

# EXHIBIT 1

**Chart of Components for Asserted Method Claims of the ‘992 Patent Pursuant to the Court’s October 19, 2007 Order**

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
‘992-19, step 1	<p>storing, in the transmission system, information from items in a compressed data form, the information including an identification code and being placed into ordered data blocks;</p> <p>(The Court has construed this step to require only “storing,” i.e., it does not require any other acts, such as assigning an identification code, ordering the data blocks,</p>	<p>The component described in the specification and illustrated by Block Diagram 2b, labeled compressed data library 118.</p> <p>(For each component of the transmission system (and in every claim in which “transmission system” appears), the component may or may not be located at the same location as the other components of the transmission system. (See, ‘992 patent, 5:59-65).)</p>	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises . . . compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means . . . .</p> <p>The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” (‘992 patent, 2:26-61).</p>	<p>The compressed data library 118:</p> <p>(1) may be comprised of one or more compressed data libraries;</p> <p>(2) may be a network of mass storage devices connected together via a high speed network;</p> <p>(3) receives information from a compression means or a compressed data formatter;</p> <p>(4) outputs information to a transmission format conversion CPU or a transmitter means;</p> <p>(5) may be a mixed media system;</p> <p>(6) based upon popularity codes and usage, items may be dynamically moved to the most appropriate media;</p> <p>(7) may be connected to an optional remote order processing and item database 300 via the library access 121 and the library system control computer 1123;</p>

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	<p>or compressing the data blocks: “. . . previously to storing, (a) an identification code has already been assigned to the information; (b) the information has been placed into ordered data blocks; and (c) the information has been compressed.” (3rd CCO, at 18:22-26.)</p>		<p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“Transmission system 100 of a preferred embodiment of the present invention preferably includes source material library means for temporary storage of items prior to conversion and storage in a compressed data library means. The items of information may include analog and digital audio and video information as well as physical objects such as books and records which require conversion to a compatible media type before converting, compressing and storing their audio and video data in the compressed data library means.” (‘992 patent, 5:66-6:7).</p> <p>“Prior to being made accessible to a user of the transmission and receiving system of the present invention, the item must be stored in at least one compressed data library 118, and given a unique identification code by identification encoder 112. Storage encoding, performed by identification encoder 112, aside from giving the item a unique identification code, optionally involves logging details about the item, called program notes, and assigning the item a popularity code. Storage encoding may be performed just prior to conversion of the item for transmission to reception</p>	<p>(8) may be accessed using a queue manager program, which optimizes such access;</p> <p>(9) storage encoding, which includes the assignment of a unique identification code, may be performed before or after the item is stored in the compressed data library;</p> <p>(10) information may be stored as a file with the unique identification code, and the file may include the compressed data, time markers, and program notes; and</p> <p>(11) the stored items may be comprised of audio and/or video information.</p>

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			<p>system 200, at any time after starting the conversion process, or after storing the item in the compressed data library 118.” (‘992 patent, 6:35-47).</p> <p>“In accordance with a preferred embodiment of the present invention, the transmission system 100 may further comprise compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data with the unique identification code received from the data compression means. After compression processing by compressor 116, the compressed audio and video data is preferably formatted and placed into a single file by the compressed data storage means 117. The file may contain the compressed audio and/or video data, time markers, and the program notes. The file is addressable through the unique identification code assigned to the data by the identification encoder 112.</p> <p>Further, according to the present invention, the transmission system preferably includes compressed data library means for separately storing composite formatted data blocks for each of the files. The compressed data storage means preferably includes compressed data library 118, as shown in FIG. 2b. After the data is processed into a file by the compressed data storage means 117, it is preferably stored in a compressed data library 118. In a preferred embodiment, compressed data library 118 is a network of mass storage devices connected together via a high speed network. Access to any of the files stored in compressed data library 118 is</p>	

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			<p>available from multiple reception systems 200 connected to the transmission and receiving system.</p> <p>Stored items are preferably accessed in compressed data library 118 through a unique address code. The unique address code is a file address for uniquely identifying the compressed data items stored in the compressed data library section of a library system. This file address, combined with the frame number, and the library system address allow for complete addressability of all items stored in one or more compressed data libraries 118. Compressed data library addresses along with receiving system addresses are used to form a completely unique address for distribution system control.</p> <p>The unique address code is an address assigned to the item by the system operator during storage encoding, which is preferably done prior to long term storage in the compressed data library 118. In a preferred embodiment, the unique address code is used for requesting and accessing information and items throughout the transmission and receiving system. The unique address code makes access to the requested data possible.” (‘992 patent, 10:17-65).</p> <p>“As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order</p>	

