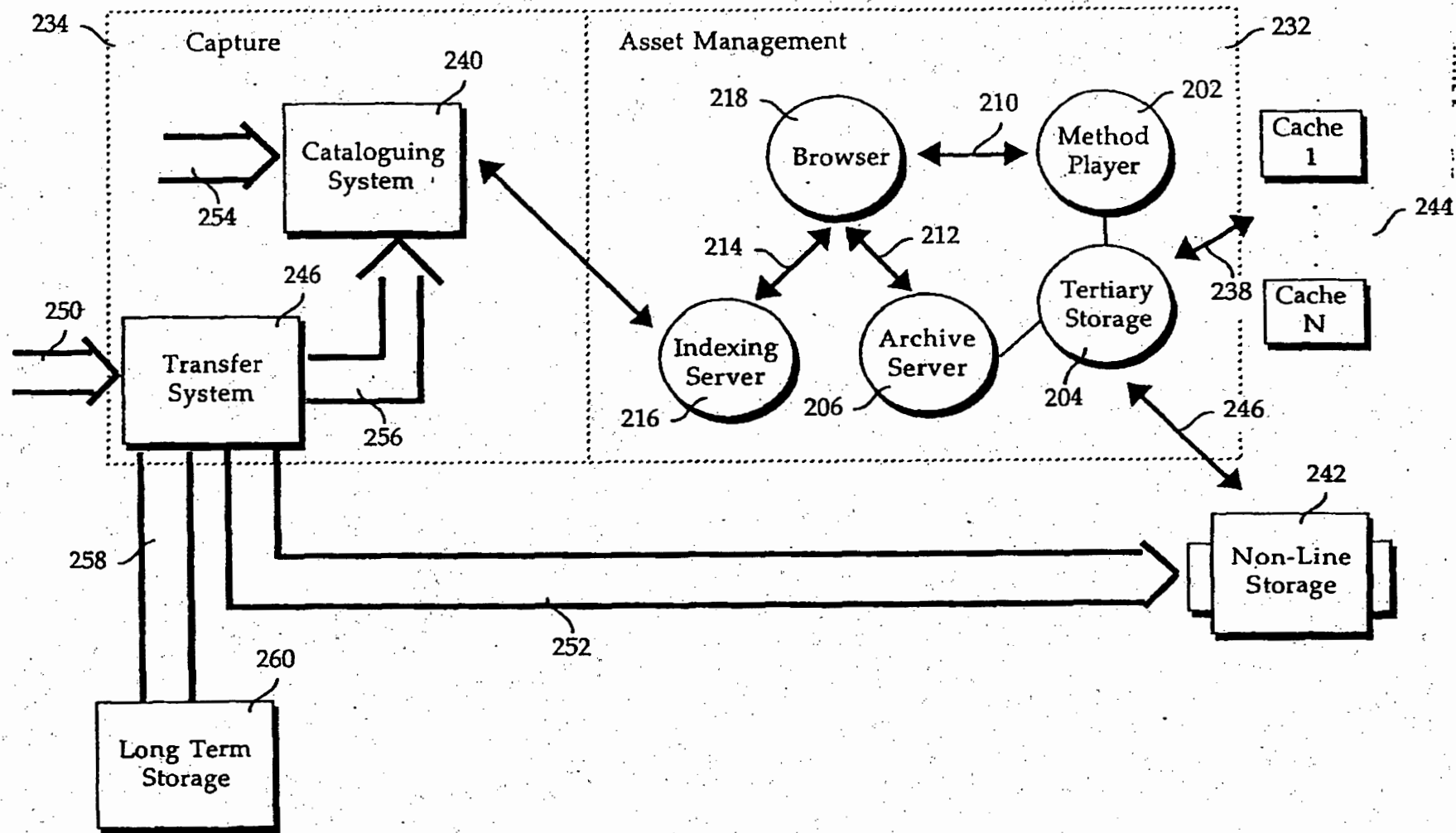


Figure 2

304

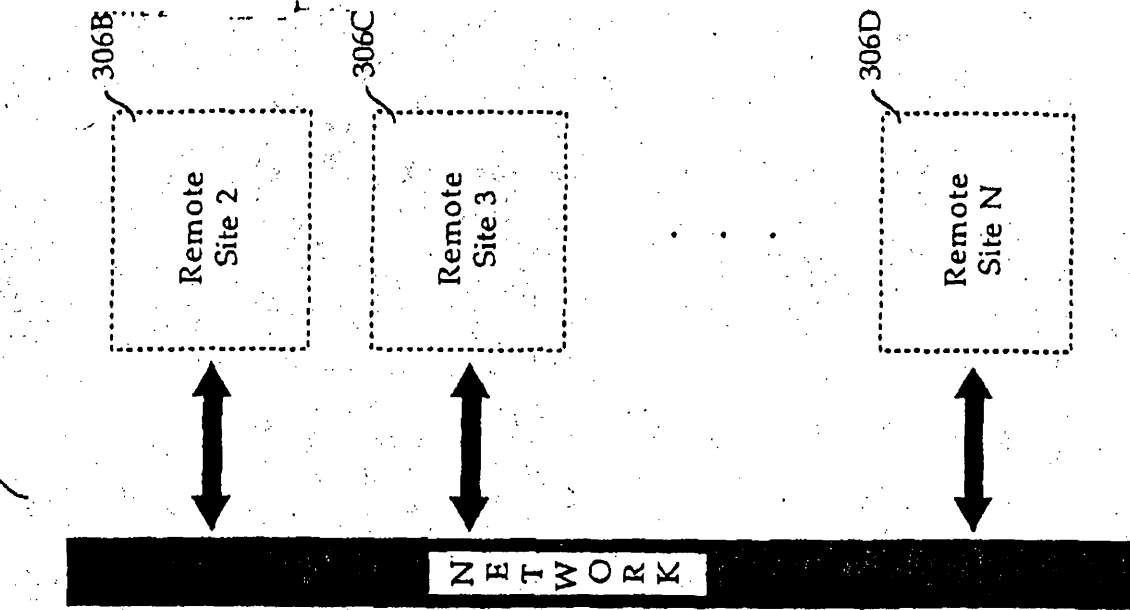
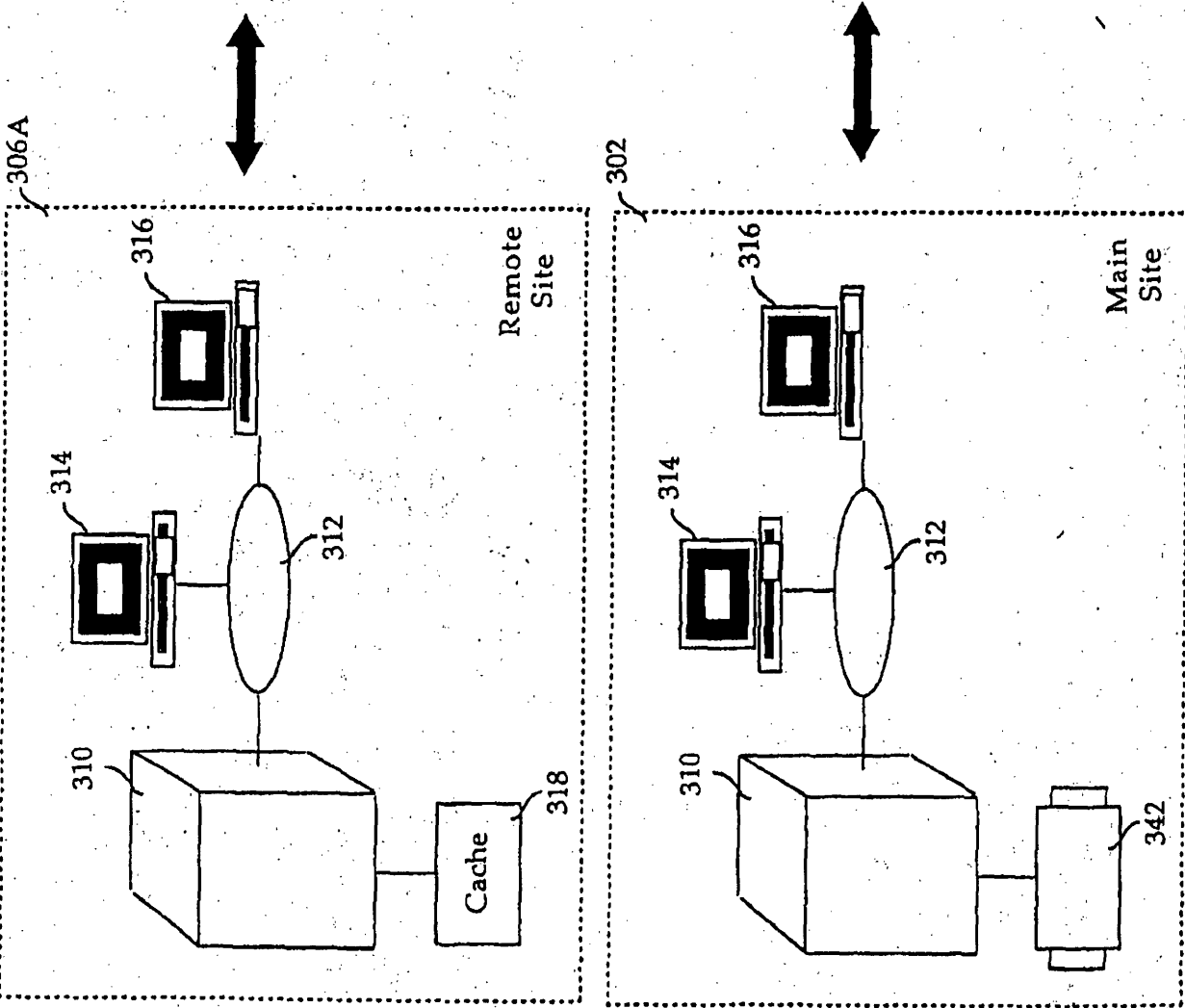


Figure 3

306A

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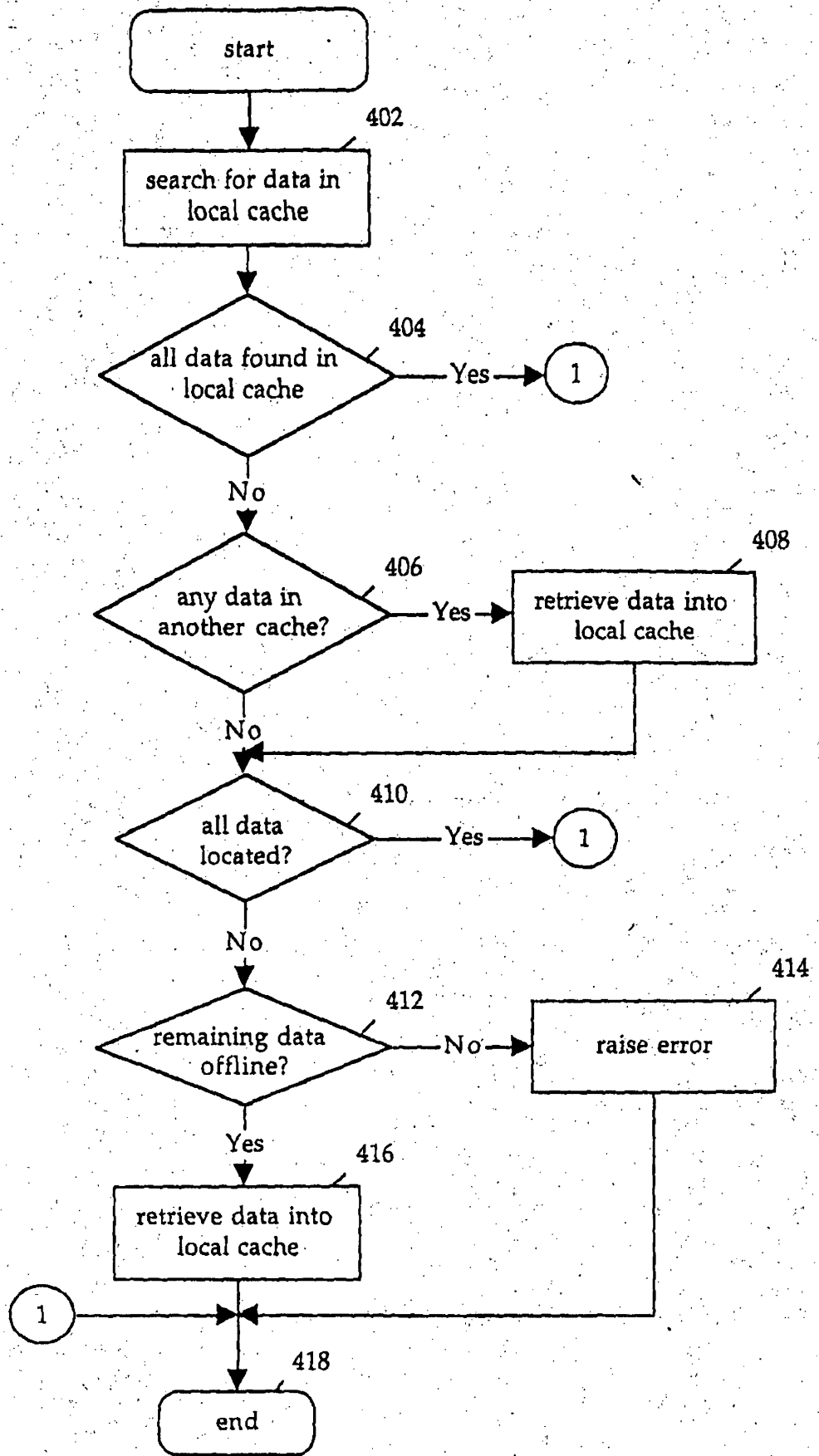