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			<p>processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very easily thereby allowing for retrieval from the compressed data library 118 without any help from an interactive system.” (‘992 patent, 11:22-39).</p> <p>“The item database master may reside in the system control computer 1123 where may be is updated and kept current to the contents of the compressed data library 118. The data stored in the item database master may be accessed by users via application programs, running on the system control computer 1123, and on the reception system 200 of the user. Users may connect to the item database via any available telecommunication channels. Copies of the item database master may be updated and informed of new entries into compressed data library 118 at periodic intervals determined by the system manager.</p> <p>Other copies of the item database master may also be made available to users from the remote order processing and item database 300 which batch processes and downloads user requests to the control computer 1123 of the compressed data library 118 via standard telecommunications or high speed communication</p>	

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			<p>channels. Moreover, multiple remote order processing and item database 300 sites make it possible for more locations to process orders than there are library facilities, and thus make order processing more efficient.” (‘992 patent, 11:54-12:7).</p> <p>“The storage encoding process performed by identification encoder 112 also allows entry of a popularity code. The popularity code is preferably assigned on the basis of how often the corresponding item is expected to be requested from the compressed data library 118. This popularity code can be used to determine the most appropriate form of media for storage of the compressed data in a mixed media system. Mixed media systems are preferably employed as more cost effective storage in very large compressed data libraries 118. Once assigned, the popularity code may be dynamically updated, by factoring item usage against system usage. Thus, stored items are dynamically moved to the most appropriate media over their life in the compressed data library 118. If a particular item stored in compressed data library 118 is retrieved frequently by users, storage in compressed data library 118 is preferably on higher speed, more reliable, and probably more expensive media. Such media includes Winchester and magneto-optical disks.</p> <p>If an item stored in compressed data library 118 is retrieved less frequently, it may be stored in the compressed data library 118 on a digital cassette tape. Examples of such cassette tapes are a Honeywell RSS-</p>	

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			<p>600 (Honeywell Inc. Minneapolis, Minn.), Summus JukeBoxFilm and tape library (Summus Computer Systems, Houston, Tex. 800-255-9638), or equivalent cassette tapes. All items stored in the compressed data library 118 are on line and are connected to the high speed network. Thus, they may be readily accessed.</p> <p>Instead of using a remote order processing and item database 300, the compressed data library 118 may include the program notes which were input by the system operator. The program notes may preferably include the title of the item stored in the compressed data library 118, chapter or song titles, running times, credits, the producer of the item, acting and production credits, etc. The program notes of an item stored in the compressed data library 118 may be thus contained within the compressed data file formed in the compressed data formatter 117.</p> <p>In some cases, where multiple compressed data libraries 118 are organized, the popularity code may dictate distribution of a particular item to multiple distribution systems. In such cases, a copy of the compressed data is sent to another library and the other library can then distribute the compressed data to users concurrently with the original compressed data library 118.</p> <p>The compressed data library 118 is composed of a network of storage devices connected through a High Performance Parallel Interface (HPPI) Super Controller (available from Maximum Strategy Inc., San Jose,</p>	



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			<p>Calif.). Therefore, multiple communication controllers may preferably access the large quantity of data stored in compressed data library 118 at very high speeds for transfer to a reception system 200 of a user upon request. For more details on this configuration see Ohrenstein, "Supercomputers Seek High Throughput and Expandable Storage", Computer Technology Review, pp. 33-39 April 1990.</p> <p>The use of an HPPI controller allows file placement onto multiple mass storage devices of the compressed data library 118 with a minimum of overhead. Database management software controls the location and tracking of the compressed data library 118 which can be located across multiple clusters of file servers connected together by one or more high speed networks over multiple systems.</p> <p>The transmission system 100 of the present invention may also preferably include library access/interface means for receiving transmission requests to transmit items and for retrieving formatted data blocks stored in the compressed data library 118 corresponding to the requests from users. The compressed audio and/or video data blocks, along with any of the information about the item stored in the compressed data library 118 may be accessed via library access interface 121. The library access interface 121 receives transmission requests either directly from the users or indirectly by remote order processing and item database 300. The transmission format means 119 receives the request and retrieves the</p>	