Figure 4

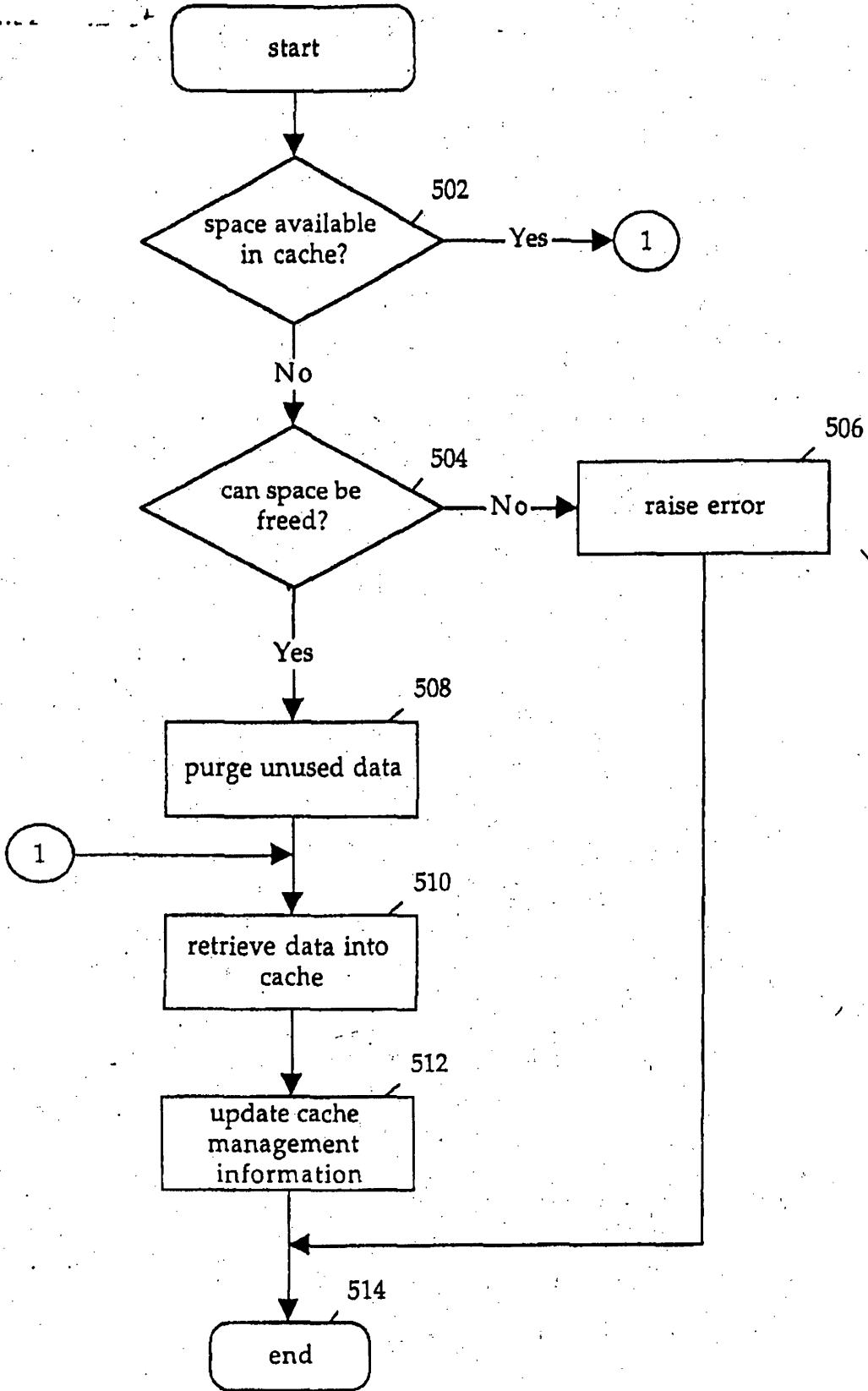


Figure 5

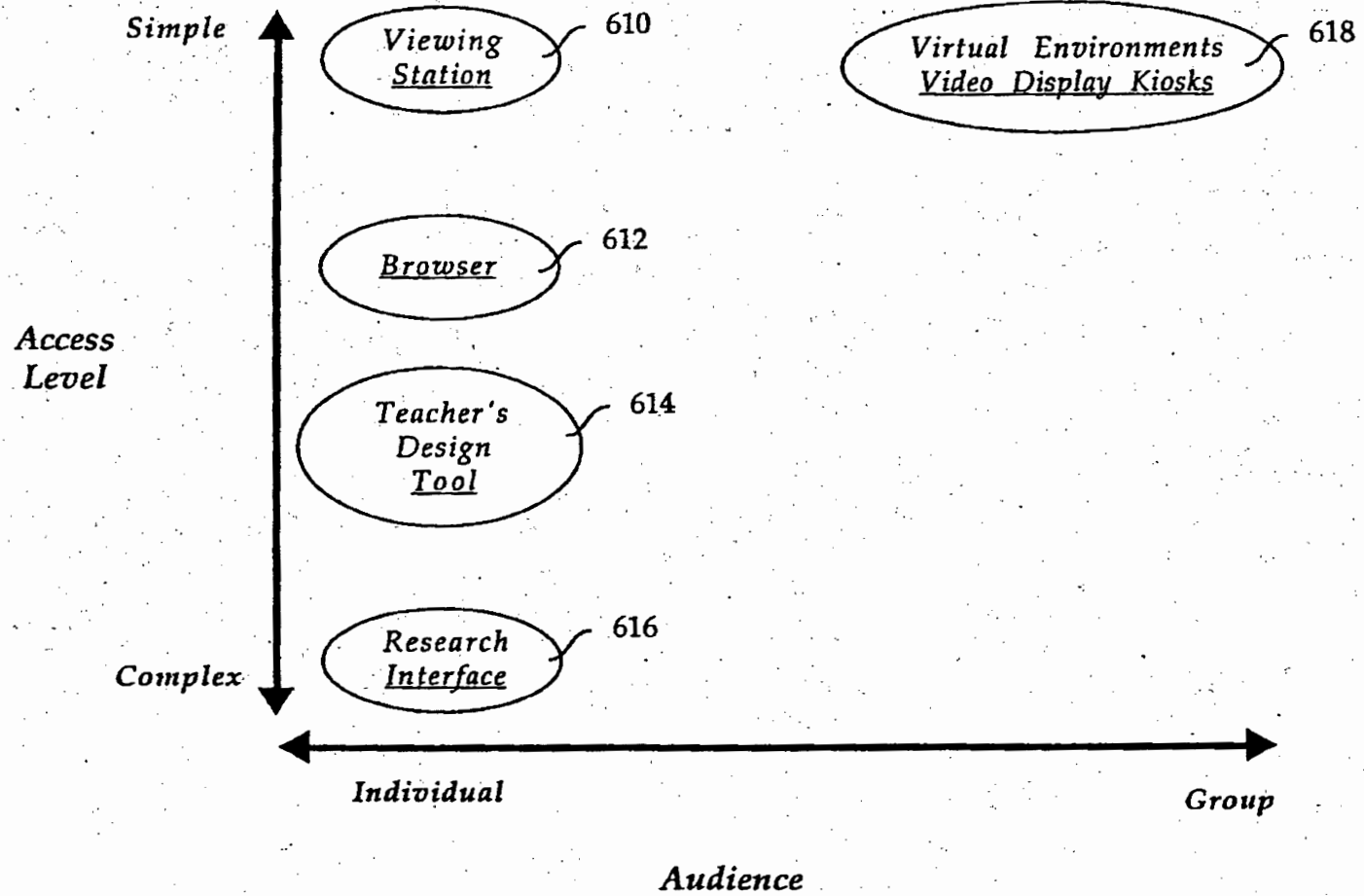


Figure 6

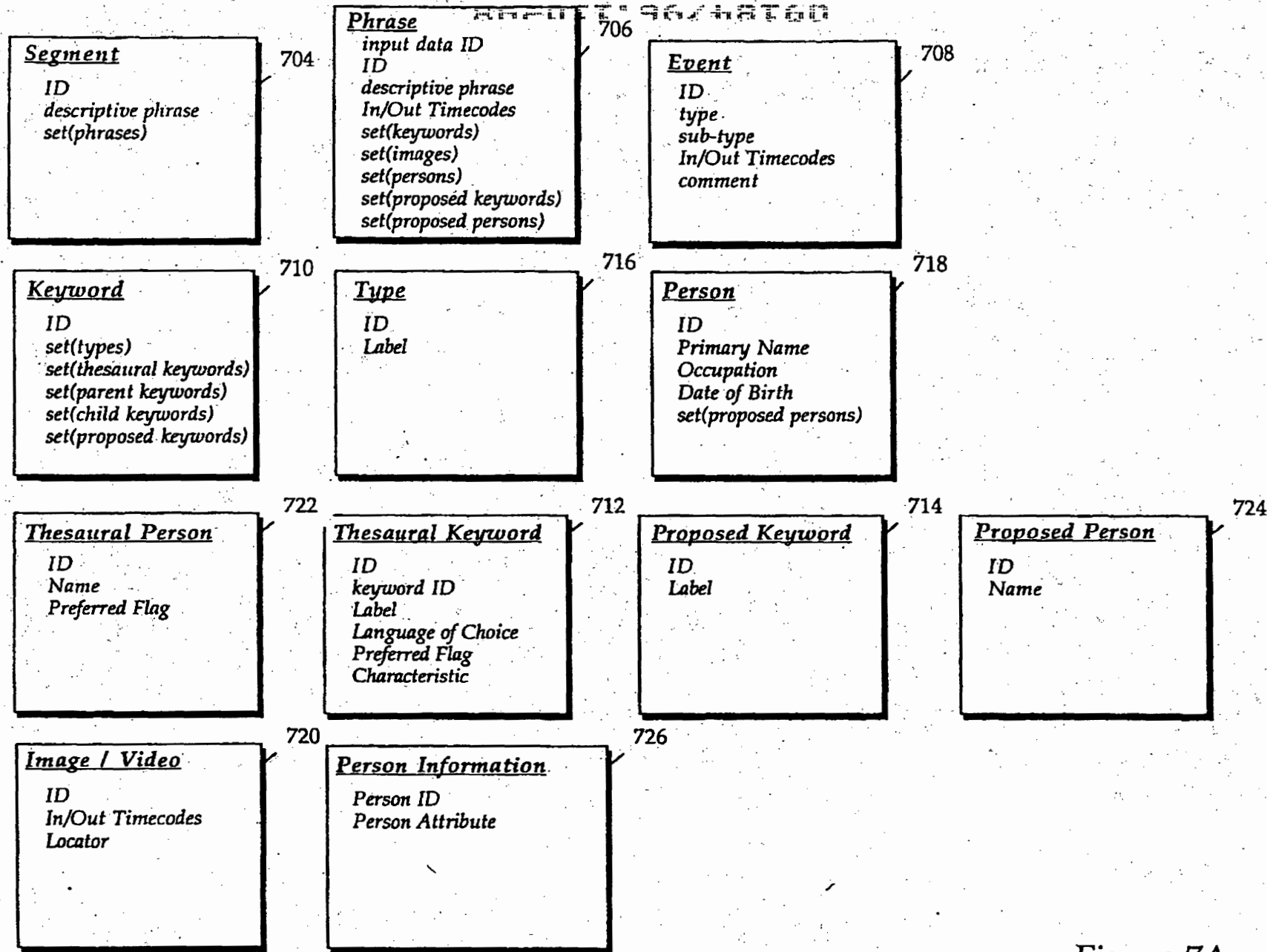


Figure 7A

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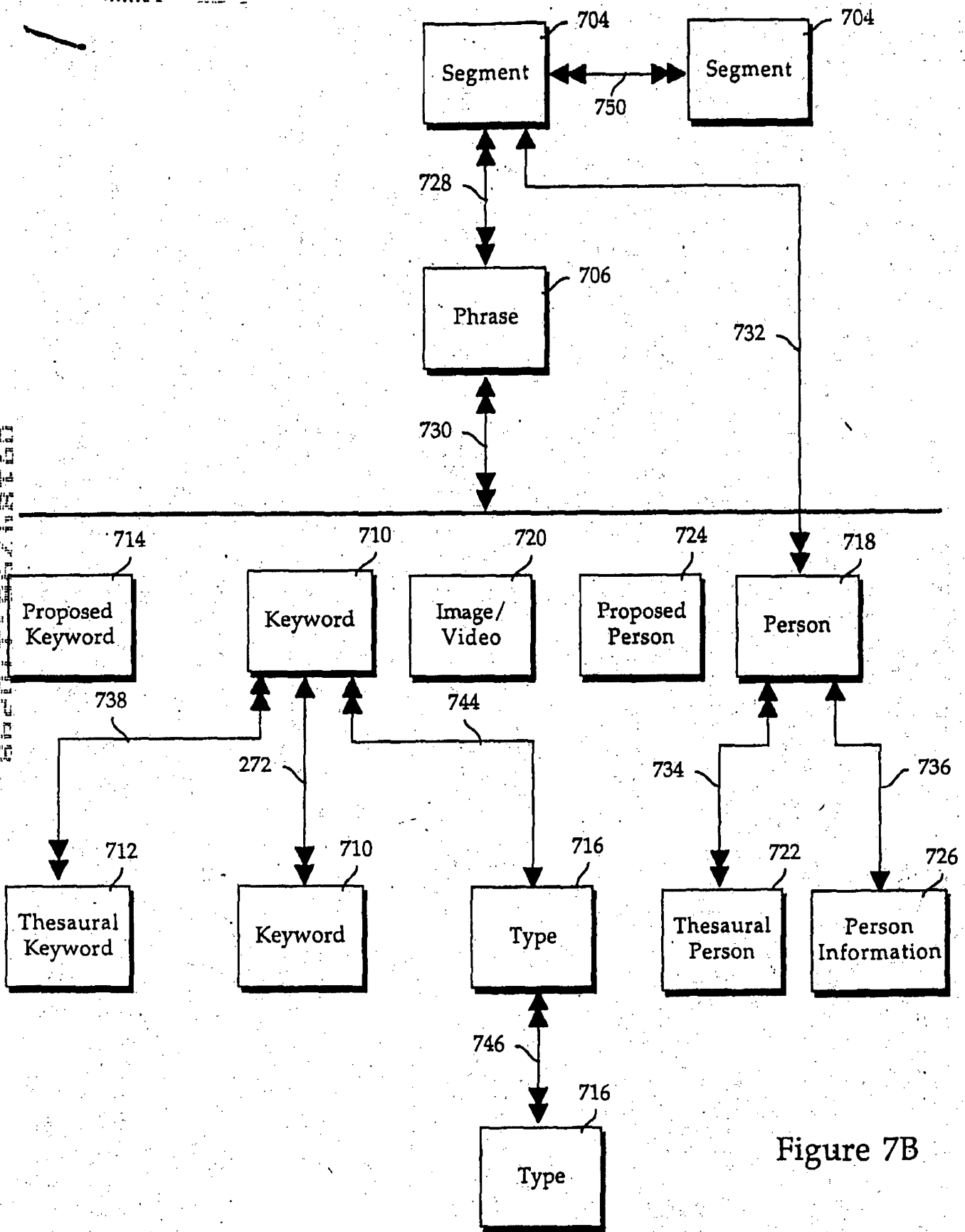
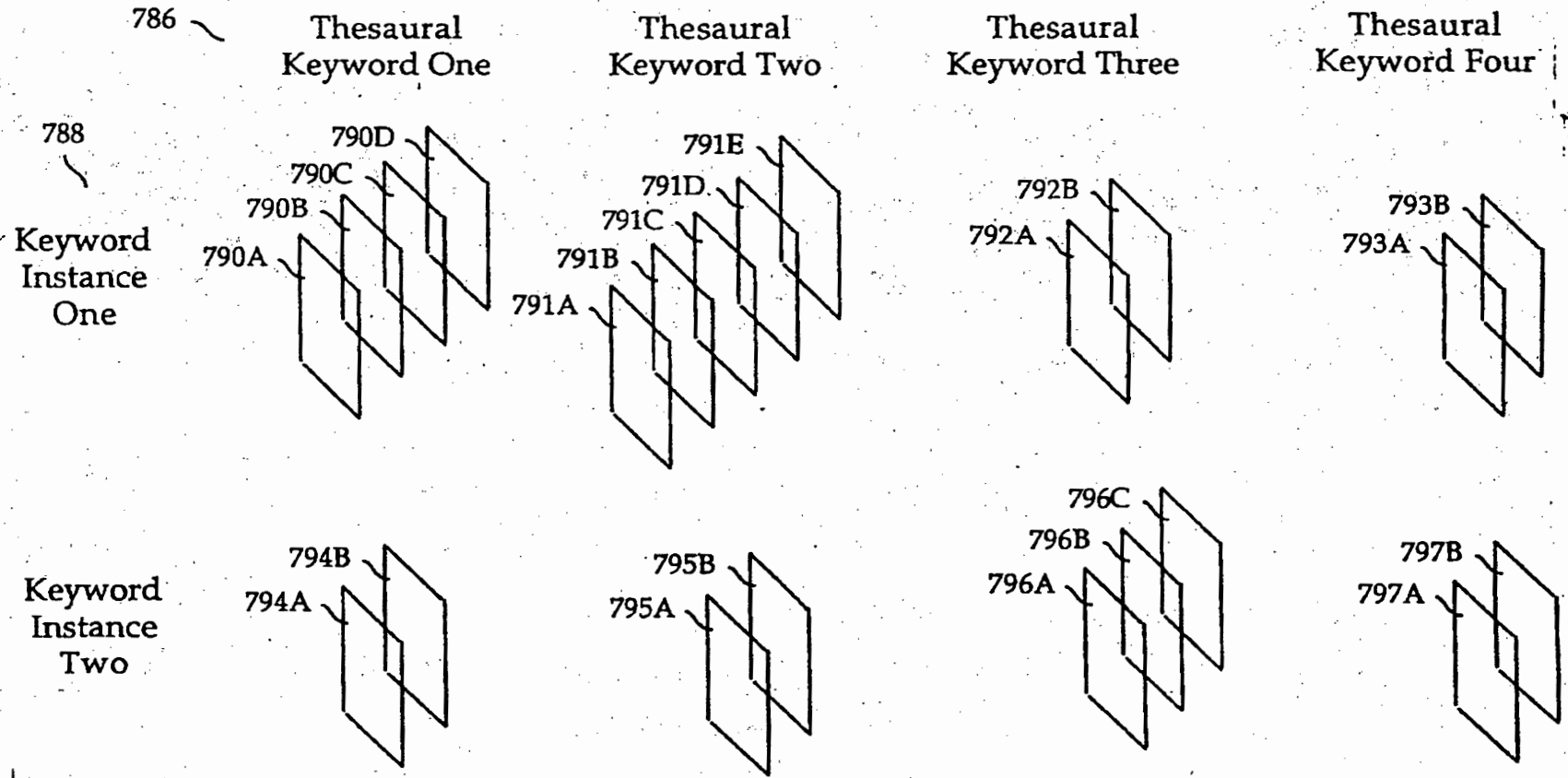


Figure 7B



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Figure 7C

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

XX is attached hereto.
was filed on July 10, 1996 as
Application Serial No. 08/677,539
and was amended on _____
(if applicable)

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.

I 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:

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

000001 56405100

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)
_____	_____	_____
(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 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 Signature: [Signature]

Date: 9/26/98

Residence: 1338 14th Street, #201

Citizenship: United States

Santa Monica, CA 90404 United States
(City, State) (Country)

Post Office Address: 1338 14th Street, #201

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 LOS ANGELES, CA 90067



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 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 FILING DATE: 07/10/1996
 PATENT NUMBER: ISSUE DATE:

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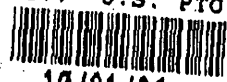
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(Rev. 6-93)

OMB No. 0851-0047 (Exp. 9/98)

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GUSTMAN, Samuel

10/21/96

Additional name(s) of conveying party(ies) attached? Yes No

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Los Angeles, California 90064-2524
 Street Address: 10345 W. Olympic Blvd., 2nd Floor
 City: Los Angeles State: CA Zip: 90064-2524
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3. Nature of conveyance:
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 Security Agreement Change of Name
 Other _____
 Execution Date: September 26, 1996

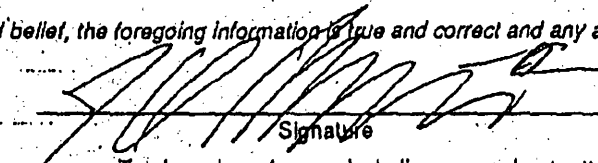
4. Application number(s) or patent number(s):
 If this document is being filed together with a new application, the execution date of the application is: _____
 A. Patent Application No.(s)
08677539
 B. Patent No.(s)

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 Internal Address: HECKER & HARRIMAN
 Street Address: 2029 Century Park East
Suite 1600
 City: Los Angeles State: CA Zip: 90067

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FOUNDATION

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are disclosed in the application for United States Letters Patent

which has been executed by the undersigned concurrently herewith,

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,
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Date: 9/26, 1996 Samuel Gust
Name: SAMUEL GUSTMAN

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the undersigned Notary Public, personally appeared SAMUEL GUSTMAN

personally known to me
 proved to me on the basis of satisfactory evidence

to be the person(s) whose name(s) IS subscribed to the within instrument, and acknowledged that, executed it.
HE

WITNESS my hand and official seal.

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IN AN APPLICATION**

(Use several sheets if necessary)

(Docket Number (Optional))
84300.911C

Application Number
09/184,796

Applicant
Samuel Gustman

Filing Date
11-02-98

Group Art Unit:
23062771

Sheet 1 of 1
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30540 U.S. PTO
09/184796
11/02/98

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
SR	3 5 9 3 3 0 9	07/13/71	Clark IV et al.	44	347	
DR	3 6 0 2 8 9 5	08/31/71	Loizides et al.	707	1	
DR	3 6 0 3 9 3 7	09/07/71	Loizides et al.	707	101	
DR	3 6 1 3 0 8 6	10/12/71	Loizides et al.	707	101	
DR	3 6 4 3 2 2 6	02/15/72	Loizides et al.	340	172.5	
DR	3 6 4 6 5 2 4	02/29/72	Clark IV et al.	340	172.5	
DM	3 6 5 1 4 8 3	03/21/72	Clark IV et al.	395	898	
DM	3 6 7 0 3 0 9	06/13/72	Amdahl et al.	711	129	
DR	3 7 0 1 9 7 2	10/31/72	Berkeley et al.	395	856	
DR	3 9 4 7 8 2 5	03/30/76	Cassada	707	3	

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Dr	4 3 1 0 8 8 3	01/12/82	Clifton et al.	707	205	
Dr	4 3 2 2 8 1 3	03/30/82	Howard et al.	364	178	
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Dr	4 8 1 9 1 5 6	04/04/89	Delorme et al.	395	182.13	
Dr	4 9 2 8 2 3 3	05/22/90	Millis	345	419	
Dr	4 9 4 5 4 2 8	07/31/90	Waldo	360	92	
Dr	4 9 8 7 5 3 3	01/22/91	Clark et al.	707	204	
Dr	5 0 7 7 6 5 8	12/31/91	Bendert et al.	707	1	
Dr	5 1 2 4 9 2 7	06/23/92	Hopewell et al.	364	468.28	

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Dr	5 1 5 1 9 8 9	09/29/92	Johnson et al.	707	10	
Dr	5 2 3 7 6 8 2	08/17/93	Bendert et al.	707	205	
Dr	5 2 8 7 4 5 9	02/15/94	Gniewek	369	34	