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			<p>composite formatted data block of the requested item stored in compressed data library 118 and converts the compressed formatted data block into a format suitable for transmission. The requested item is then sent to the user via the transmitter 122 or directly via interface 121.</p> <p>In a preferred embodiment of the present invention, customer access of an item stored in compressed data library 118 via the library access interface 121 may be performed in various ways. The methods of requesting a stored item are analogous to making an airline reservation or transferring funds between bank accounts. Just as there are different methods available for these processes it is desirable to have several ordering methods available to the users of the system of the present invention. For example, telephone tone decoders and voice response hardware may be employed. Additionally, operator assisted service or user terminal interfaces may be used.” (‘992 patent, 12:28-13:60).</p> <p>“To complete an order, the remote order processing and item database 300 preferably connects to the compressed data library 118 of choice via the library access interface 121 and communicates with the library system control computer 1123. Preferably the user's account ID, identification of the item for transmission and the chosen destination for the item are communicated. Through employment of distributed order processing systems of this type many orders may be processed with minimal library overhead.</p>	

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			<p>All transmission requests from the access methods are placed into a transmission queue managed by the library system control computer 1123. This queue is managed by a program that controls the distribution of the requested items to the reception system 200 of the user. The queue manager program also operates in the system control computer and keeps track of the user ID, the chosen program and price, the user channel type, the number of requests for a given program, the latest delivery time, and the compressed data library media type (for example, high speed or low speed). From this information, the queue manager program makes best use of the available distribution channels and media for efficient transmission and storage of the requested items.</p> <p>The queue manager program also manages the file transmission process for multiple requests for a single file, stored in the compressed data library 118. During a given time period, the queue manager program will optimize access to the compressed data library 118, wherever possible it will place the data on multiple outputs for simultaneous transmission to more than one requesting user.</p> <p>The conversion performed by transmission data converter 119 encodes the data for the transmission channel. The transmission data converter transfers the desired segments of data from the compressed data library 118 onto the communication channel which is used to deliver the data to the reception system 200.</p>	

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			<p>The transmission system 100 of the present invention preferably further includes transmitter means 122, coupled to the compressed data library 118, for sending at least a portion of a specific file to at least one remote location. The transmission and receiving system of the present invention preferably operates with any available communication channels. Each channel type is accessed through the use of a communications adaptor board or processor connecting the data processed in the transmission format converter 119 to the transmission channel.” (‘992 patent, 15:23-16:3).</p> <p>“FIG. 5 is a flowchart of a preferred method of implementing a queue manager program of the present invention. The queue manager program, in the distribution process, preferably confirms availability of an item from the compressed data library 118 and logically connects the item stored in compressed data library 118 to the communications controller, illustrated in FIG. 2a (step 5010). After availability is confirmed in step 5010, the data awaits transmission by the transmitter 122.” (‘992 patent, 16:29-37).</p> <p>“The system may also preferably include dispatching control software which receives input from the remote order processing and item database 300 and sends distribution requests to the distribution systems. In instances where not all items are contained in each of the compressed data libraries 118, the dispatching software will keep a list of the available titles in a particular compressed data library 118. The dispatch software may</p>	

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			<p>also preferably coordinate network traffic, source material library 111 utilization, source material library 111 contents, and connection costs. By proper factoring of these variables, efficient use of the available distribution channels may be achieved.” (‘992 patent, 17:54-66).</p> <p>“After the information is processed for efficient transfer, in substeps 413a-e of step 413, the distribution method 400 of the present invention preferably includes the step of storing the processed information is stored in a compressed data library (step 414). Preferably, the compressed data library is analogous to compressed data library 118, described with respect to FIG. 2a.” (‘992 patent, 19:11-17).</p>	
‘992-19, step 2	sending a request, by the user to the transmission	The components described in the specification and illustrated by Block	“The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and	This step of sending a request is not performed by the transmission system and is not required to be performed by a receiving system