Dr	5 2 9 7 2 4 9	03/22/94	Bernstein et al.	345	356	
Dr	5 3 1 7 7 2 8	05/31/94	Tevis et al.	707	204	
Dr	5 3 1 7 7 2 9	05/31/94	Mukherjee et al.	707	204	
Dr	5 4 1 4 8 0 8	05/09/95	Williams	345	328	
Dr	5 3 9 4 3 8 2	02/28/95	Hu et al.	369	32	
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Dr	5 4 4 8 7 2 6	09/05/95	Cramsie et al.	707	103	
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Dr	5 6 6 4 2 2 7	09/02/97	Mauldin et al.	707	516	

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	Applicant GUSTMAN, Samuel	
	Filing Date 11-02-98	Group Art Unit 2771

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<i>Dr</i>	5	6	3	0	1	2	1	05/13/97	Braden-Harder et al.	707	102	
<i>Dr</i>	5	5	7	4	9	0	5	11/12/86	deCarmo	707	01	
<i>Dr</i>	5	4	1	4	6	4	4	05/09/95	Seaman et al.	364	551.01	

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					YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

<p>CERTIFICATE OF MAILING This is to certify that this correspondence is being deposited with the United States Postal Service with registered postage as Express Mail Label No. EL11266727US in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231 on:</p> <p style="text-align: center;"><u>November 3, 1998</u></p> <p style="text-align: center;">Signature: <u>[Signature]</u> Date: <u>11/03/98</u></p> <p style="text-align: center;">Mario Federis</p>	
EXAMINER	DATE CONSIDERED
<i>Diane Mervick</i>	<i>06-07-99</i>

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

#11/A
12/2/98
9-8-99

Attorney Docket No.: 84300.911C

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)

Examiner: D. Mizrahi

Group Art Unit: 2771

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.

09181796-110298

IN THE CLAIMS:

Please delete claims 1-18.

Please add the following new claim(s):

-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.--

Sub B1

00191795-110298

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

Date: 11/2/98

By: 

J. D. Harriman II
Reg. No. 31,967

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

CERTIFICATE OF MAILING

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November 2, 1998

Signature 

Date 11/02/98

Mario Federis

09184796:110298

APPLICANT OR PATENTEE: WORKS OF THE SHOAH VISUAL HISTORY FOUNDATION
OUR REF NO: 84300.911
SERIAL OR PATENT NO.: 08/677.539 FILED/ISSUE DATE: JULY 10, 1996
FOR: A DIGITAL LIBRARY SYSTEM

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
37 CFR 1.9(F) AND 1.27(C) - SMALL BUSINESS CONCERN**

I hereby declare that I am:

- the owner of the small business concern identified below:
 an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN: SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION
ADDRESS OF CONCERN: 10345 W. Olympic Blvd., 2nd Fl., Los Angeles, CA 90064-2524

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.

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:

A DIGITAL LIBRARY SYSTEM

by inventor(s): SAMUEL GUSTMAN described in

- The specification filed herewith.
 Application Serial No.: 08/677.539
 Patent No.: _____ Issued: _____

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: _____
ADDRESS: _____
 INDIVIDUAL SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

NAME: _____
ADDRESS: _____
 INDIVIDUAL SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

I acknowledge 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 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.

NAME OF PERSON SIGNING: Michael Rutman
TITLE OF PERSON OTHER THAN OWNER: Director/Secretary/CFO
ADDRESS OF PERSON SIGNING: 10345 W. Olympic Blvd., 2nd Fl., L.A., CA 90064-2524
SIGNATURE: [Signature] DATE: 9/21/96

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:

This is a request for filing a

- Continuation application
 Divisional application

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

Serial No. 08/677,539

filed: July 10, 1996

of: Samuel GUSTMAN

for: DIGITAL LIBRARY SYSTEM

1. Please enter the preliminary amendment, enclosed herewith.
2. Please cancel claims Claims 1-18.
3. Please amend the Specification by inserting after the title, the sentence:
-This is a continuation of application Serial No. 08/677,539, filed
July 10, 1996.-
4. The prior application is assigned to: SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION

00104705-11059

Docket No. 84300.911C

5. The Power of Attorney in the prior application is to:

HECKER & HARRIMAN

(a) The Power appears in the original papers of the prior application.

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

(c) 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

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

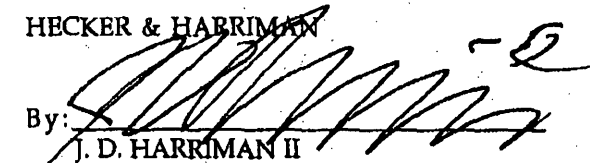
7. Applicant hereby petitions for an extension of time of _____ pursuant to Rule 1.136, if one is needed, for the above-noted prior application. A duplicate copy of this sheet is enclosed for filing in the proper application file.