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	<p>system, for at least a part of the stored information to be transmitted to the one of the receiving systems at one of the remote location selected by the user;</p>	<p>Diagram 1c, 2a, and 2b labeled:</p> <p>(1) the library system control computer 1123; or</p> <p>(2) the library system control computer 1123 and the library access interface 121; or</p> <p>(3) the library system control computer 1123, the library access interface 121, and an operator; or</p> <p>(4) the source material library 111; or</p> <p>(5) the remote order processing and item database 300.</p>	<p>video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” (‘992 patent, 2:49-61).</p> <p>“A user of the transmission and receiving system of the present invention preferably accesses transmission system 100 by calling a phone number or by typing commands into a computer. The user then chooses audio and/or video material from a list of available items which he or she wants to listen to and/or watch.” (‘992 patent, 3:54-60).</p> <p>“In direct connection configurations, such as reception systems 200 shown in FIGS. 1e and 1f, the user preferably selects the reception system 200 to which the requested material is sent, and optionally selects the time playback of the requested material as desired. Accordingly, the user may remotely access the transmission system 100 from a location different than the location of reception system 200 where the material will be sent and/or played back. Thus, for example, a user may preferably call transmission system 100 from work and have a movie sent to their house to be played back after dinner or at any later time of their choosing.”</p>	<p>(although a request could optionally be made through the user/computer interface 207 of the receiving system).</p> <p>The Court has, however, included this step as requiring a “transmission system” component, because the request is sent to the transmission system. (See, 5<sup>th</sup> CCO, at 12:17-19).</p> <p>The library access interface 121:</p> <p>(1) receives user requests via standard telecommunications or high speed communications channels;</p> <p>(2) may receive requests from the remote order processing and item database 300 or may directly receive requests;</p> <p>(3) receives requests which may include the address of the user, the address of the item and may optionally include specific frame numbers, item names, unique identification code, item title, program notes, and the desired viewing time of the item;</p> <p>(4) may receive requests from a user via a telephone tone decoder, voice</p>

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			<p>(‘992 patent, 5:10-21).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“The unique address code is an address assigned to the item by the system operator during storage encoding, which is preferably done prior to long term storage in the compressed data library 118. In a preferred embodiment, the unique address code is used for requesting and accessing information and items throughout the transmission and receiving system. The unique address code makes access to the requested data possible.</p> <p>“The storage encoding process performed by encoder 112 also allows entry of item notes and production credits. Production credits may include the title, names of the creators of the item such as the producer, director, actors, etc. Other details regarding the item which may be of interest and which may make the items more accessible are kept in an item database.</p> <p>“Item addresses are mapped to item names by identification encoder 112 and may preferably be used as an alternative method of accessing items. The item names are easier to remember, thus making user access</p>	<p>response hardware, operator assisted service, or user terminal interfaces; and</p> <p>(5) passes transmission requests to the library system control computer 1123, which may place the requests into a transmission queue. User requests may also alternatively be made to the source material library using any available communication channel.</p> <p>The library system control computer 1123:</p> <p>(1) sends information to the transmission format conversion CPU(s) and/or to the compressed data library; and</p> <p>(2) users may directly access the item database master, which may reside in the library system control computer 1123 via application programs running on the library system control computer 1123 and running on the reception system of the user.</p> <p>A system operator is included as a necessary component of the</p>

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			<p>more intuitive by using item names. The storage encoding entry process performed in identification encoder 112 operates a program which updates a master item database containing facts regarding items in the compressed data library system. The storage encoding process may be run by the system operator whereby the system operator accesses the master item database to track and describe items stored in one or more compressed data libraries. The names and other facts in the item database may preferably be updated at any time via the storage encoding process. Changes made to the master item database may be periodically sent to the remote order processing and item database 300.</p> <p>“As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very easily thereby allowing for retrieval from the compressed</p>	<p>transmission system, because the specification makes clear that requests may be received by operators. In its 3rd CCO, the Court held that a system operator is part of the transmission system. (3rd CCO, at 13:10-14:6).</p>



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			<p>data library 118 without any help from an interactive system.</p> <p>“As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very easily thereby allowing for retrieval from the compressed data library 118 without any help from an interactive system.</p> <p>To achieve user access via an interactive system, facts about the items may be kept in files as a part of the items or the facts may be kept separately, for example, by systems which only to inform users of the available items and take orders. For example, in systems which have portions split in separate locations, the facts about the items may be separated from the items themselves and stored in separate files. A system of this type can distribute user orders to other portions of the</p>	