8. 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,

HECKER & HARRIMAN

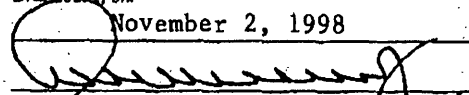
Date: 11/2/98

By: 
J. D. HARRIMAN II
Reg. No. 31,967
 Inventor(s)
 Assignee of Complete Interest
 Attorney of Record in prior application.

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

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. EL11126672US) in an envelope addressed to: Assistant Commissioner for Patents, BOX PATENT APPLICATION, Washington, D.C. 20231, on:

November 2, 1998


Signature: Mario Federia Date: 11/02/98

00184796-110398

Transaction History Date 1998-11-24
 Date information retrieved from USPTO Patent
 Application Information Retrieval (PAIR)
 system records at www.uspto.gov

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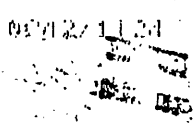


UNITED STATES DEPARTMENT OF COMMERCE
 Patent and Trademark Office
 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
--------------------	---------------------	-----------------------	---------------------------

0071271138 11/24/98 GUEZMAN MINDGEEK 1005

GARY G. HICKER
 HICKER & HICKER
 2000 CLEVELAND PARK EAST
 SUITE 5000
 LOS ANGELES, CA 90027



NOT RECEIVED

DATE MAILED: 11/24/98

**NOTICE TO FILE MISSING PARTS OF APPLICATION,
 Filing Date Granted**

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of \$85.00 for a small entity in compliance with 37 CFR 1.27, or \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form are filed within the period set above, the total amount owed by applicant as a small entity (statement filed) non-small entity is \$ 11.00

- 1. The statutory basic filing fee is:
 - missing.
 - insufficient.
 Applicant must submit \$ 11.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).
- 2. Additional claim fees of \$ _____, including any multiple dependent claim fees, are required.
 - \$ _____ for _____ independent claims over 3.
 - \$ _____ for _____ dependent claims over 20.
 - \$ _____ for multiple dependent claim surcharge.
 Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.
- 3. The oath or declaration:
 - is missing or unexecuted.
 - does not cover the newly submitted items.
 - does not identify the application to which it applies.
 - does not include the city and state or foreign country of applicant's residence.
 An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date is required.
- 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.
 A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.
- 6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).
- 7. Your filing receipt was mailed in error because your check was returned without payment.
- 8. The application does not comply with the Sequence Rules.
 See attached "Notice to Comply with Sequence Rules 37 CFR 1.821-1.825."
- 9. OTHER: _____

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
 Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY

FORM PTO-1533 (REV.9-97)

SECTOR #

Attorney 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:

Group Art Unit: 2771

RESPONSE TO NOTICE TO FILE MISSING PARTS

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

Sir:

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

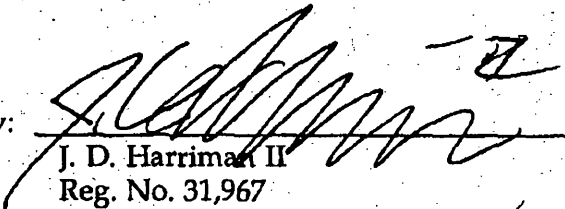
1. A check in the total amount of \$155.00, as payment for deficiency in the basic filing fee (\$90.00), and surcharge fee (\$65.00) set forth in 37 C. F. R. § 1.16(e), all fees being paid under a Small Entity Status;
2. A copy of Missing Parts Notice;
3. Certificate of Mailing by EXPRESS MAIL, and
4. A return receipt postcard.

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.

Respectfully submitted,

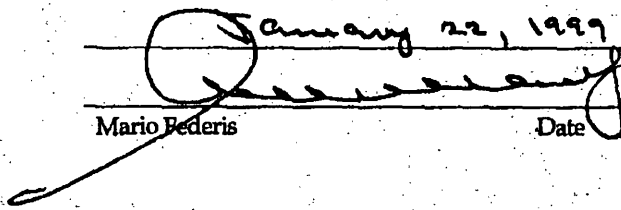
Date: 1/22/99

By: 
J. 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 :

January 22, 1999

Mario Pederis Date 01/24/99



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
09/184,796	11/02/98	GUSTMAN	S 84300.911C

0242/1124

GARY A HECKER

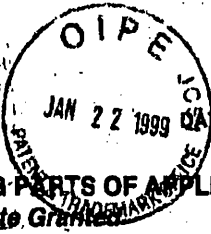
NOT ASSIGNED

HECKER & HARRIMAN

2029 CENTUR...

SUIT...

LOU ANNE...



2771

11/24/98

NOTICE TO FILE MISSING PARTS OF APPLICATION

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of \$65.00 for a small entity in compliance with 37 CFR 1.27, or \$130.00 for a non-small entity; must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form are filed within the period set above, the total amount owed by applicant as a small entity (statement filed) non-small entity is \$ 155.00.

1. The statutory basic filing fee is:

missing.

insufficient.

Applicant must submit \$ 90.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

2. Additional claim fees of \$ _____, including any multiple dependent claim fees, are required.

\$ _____ for _____ independent claims over 3.

\$ _____ for _____ dependent claims over 20.

\$ _____ for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

3. The oath or declaration:

is missing or unexecuted.

does not cover the newly submitted items.

does not identify the application to which it applies.

does not include the city and state or foreign country of applicant's residence.

An oath or declaration, in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date, is required.

4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

7. Your filing receipt was mailed in error because your check was returned without payment.

8. The application does not comply with the Sequence Rules.

See attached "Notice to Comply with Sequence Rules 37 CFR 1.821-1.825."

9. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE

01728/1999-RITSEBRYE 00000059 09184796

65-00 00
90-00 00

01 FC-205
02 FC-201



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/184,796	11/02/98	GUSTMAN	S 84300.911C

GARY A HECKER
HECKER & HARRIMAN
2029 CENTURY PARK EAST
SUITE 1600
LOS ANGELES CA 90067

LM01/0616

EXAMINER

MITRAHI, D.

ART UNIT	PAPER NUMBER
----------	--------------


DATE MAILED: 06/16/99

06/16/99

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

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/184,796	Applicant Samuel GUSTMAN	
Examiner Diane Mizrahi	Group Art Unit 2771	

- Responsive to communication(s) filed 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 accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.
- A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- Claim(s) 19 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- Claim(s) _____ is/are allowed.
- Claim(s) 19 is/are rejected.
- Claim(s) _____ is/are objected to.
- Claims _____ are subject to restriction or election requirement.

Application Papers

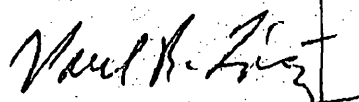
- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- The drawing(s) filed on Nov 2, 1998 is/are objected to by the Examiner.
- The proposed drawing correction, filed on _____ is approved disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - All Some* None of the CERTIFIED copies of the priority documents have been
 - received.
 - received in Application No. (Series Code/Serial Number) _____.
 - received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- *Certified copies not received: _____
- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). 11-2-98 (dated)
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152


Paul R. Lintz
Primary Examiner

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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.

3. Claim 19 is rejected under 35 U.S.C. 102(e) as being anticipated by Grasso et al. (5,892,909 and Grasso hereinafter).
4. Regarding Claim 19, Grasso teaches a digital library system (col 8, lines 7-33); a cataloging system of multimedia data (col 2, lines 34-53); cataloging 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).

Prior Art Made of Record

6.

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

Application/Control Number: 09/184,796

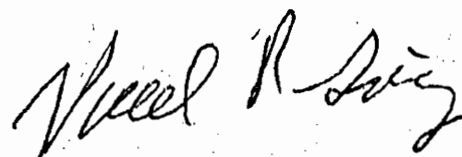
Page 4

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


Paul R. Lintz
Primary Examiner

Notice of References Cited

Application No. 09/184,796	Applicant Samuel GUSTMAN
Examiner Diane Mizrahi	Group Art Unit 2771
Page 1 of 1	

U.S. PATENT DOCUMENTS

	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
A	5,689,648 ✓	11-18-97	Diaz	707	26
B	5,907,837 ✓	5-25-99	Ferrel	707	3
C	5,832,495 ✓	11-3-98	Gustman	707	102
D	5,638,443 ✓	6-10-97	Stefik	705	44
E	5,893,095 ✓	4-6-99	Jain	707	6
F	5,892,909 ✓	4-6-99	Grasso	385	200.31
G					
H					
I					
J					
K					
L					
M					

FOREIGN PATENT DOCUMENTS

	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
N						
O						
P						
Q						
R						
S						
T						

NON-PATENT DOCUMENTS

	DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
U	Ramaiah, CK, Multimedia systems in libraries and their applications, Defence Scientific Information and Documentation, vol. 18, issue 6, pp 25-40/	11-98
V	The Gale Group, IBM Digital Library Unveils Products, Partners, Plans, Newsbytes, pp. 1-5.	7-97
W		
X		

**NOTICE OF DRAFTSPERSON'S
PATENT DRAWING REVIEW**

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

- A. approved by the Draftsperson under 37 CFR 1.84 or 1.152.
- B. 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 submitted according to the instructions on the back of this notice.

<p>1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink. Color. ___ Color drawings are not acceptable until petition is granted. Fig(s) _____ Pencil and non black ink not permitted. Fig(s) _____</p> <p>2. PHOTOGRAPHS. 37 CFR 1.84 (b) ___ 1 full-tone set is required. Fig(s) _____ ___ Photographs not properly mounted (must use bryistol board or photographic double-weight paper). Fig(s) _____ ___ Poor quality (half-tone). Fig(s) _____</p> <p>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) _____</p> <p>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) _____</p> <p>5. MARGINS. 37 CFR 1.84(g): Acceptable margins: Top 2.5 cm Left 2.5cm 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 Margins not acceptable. Fig(s) <u>2, 3-5, 7A-7C</u> <input checked="" type="checkbox"/> Top (T) <input checked="" type="checkbox"/> Left (L) <input type="checkbox"/> Right (R) <input type="checkbox"/> Bottom (B)</p> <p>6. VIEWS. 37 CFR 1.84(h) REMINDER: Specification may require revision to correspond to drawing changes. 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 separately or properly. Fig(s) _____</p> <p>7. SECTIONAL VIEWS. 37 CFR 1.84 (h)(3) ___ Hatching not indicated for sectional portions of an object. Fig(s) _____ ___ Sectional designation should be noted with Arabic or Roman numbers. Fig(s) _____</p>	<p>8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i) ___ 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. Fig(s) _____</p> <p>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) _____</p> <p>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). Fig(s) _____</p> <p>11. SHADING. 37 CFR 1.84(m) ___ Solid black areas pale. Fig(s) _____ ___ Solid black shading not permitted. Fig(s) _____ ___ Shade lines, pale, rough and blurred. Fig(s) _____</p> <p>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) Figs _____ ___ Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Fig(s) _____</p> <p>13. LEAD LINES. 37 CFR 1.84(q) ___ Lead lines cross each other. Fig(s) _____ ___ Lead lines missing. Fig(s) _____</p> <p>14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t) ___ Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Sheet(s) _____</p> <p>15. NUMBERING OF VIEWS. 37 CFR 1.84(u) ___ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) _____</p> <p>16. CORRECTIONS. 37 CFR 1.84(w) ___ Corrections not made from prior PTO-948 dated _____</p> <p>17. DESIGN DRAWINGS. 37 CFR 1.152 ___ Surface shading shown not appropriate. Fig(s) _____ ___ Solid black shading not used for color contrast. Fig(s) _____</p>
<p>COMMENTS</p>	

REVIEWER LAM DATE 02/22/99 TELEPHONE NO. (703) 508-0366

ATTACHMENT TO PAPER NO. 5



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

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

CHANGE OF ADDRESS/POWER OF ATTORNEY

JEH
8/23/99

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.

#8/640
ME
12-4-99

Case/Docket No. 84300.911C

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.

The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)	(Col. 3)	SMALL ENTITY		OTHER THAN A SMALL ENTITY	
	Claims Remaining After Amd.		Highest No. Previously Paid For	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee
Total Claims	* 16	Minus	** 20	0	X 9	\$0	X 18	\$0
Indep. Claims	* 2	Minus	*** 3	0	X 39	\$0	X 78	\$0
<input type="checkbox"/> First Presentation of Multiple Dependent Claims					+ 130	\$0	+ 260	\$0
					Total Add'l Fee	\$0	Total Add'l Fee	\$0

RECEIVED
 NOV 29 1999
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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 of claims 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 TWO months, pursuant to Rule 1.136(a).
- 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 \$ is attached for presentation of additional claim(s).

1/24/1999 MBERHE 00000033 09184796
H FC:216 190.00 DP

Respectfully submitted,
HECKER & HARRIMAN

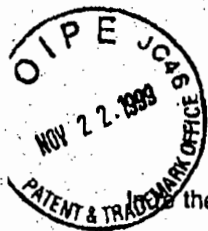
Date: November 16, 1999

J.D. Harriman II
Reg. No. 31,967

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

CERTIFICATE OF MAILING
 This is to certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on: November 16, 1999.

Signature: Lilian E. Rodriguez Date: 11-16-99



Case 2776 ✓

Case/Docket No. 84300.911C

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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.

The fee has been calculated as shown below:

	(Col. 1)		(Col. 2)		(Col. 3)		SMALL ENTITY		OTHER THAN A SMALL ENTITY	
	Claims Remaining After Amd	Minus	Highest No. Previously Paid For	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee		
Total Claims	* 16	Minus	** 20	0	X 9	\$0	X 18	\$0		
Indep. Claims	* 2	Minus	*** 3	0	X 39	\$0	X 78	\$0		
<input type="checkbox"/> First Presentation of Multiple Dependent Claims					+ 130	\$0	+ 260	\$0		
Total Add'l Fee						\$0	Total Add'l Fee	\$0		

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 of claims 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 TWO months, pursuant to Rule 1.136(a).
- 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 \$ is attached for presentation of additional claim(s).

Respectfully submitted,

HECKER & HARRIMAN

[Handwritten Signature]
J.D. Harriman II
Reg. No. 31,967

Date: November 16, 1999

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

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[Handwritten Signature]
Signature: Lilian E. Rodriguez
Date: 11-16-99



#9/B
MF
12499

84300.911C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of)	
SAMUEL GUSTMAN)	Examiner: DIANE MIZRAHI
Serial No. 09/184,796)	Group Art Unit: 2771
Filed: November 2, 1998)	
For: DIGITAL LIBRARY SYSTEM)	

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NOV 29 1999
TESH CENTER 2700

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.

AMENDMENTS

IN THE CLAIMS

Please add claims 20-34.

Please amend claim 19 as provided.

B1
19. (ONCE AMENDED) 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; and
a distribution system coupled to said access management system.

PLEASE ADD CLAIMS

B2
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. --

³
-21. The system of claim ²20 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
-22. The system of claim ³21 wherein said text interface contains
operations for querying said plurality of catalogue elements and said plurality
of attributes and attribute elements. --

⁵
-23. The system of claim ²20 further comprising a tertiary storage
manager coupled to said archive server. --

⁶
-24. The system of claim ⁵23 wherein said tertiary storage manager is a
cache manager. --

⁷
-25. The system of claim ¹19 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. --

⁸ ⁷
- 26. The system of claim 25 wherein said plurality of remote sites further comprise an instance of said asset management system. --

⁹ ⁷
- 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. --

¹¹ ⁷
- 29. The system of claim 25 wherein said temporary storage is a named cache. --

¹⁴
- 30. 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, 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
-- ~~31~~. The digital library system of claim ~~30~~¹⁴ wherein said cataloguing system is configured to perform the step of:

receiving textual information as input. --

 -- ~~32~~¹⁴. The digital library of claim ~~30~~¹⁴ further comprising a transfer system configured to convert said multimedia data from analog format to digital format. --

-- ~~33~~¹². The digital library of claim ~~25~~⁷ wherein said plurality of remote sites are connected over a wide area network. --

-- ~~34~~¹³. The digital library of claim ~~33~~¹² wherein said wide area network is the internet. --

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 Grasso. Applicant contends that claim 19 is not anticipated by Grasso because Grasso 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 Grasso. As such, Grasso is not prior art under 35 U.S.C. § 102(e).

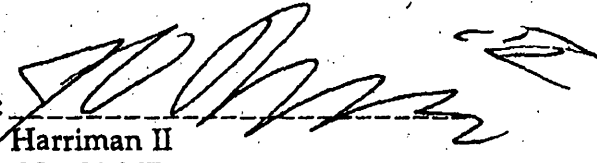
CONCLUSION

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.

Respectfully submitted,

HECKER & HARRIMAN

Date: 11/16/99

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

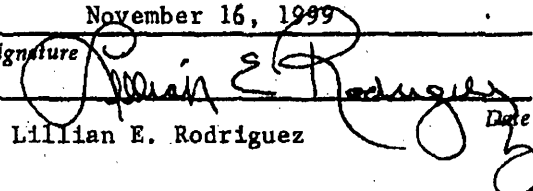
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Suite 2300
Los Angeles, California 90067
(310) 286-0377

CERTIFICATE OF MAILING

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November 16, 1999

Signature


Lillian E. Rodriguez

Date

11-15-99

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**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/184,796	11/02/98	GUSTMAN	8 84300.9110

022804
HECKER & HARRINAN
SUITE 2300
1925 CENTURY PARK EAST
LOS ANGELES CA 90067

LM41/1216

EXAMINER

MIZRAHI, P

ART UNIT	PAPER NUMBER
2771	10

DATE MAILED: 12/16/99

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

Commissioner of Patents and Trademarks

Notice of Allowability

Application No. 09/184,796	Applicant(s) Samuel GUSTMAN
Examiner Diane Mizrahi	Group Art Unit 2771

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

- This communication is responsive to 11-22-99
- The allowed claim(s) is/are 19-34; 1-18 are canceled; renumbered 1-16
- The drawings filed on _____ are acceptable.
- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - All Some* None of the CERTIFIED copies of the priority documents have been
 - received.
 - received in Application No. (Series Code/Serial Number) _____
 - received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - *Certified copies not received: _____
- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

- Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
- Applicant MUST submit NEW FORMAL DRAWINGS
 - because the originally filed drawings were declared by applicant to be informal.
 - including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 5.
 - including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.
 - including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

- Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s) _____
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152
- Interview Summary, PTO-413
- Examiner's Amendment/Comment
- Examiner's Comment Regarding Requirement for Deposit of Biological Material
- Examiner's Statement of Reasons for Allowance

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

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, formal drawings 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.

Application/Control Number: 09/184,796

Page 3

Art Unit: 2771

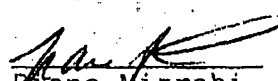
5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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 CFR 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.


Diane Mizrahi
Patent Examiner

December 13, 1999


THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 2700



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

022804
HECKER & HARTMAN
SUITE 2000
1925 CENTURY PARK EAST
LOS ANGELES CA 90067

LM41/1216

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/184,796	11/02/98	016	MIZRAHI, D.	2771 12/16/99
First Named Applicant	GUSTMAN,		35 USC 154(b) term ext. =	0 Days.

TITLE OF INVENTION DIGITAL LIBRARY SYSTEM

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	84300.9110	707-103.000	F72 UTILITY	YES	\$605.00	03/16/00

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 THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

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:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY

PART B—ISSUE FEE TRANSMITTAL

Complete and mail this form, together with a...

Stamp: MAR 16 2000

Box ISSUE FEE
Assistant Commissioner for Patents
Washington, D.C. 20231

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate.

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee Transmittal.

Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for the return mail in an envelope addressed to the Box Issue Fee address above on the date indicated below, w/label No. EL551405391US

Mario Federis (Depositor's name)

(Date)

(Signature)

March 16, 2000

(Date)

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)
1020004
UPENET & HOWEIMAN
SUIITE 3000
1725 CENTURY PARK EAST
LOS ANGELES CA 90067

Table with columns: APPLICATION NO., FILING DATE, TOTAL CLAIMS, EXAMINER AND GROUP ART UNIT, DATE MAILED. Includes applicant name GUSIMAN and fee details.

TITLE OF INVENTION: DIGITAL LIBRARY SYSTEM
05/31/2000 MODEL 0000006 09184796
01 FC:242 600.00 UP
02 FC:561 30.00 UJ

Table with columns: ATTY'S DOCKET NO., CLASS-SUBCLASS, BATCH NO., APPLN. TYPE, SMALL ENTITY, FEE DUE, DATE DUE.

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.
2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type) PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent.
4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):
4b. The following fees or deficiency in these fees should be charged to:

The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the issue Fee to the application identified above.
(Authorized Signature) Gary A. Hecker, Esq. (Date) 03/15/2000

NOTE: The Issue Fee will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.
Burden Hour Statement: This form is estimated to take 0.2 hours to complete.
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE

03-20-00

B



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,
THE HECKER LAW GROUP

Date: March 16, 2000

By:
Gary A. 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

Mario Federis Date 03/16/2000

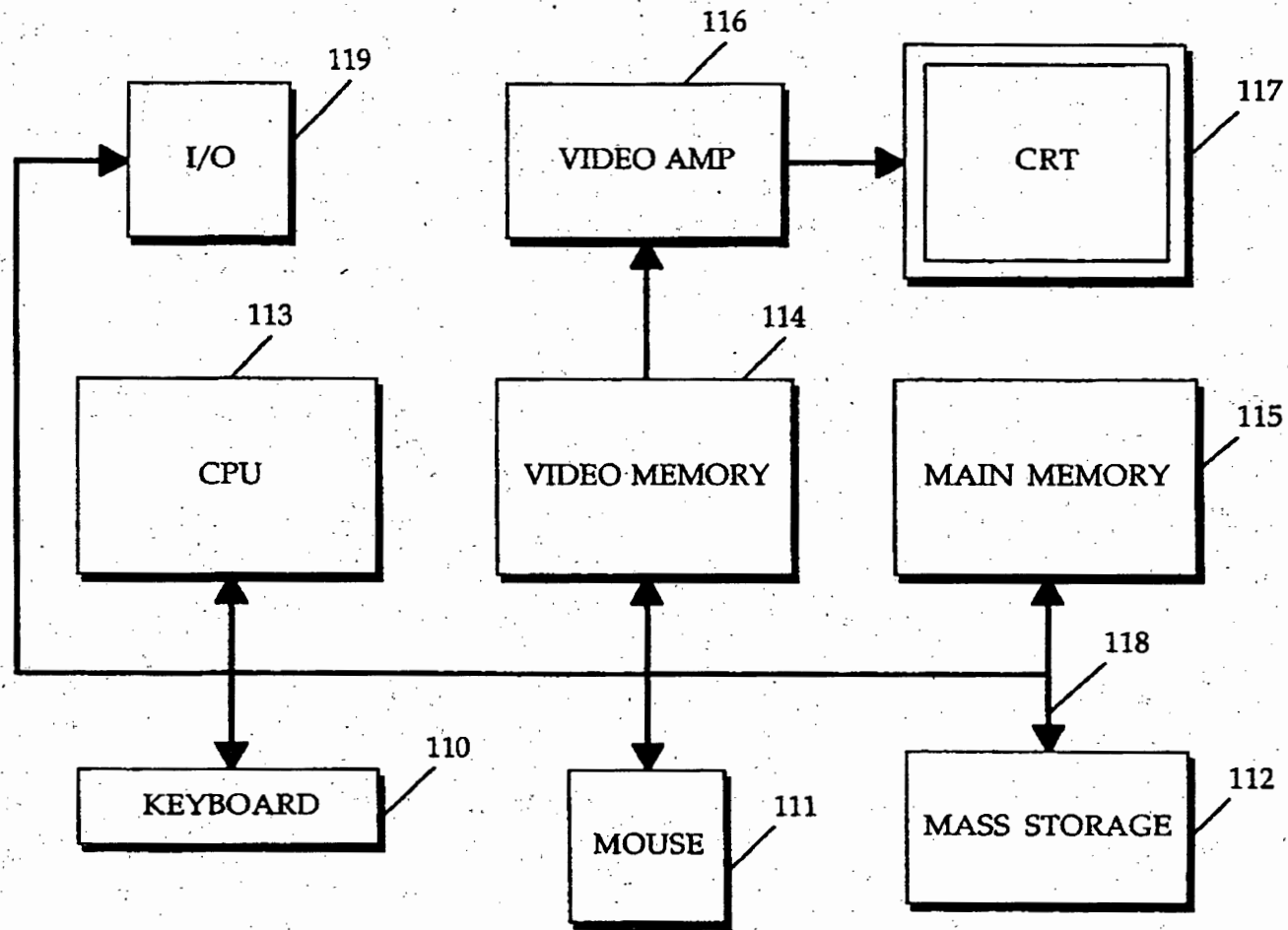
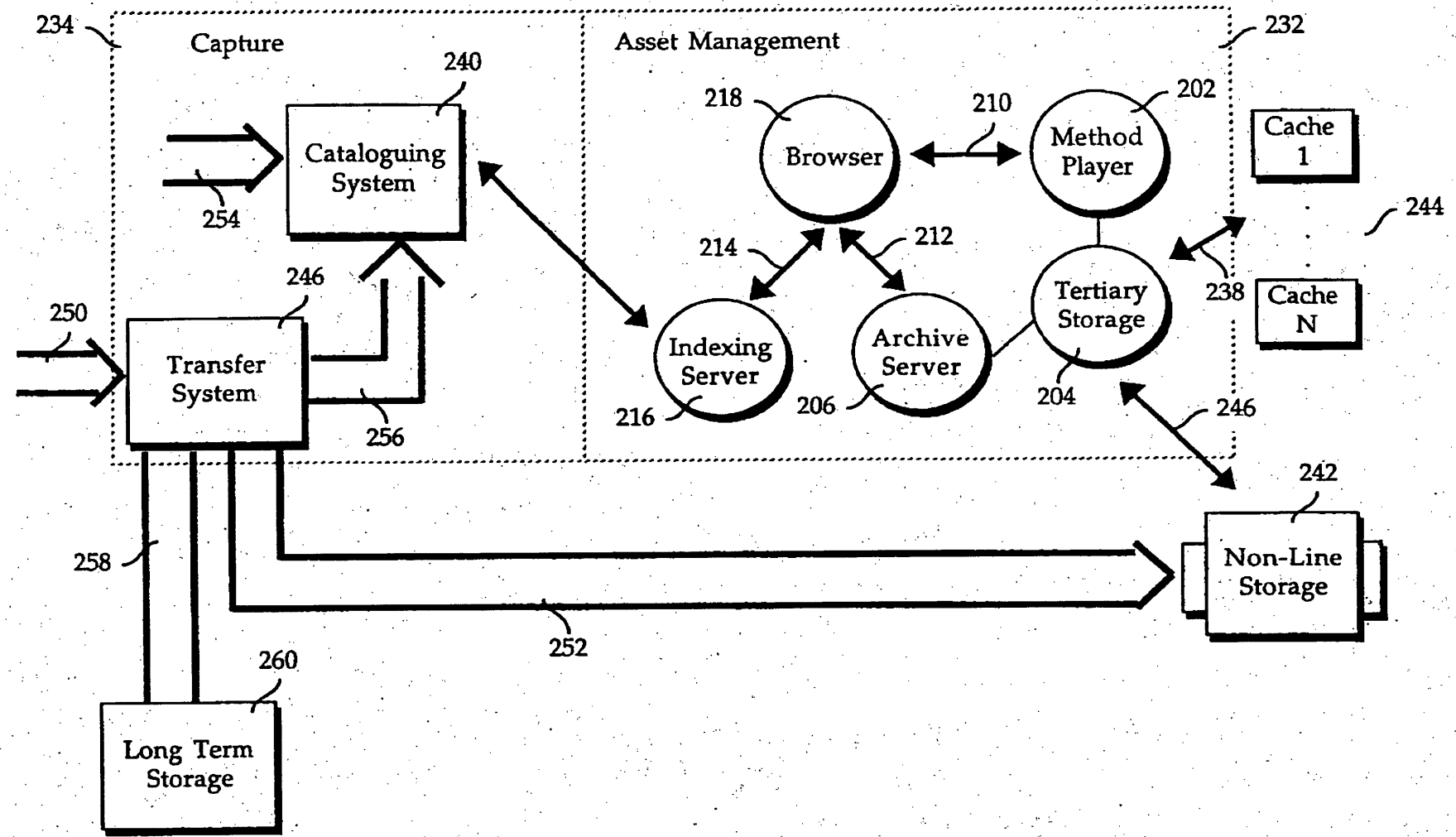