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			<p>transmission and receiving system for ultimate distribution to the requesting user. Further, to support a plurality of users, multiple versions of the item database may preferably reside either on multiple database servers, in catalogs, or on other computer systems.</p> <p>The item database master may reside in the system control computer 1123 where may be is updated and kept current to the contents of the compressed data library 118. The data stored in the item database master may be accessed by users via application programs, running on the system control computer 1123, and on the reception system 200 of the user. Users may connect to the item database via any available telecommunication channels. Copies of the item database master may be updated and informed of new entries into compressed data library 118 at periodic intervals determined by the system manager.</p> <p>Other copies of the item database master may also be made available to users from the remote order processing and item database 300 which batch processes and downloads user requests to the control computer 1123 of the compressed data library 118 via standard telecommunications or high speed communication channels. Moreover, multiple remote order processing and item database 300 sites make it possible for more locations to process orders than there are library facilities, and thus make order processing more efficient.</p> <p>Preferably, access of a requested item via the remote order processing and item database 300 operates as</p>	

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			<p>follows. If the user does not know the title of the desired item, he or she may request the item by naming other unique facts related to the item. For example, a user would be able to access an item about Tibetan Medicine by asking for all items which include information about "Tibet" and include information about "Medicine." The remote order processing and item database 300 would then be searched for all records matching this request. If there is more than one item with a match, each of the names of the matching items are preferably indicated to the user. The user then selects the item or items that he or she desires. Upon selection and confirmation, by the user, a request for transmission of a particular item or items is sent to the distribution manager program of the system control computer 1123. The request contains the address of the user, the address of the item, and optionally includes specific frame numbers, and a desired viewing time of the item." ('992 patent, 10:58-12:27).</p> <p>"The transmission system 100 of the present invention may also preferably include library access/interface means for receiving transmission requests to transmit items and for retrieving formatted data blocks stored in the compressed data library 118 corresponding to the requests from users. The compressed audio and/or video data blocks, along with any of the information about the item stored in the compressed data library 118 may be accessed via library access interface 121. The library access interface 121 receives transmission requests either directly from the users or indirectly by remote order</p>	

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			<p>processing and item database 300. The transmission format means 119 receives the request and retrieves the composite formatted data block of the requested item stored in compressed data library 118 and converts the compressed formatted data block into a format suitable for transmission. The requested item is then sent to the user via the transmitter 122 or directly via interface 121.</p> <p>In a preferred embodiment of the present invention, customer access of an item stored in compressed data library 118 via the library access interface 121 may be performed in various ways. The methods of requesting a stored item are analogous to making an airline reservation or transferring funds between bank accounts. Just as there are different methods available for these processes it is desirable to have several ordering methods available to the users of the system of the present invention. For example, telephone tone decoders and voice response hardware may be employed. Additionally, operator assisted service or user terminal interfaces may be used.</p> <p>Customer access via telephone tone decoders and voice response hardware is completely electronic and may preferably be performed between a system user and a computer order entry system. The user may obtain help in ordering an item from a computer synthesized voice. With such an access method, the user will normally be accessing a dynamic catalog to assist them. Confirmation of selections and pricing information may preferably be</p>	

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			<p>given to the user prior to completion of the transaction.</p> <p>This process of access, performed by remote order processing and item database configuration 300, shown in FIG. 1c, preferably includes the following steps, shown in flowchart 3000 of FIG. 3. First, the user calls the system access number (step 3010). Upon successfully dialing the system access number, the user receives instructions from the system (step 3020). The instructions may preferably include steps the user must take in order to place an order. Preferably, the instructions may be bypassed by the experienced user who knows how to place an order.</p> <p>The user then enters a customer ID code by which the system accesses the user's account, and indicates to the system that the user is a subscriber of the system (step 3030). In response to the user entering his ID code in step 3030 the system confirms whether the user is in good standing (step 3040). If the user is in good standing, the system queues the user to input his request (step 3050).</p> <p>The user request may preferably be made from a catalog sent to each of the subscribers of the system. The user will preferably identify his choice and enter the corresponding identification code of the item (step 3060). The system then preferably confirms the selection that the user has made and informs the user of the price of the selection (step 3070).</p> <p>The user then indicates whether the confirmation performed in step 3070 is correct (step 3080). If the</p>	

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			<p>confirmation performed in step 3070 is correct, the user so indicates and then inputs a desired delivery time and delivery location (step 3090).</p> <p>If the confirmation performed in step 3070 does not result in the selection desired by the user, the user re-inputs the item identification code in step 3060 and the confirmation steps 3070 and 3080 are repeated. Therefore, proper selection of the selected item is insured. Once there is confirmation, the user enters the playback time and destination in step 3090.</p> <p>The user then preferably confirms that the order is correct (step 3100). The confirmation performed in step 3100 includes confirmation of the entire transaction including the selected item, the selected time of playback, and the location of playback. The transaction is then completed and the request is placed on a transmission queue at the appropriate compressed data library 118 (step 3110).</p> <p>Access by the users via operator assisted service includes telephone operators who answer calls from the users. The operators can sign up new customers, take orders, and help with any billing problems. The operators will preferably have computer terminals which give them access to account information and available program information. Operators can also assist a user who does not know a title by looking up information stored in files which may contain the program notes, as described above. Once the chosen program is identified, the</p>	