Figure 1

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6092080



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Figure 2

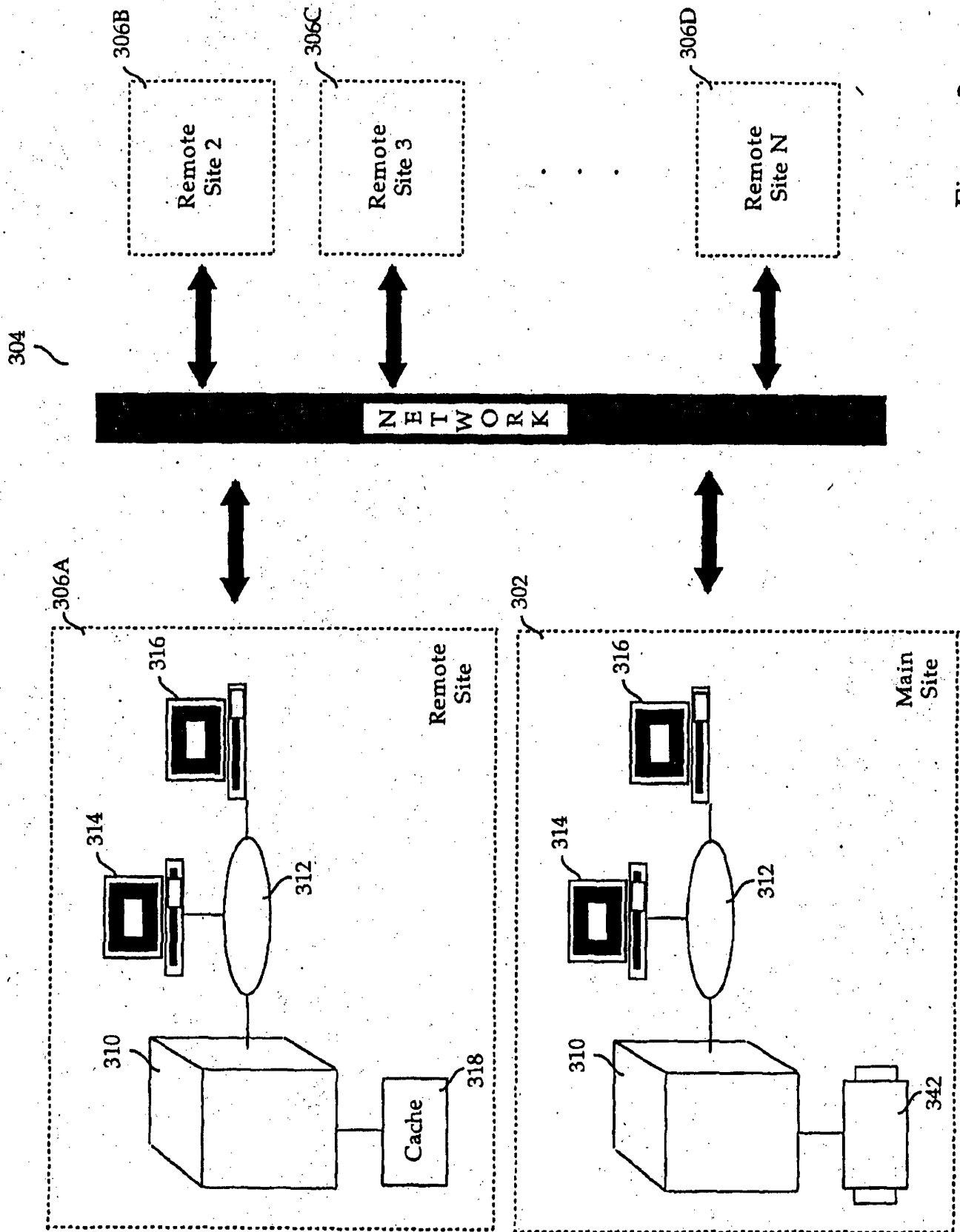


Figure 3

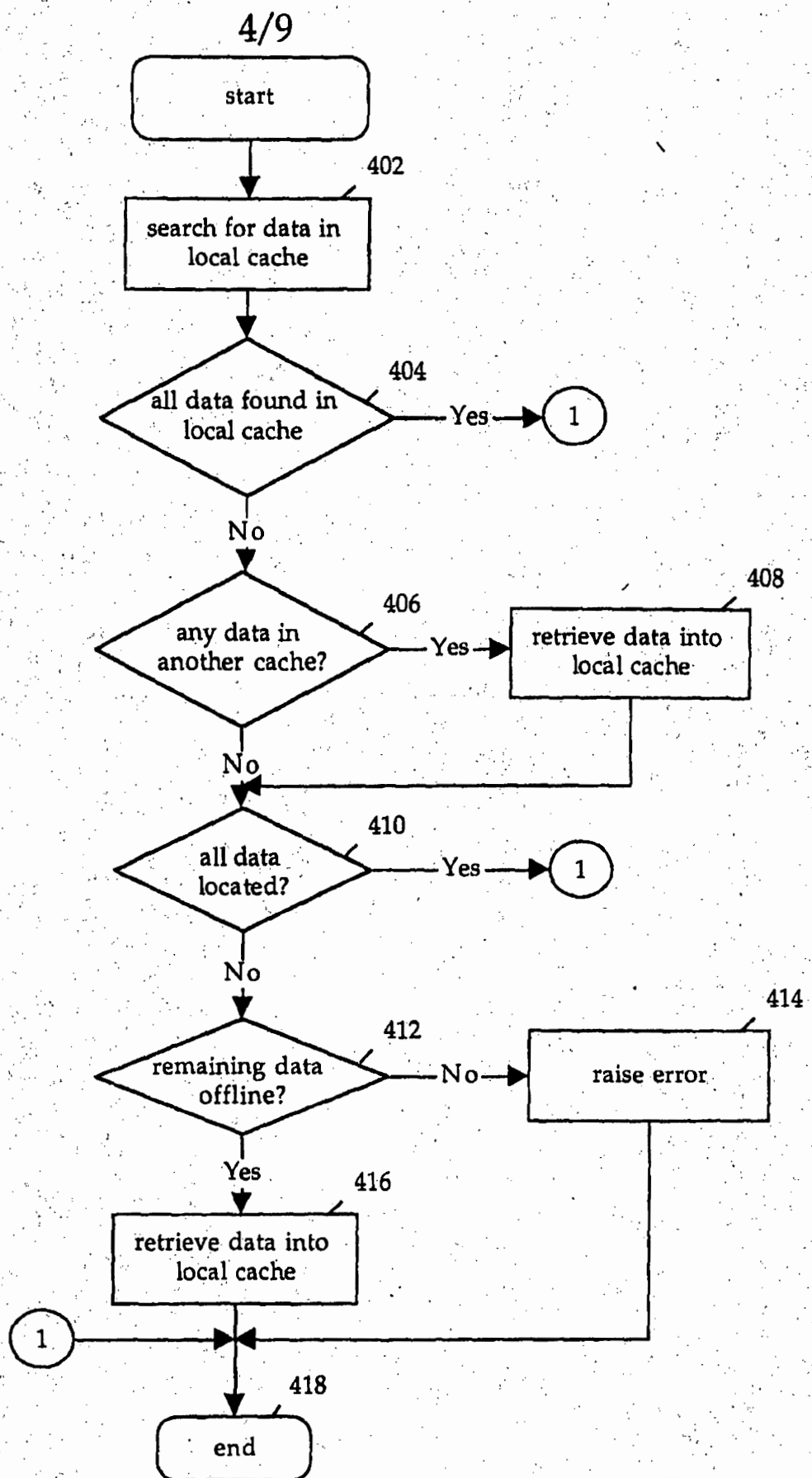


Figure 4

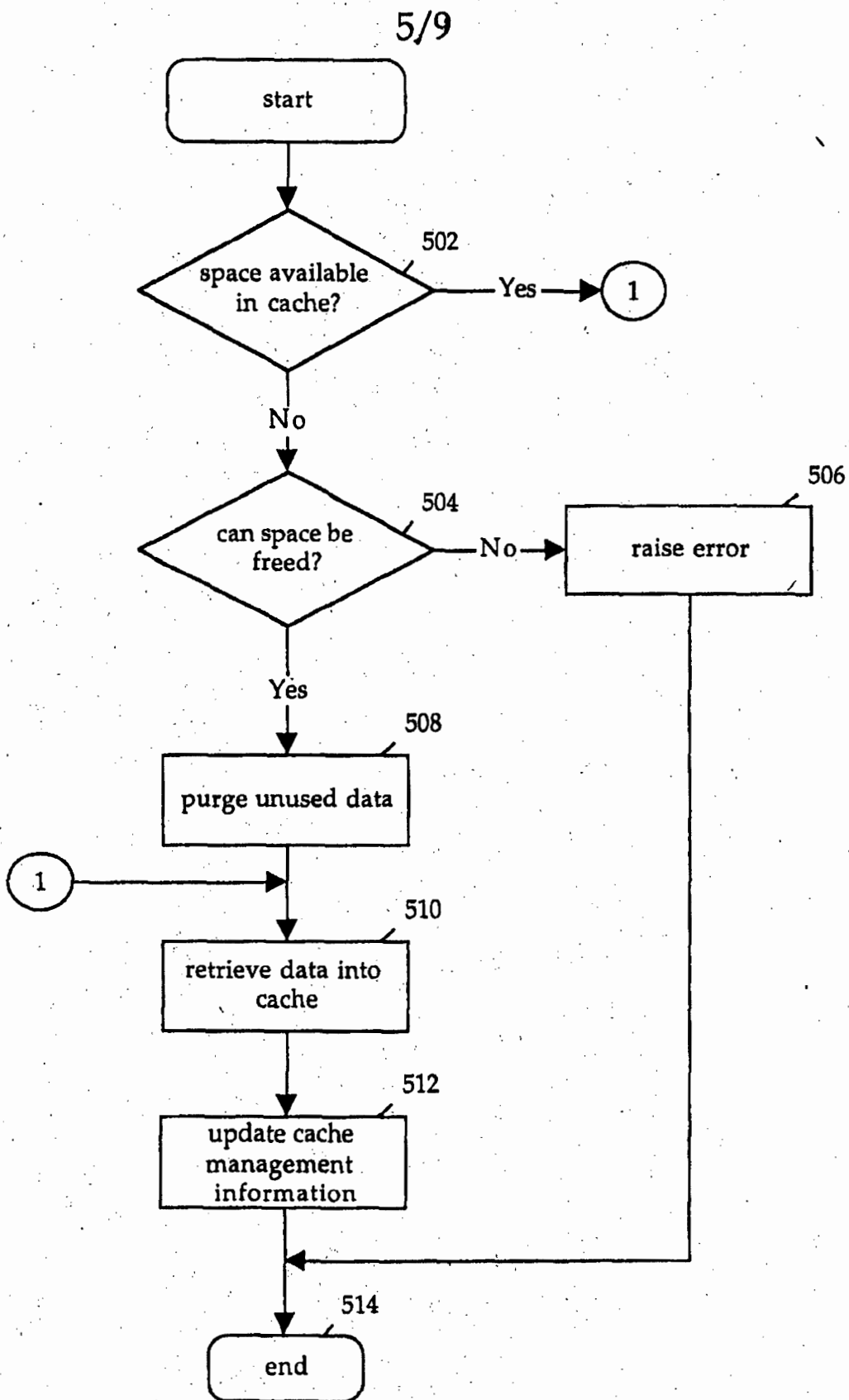
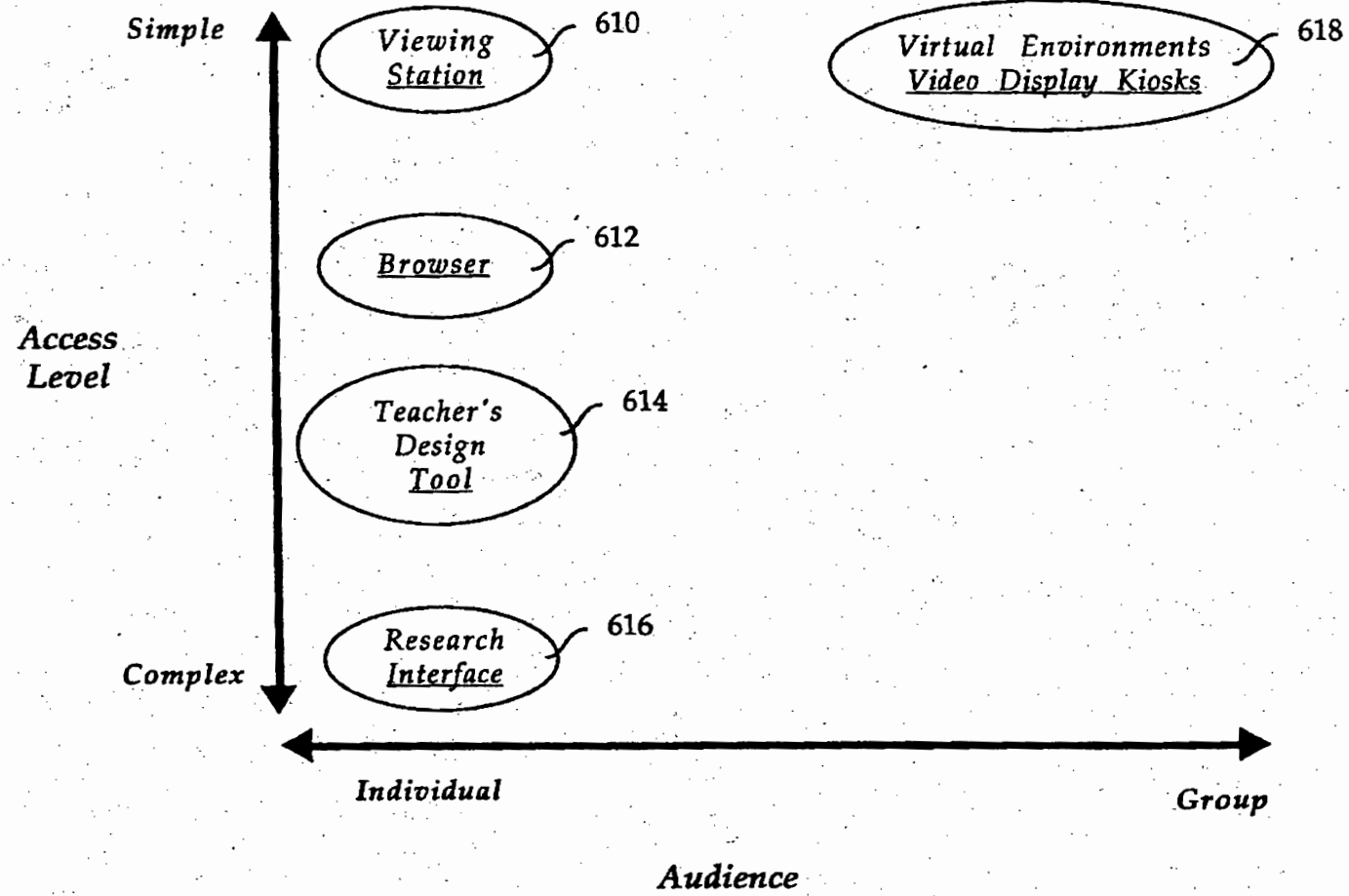
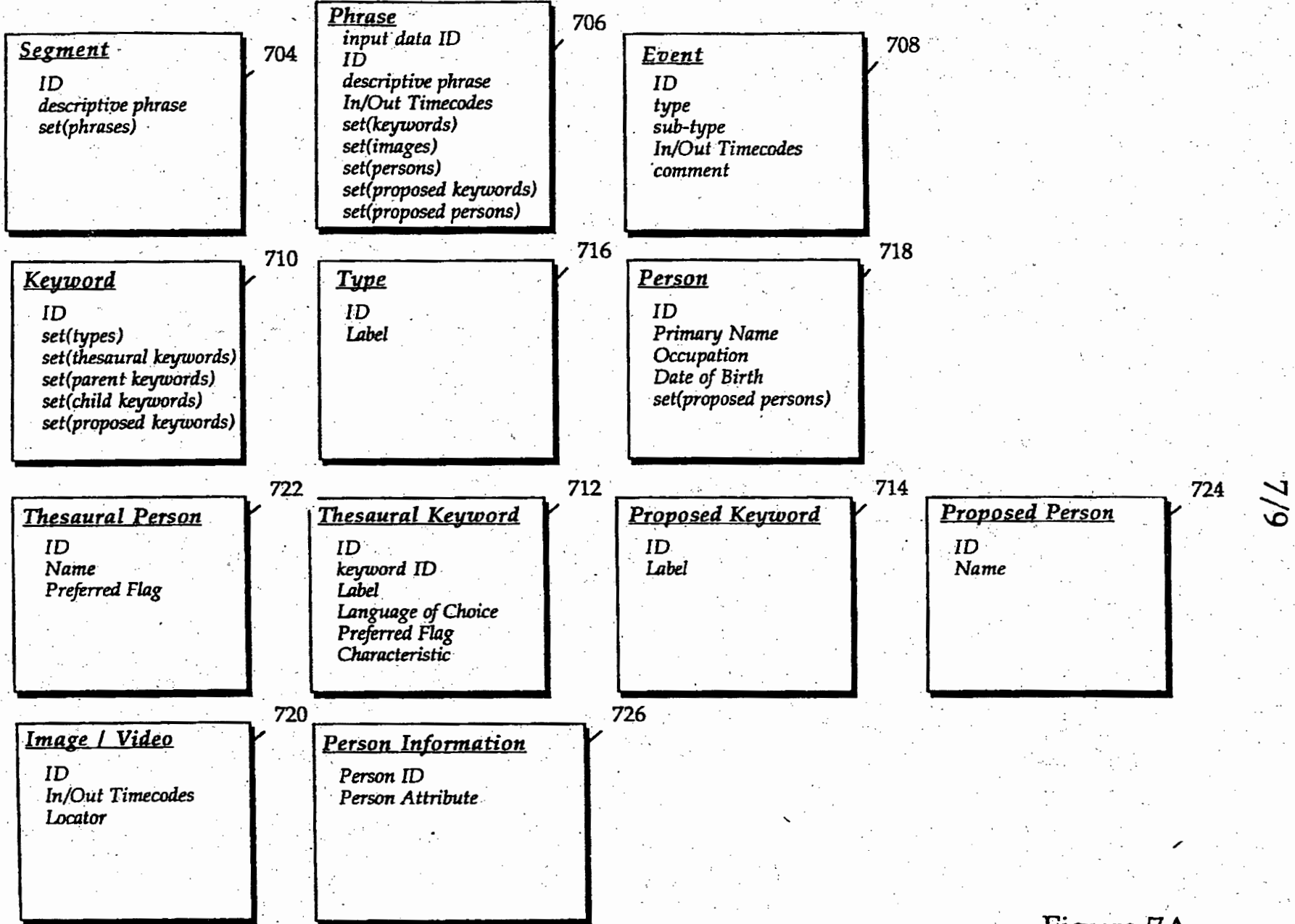


Figure 5



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Figure 6



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Figure 7A

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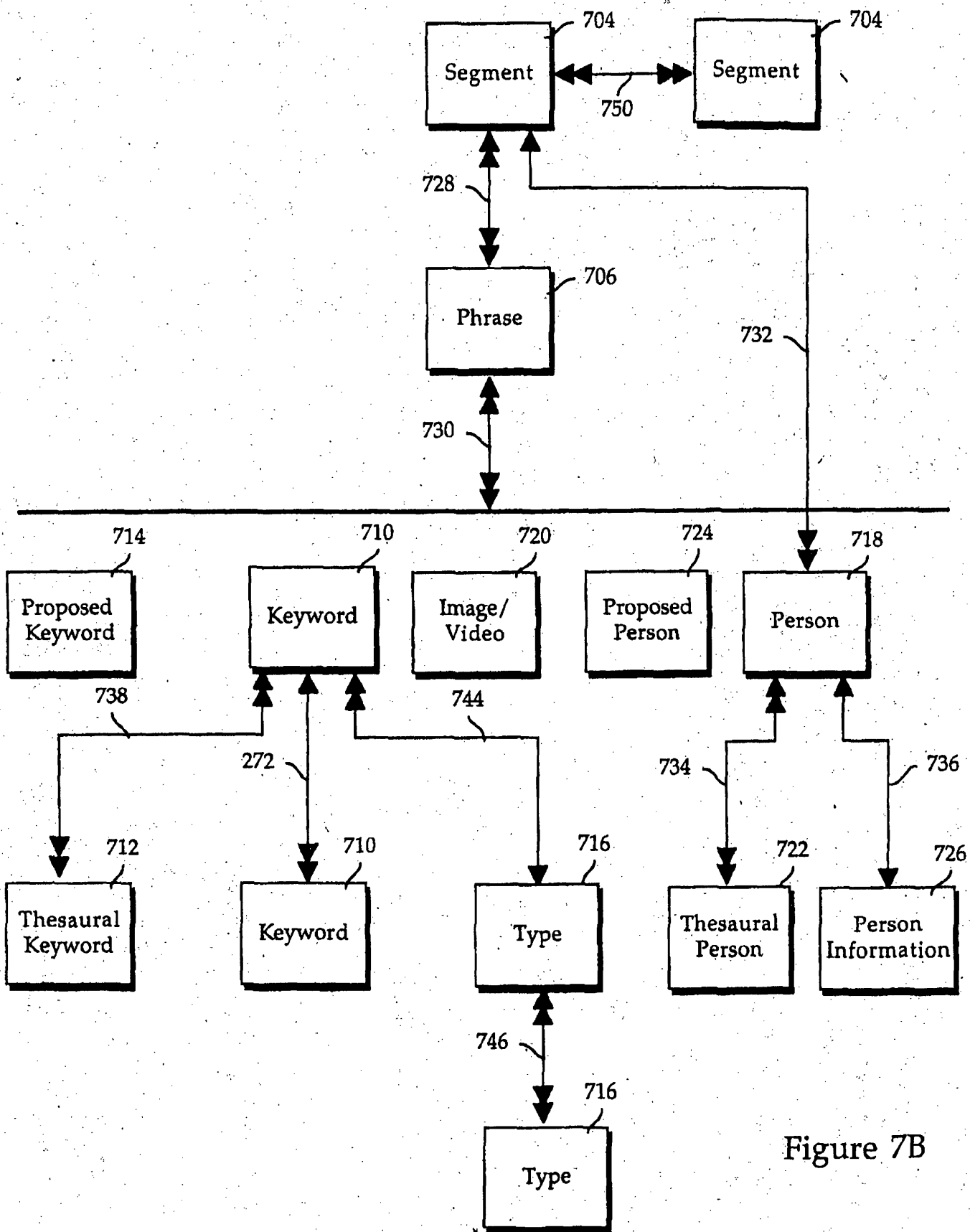


Figure 7B

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 Trademark Office
 ASSISTANT SECRETARY OF COMMERCE AND
 COMMISSIONER, PATENTS 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 Calculation

Fee Code	Total # Claims	Number Extra	X	Fee =		Total
				Sm. Entity	Lg. Entity	
Basic Filing Fee	201/101			_____	_____	_____
Total Claims >20	203/103	-20 =	X	_____	_____	_____
Independent Claims >3	202/102	-3 =	X	_____	_____	_____
Mult. Dep Claim Present	204/104			_____	_____	_____
<u>Surcharge</u>	205/105			_____	_____	_____
English Translation	139			_____	_____	_____

wanted

TOTAL FEE CALCULATION

Fees due upon filing the application:

Total Filing Fees Due = \$ 395
 Less Filing Fees Submitted - \$ 305
BALANCE DUE = \$ 90

[Signature]

Office of Initial Patent Examination

2

PATENT APPLICATION FEE DETERMINATION RECORD Effective October 1, 1997					Application or Docket Number							
CLAIMS AS FILED - PART I												
(Column 1)			(Column 2)		SMALL ENTITY TYPE <input type="checkbox"/>		OR		OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED		NUMBER EXTRA		RATE	FEE			RATE	FEE		
BASIC FEE						395.00	OR			790.00		
TOTAL CLAIMS	/ minus 20 = *				x\$11=		OR		x\$22=			
INDEPENDENT CLAIMS	/ minus 3 = *				x41=		OR		x82=			
MULTIPLE DEPENDENT CLAIM PRESENT					+135=		OR		+270=			
* If the difference in column 1 is less than zero, enter "0" in column 2					TOTAL	395	OR		TOTAL			
CLAIMS AS AMENDED - PART II												
(Column 1)			(Column 2)		(Column 3)		SMALL ENTITY		OR		OTHER THAN SMALL ENTITY	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDITIONAL FEE			RATE	ADDITIONAL FEE
	Total	* 16	Minus	** 20	=	-	x\$11=		OR		x\$22=	
	Independent	* 2	Minus	*** 3	=	-	x41=		OR		x82=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+135=		OR		+270=		
					TOTAL		OR		TOTAL			
					ADDIT. FEE		OR		ADDIT. FEE			
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDITIONAL FEE			RATE	ADDITIONAL FEE
	Total	*	Minus	**	=	=	x\$11=		OR		x\$22=	
	Independent	*	Minus	***	=	=	x41=		OR		x82=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+135=		OR		+270=		
					TOTAL		OR		TOTAL			
					ADDIT. FEE		OR		ADDIT. FEE			
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDITIONAL FEE			RATE	ADDITIONAL FEE
	Total	*	Minus	**	=	=	x\$11=		OR		x\$22=	
	Independent	*	Minus	***	=	=	x41=		OR		x82=	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+135=		OR		+270=		
					TOTAL		OR		TOTAL			
					ADDIT. FEE		OR		ADDIT. FEE			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

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
G06F001200	G	G06	G06F	G06F0012	G06F001200
G06F001730	G	G06	G06F	G06F0017	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:

Type	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:

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

Post-Issuance (US):

Reassignment (US) Table:

Maintenance Status (US):

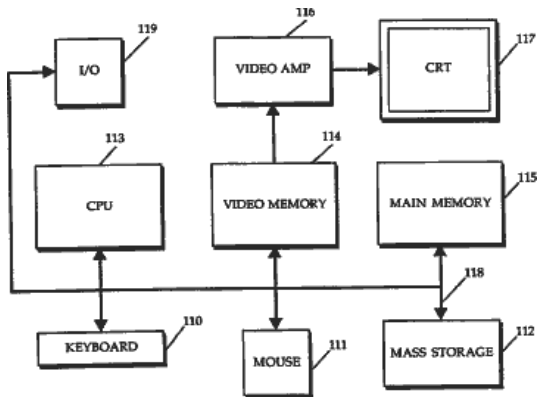
Litigation (US):

Opposition (EP):

License (EP):

EPO Procedural Status:

Front Page Drawing:



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:

Type	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
Current				

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. 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 NATIONAL PHASE IN: JP 1998505273		
1999-05-12	REG	-
Description: REFERENCE TO NATIONAL CODE DE 8642 IMPACT ABOLISHED FOR DE - I.E. PCT APPL. NOT ENT. GERMAN PHASE		
1999-05-06	WWP	+
Description: WIPO INFORMATION: PUBLISHED IN NATIONAL OFFICE EP 1997936038		
1999-03-10	NENP	-
Description: NON-ENTRY INTO THE NATIONAL PHASE IN: CA		
1999-02-04	WWE	+
Description: WIPO INFORMATION: ENTRY INTO NATIONAL PHASE EP 1997936038		
1998-06-04	CR1	-
Description: CORRECTION OF ENTRY IN 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		

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):

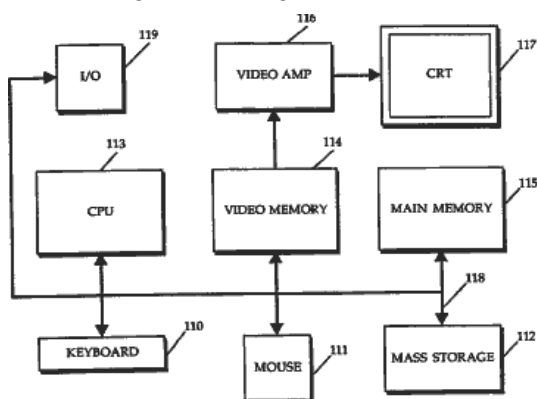
Litigation (US):

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:

Type	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
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Description: WIPO INFORMATION: WITHDRAWN IN NATIONAL OFFICE EP 1997934887		
2000-07-26	WWP	+

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: ENTRY INTO NATIONAL PHASE EP 1997934887		
1999-01-07	ENP	-
Description: ENTRY INTO THE NATIONAL PHASE IN: CA 2259610 A		
1999-01-07	ENP	-
Description: ENTRY INTO THE NATIONAL PHASE IN: CA 2259610		
1998-07-16	DFPE	-
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1998-06-25	AL	+
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1998-06-25	AK	+
Description: DESIGNATED STATES WO 9801850 A3 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		
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 DESIGNATIONS AFTER INTERNATIONAL PUBLICATION US		
1998-01-15	AL	+
Description: DESIGNATED COUNTRIES FOR REGIONAL PATENTS WO 9801850 A2 GH; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL		

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):

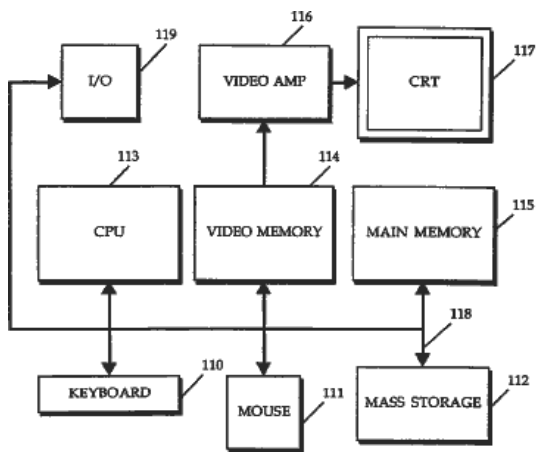
Litigation (US):

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:

Type	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.

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 REMINDER MAILED		
2002-05-07	SULP	+
Description: SURCHARGE FOR LATE PAYMENT		
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):

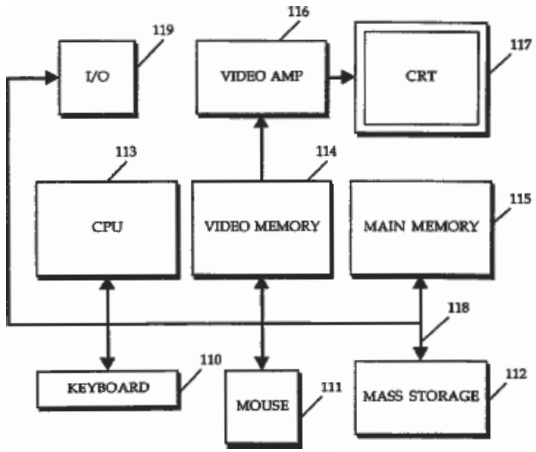
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 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:

Type	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 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 REMINDER MAILED		
2002-05-07	SULP	+
Description: SURCHARGE FOR LATE PAYMENT		
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 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	008183/0296	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):

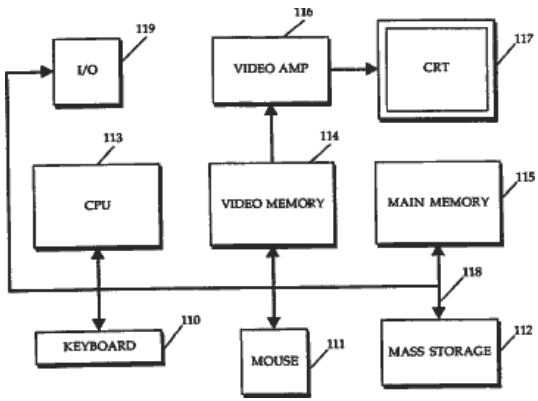
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 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:



Record 7/15 US6092080A Digital library system

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:

Type	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 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 PAYMENT		
2011-09-21	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		
2008-01-09	FPAY	+
Description: FEE PAYMENT		
2004-01-20	FPAY	+
Description: FEE PAYMENT		

Post-Issuance (US):

Reassignment (US) Table:

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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):

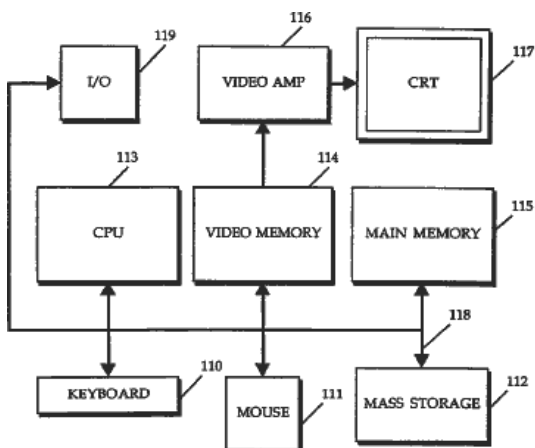
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 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:

Type	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	-

Description: DEEMED TO BE WITHDRAWN 2004-02-03		
2000-07-26	AK	+
Description: DESIGNATED CONTRACTING 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):

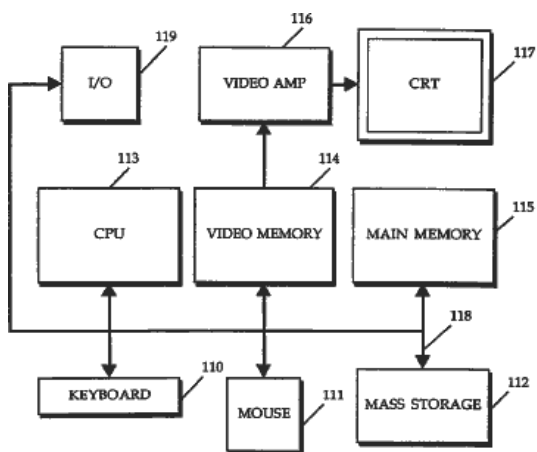
Litigation (US):

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 | 5B075PP02 | 5B075PP03 | 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:

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Type	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):

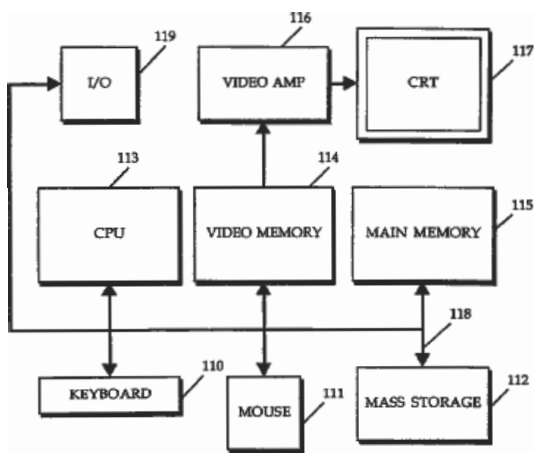
Litigation (US):

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:

Type	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.

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 UNIVERSITY OF SOUTHERN CALIFORNIA,CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRAME:024066/0834 2005-12-31		
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).				

Maintenance Status (US):

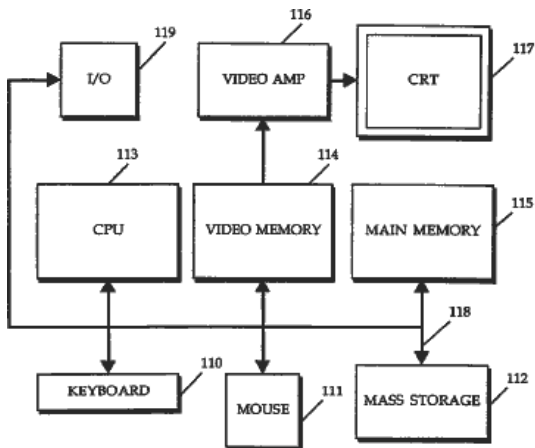
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 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 2:11cv10701 | 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 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

JP F Terms:

JP FI Codes:

Assignee - Original: Survivors of The Shoah Visual History Foundation

Any CPC Table:

Type	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
2004-02-12	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:

1/34

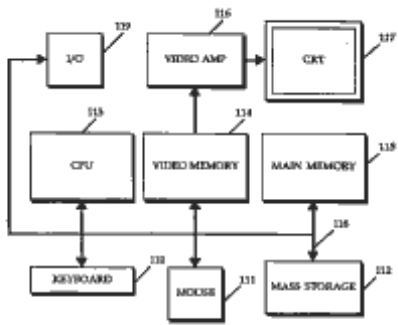


FIG. 1

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:

Type	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

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 UNIVERSITY OF SOUTHERN CALIFORNIA,CALIFORNIA ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:SURVIVORS OF THE SHOAH VISUAL HISTORY FOUNDATION; REEL/FRA: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):

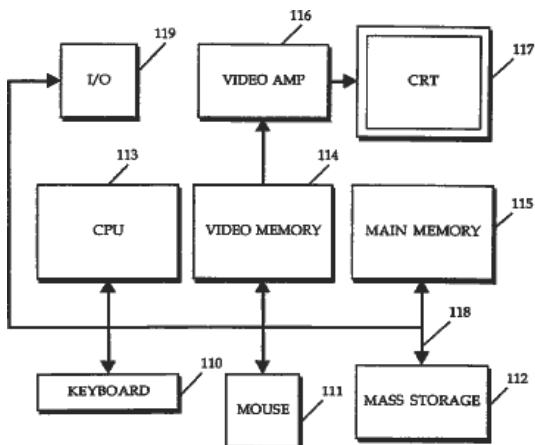
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-02 2011 Preservation Technologies LLC Google Inc Youtube LLC C.D. California 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:

Type	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		

2002-08-28	AK	+
Description: DESIGNATED CONTRACTING STATES: EP 0912951 A4 BE; CH; DE; FR; GB; IT; LI; LU; NL		
2002-08-28	A4	+
Description: SUPPLEMENTARY SEARCH REPORT 2002-07-12		
1999-05-06	AK	+
Description: DESIGNATED CONTRACTING STATES: EP 0912951 A2 BE; CH; DE; FR; GB; IT; LI; LU; NL		
1999-05-06	17P	+
Description: REQUEST FOR EXAMINATION FILED 1999-02-08		

Post-Issuance (US):

Reassignment (US) Table:

Maintenance Status (US):

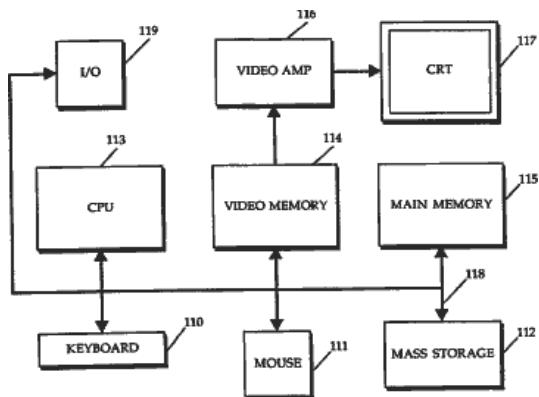
Litigation (US):

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:

Type	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
2004-03-28	RH1	-
Description: PATENTS NOT IN FORCE		
2003-06-24	KB	+
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):

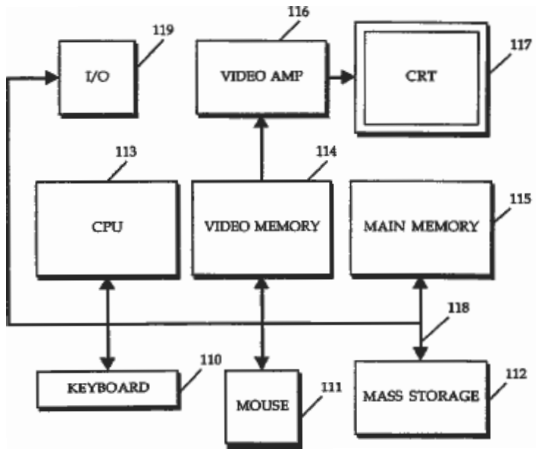
Litigation (US):

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 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:

Type	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 PAYMENT		
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):

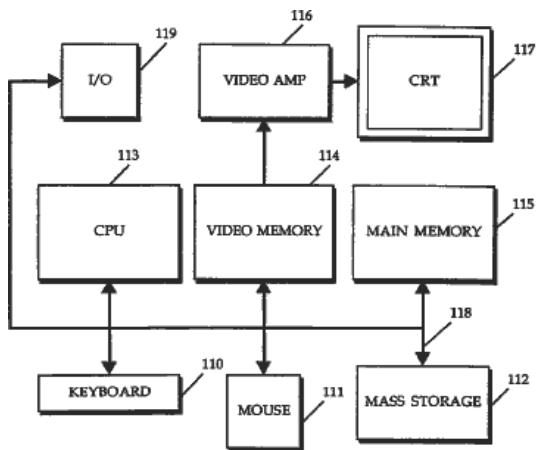
Litigation (US): 2011-12-02 2011 Preservation Technologies LLC Netflix, Inc. Amazon.com Inc. Amazon.com Inc. Facebook Inc. Sony Corporation of America Dish Network Corporation C.D. California 8:11cv01862 Patent Infringement | 2011-12-27 2011 Preservation Technologies LLC Hulu LLC C.D. California 8:11cv01985 | 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 2:11cv10701 | 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 LIBRARY SYSTEM				
Status:	4th, 8th and 12th 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				