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			<p>operator informs the user of the price. After the user confirms the order, the user indicates the desired delivery time and destination. The operator then enters the user request into the system. The request is placed in the transmission queue.</p> <p>Access by a user terminal interface method provides the user with access from various terminals including personal computers, and specialized interfaces built into the reception system 200 for the user. Such access allows a user to do a search of available programs from a computer screen. This process involves the steps 4000 shown in FIG. 4.</p> <p>FIG. 4 is a flowchart of a preferred method of user request via a user interface of the present invention. In the preferred method of FIG. 4, the user first logs onto the user terminal interface (step 4010). After the user logs on, the user may preferably select a desired item by searching the database of available titles in the library system control computer 1123 or any remote order processing and item database 300 (step 4020). The search may preferably be performed using the database containing the program notes, described above with respect to FIGS. 2a and 2b. It is possible to process orders and operate a database of available titles at multiple locations remote of the source material library 111. Users and order processing operators may preferably access such remote systems and may place transmission requests from these systems. Orders placed on these systems will be processed and distributed to the</p>	

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			<p>appropriate libraries. After the desired item is found, the user selects the item for transmission at a specific time and location (step 4030).</p> <p>To complete an order, the remote order processing and item database 300 preferably connects to the compressed data library 118 of choice via the library access interface 121 and communicates with the library system control computer 1123. Preferably the user's account ID, identification of the item for transmission and the chosen destination for the item are communicated. Through employment of distributed order processing systems of this type many orders may be processed with minimal library overhead.</p> <p>All transmission requests from the access methods are placed into a transmission queue managed by the library system control computer 1123. This queue is managed by a program that controls the distribution of the requested items to the reception system 200 of the user. The queue manager program also operates in the system control computer and keeps track of the user ID, the chosen program and price, the user channel type, the number of requests for a given program, the latest delivery time, and the compressed data library media type (for example, high speed or low speed). From this information, the queue manager program makes best use of the available distribution channels and media for efficient transmission and storage of the requested items.</p> <p>The queue manager program also manages the file</p>	



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			<p>transmission process for multiple requests for a single file, stored in the compressed data library 118. During a given time period, the queue manager program will optimize access to the compressed data library 118, wherever possible it will place the data on multiple outputs for simultaneous transmission to more than one requesting user.” (‘992 patent, 13:29-15:54).</p> <p>“The library access interface 121 in the reception system 200 preferably includes a title window where a list of available titles are alphabetically listed. This window has two modes: local listing of material contained within the library system control computer 1123, and library listing for all available titles which may be received from the available, remotely accessible libraries. The titles listed in this window are sent from the database on the library system control computer 1123 or the remote order processing and item database 300.</p> <p>The system may also preferably include dispatching control software which receives input from the remote order processing and item database 300 and sends distribution requests to the distribution systems. In instances where not all items are contained in each of the compressed data libraries 118, the dispatching software will keep a list of the available titles in a particular compressed data library 118. The dispatch software may also preferably coordinate network traffic, source material library 111 utilization, source material library 111 contents, and connection costs. By proper factoring of these variables, efficient use of the available</p>	

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			distribution channels may be achieved.” (‘992 patent, 17:44-66).	
‘992-19, step 3	sending at least a portion of the stored information from the transmission system to the receiving system at the selected remote location;	<p>The components described in the specification and illustrated by Block Diagram 2b, labeled:</p> <p>(1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or</p> <p>(2) compressed data library 118, library system control computer 1123, and library access interface 121.</p>	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises . . . compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.</p> <p>The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.”</p>	<p>See, ‘992 patent, claim 19, step 1.</p> <p>The transmission format conversion CPU 119 transfers the desired segments of data from the compressed data library onto the communication channel and receives the user request and retrieves the requested data blocks from the compressed data library.</p> <p>As an option, the information may be sent directly to the user via the library access interface 121.</p> <p>The transmitters/transceivers 122 of Figure 2b:</p> <p>(1) The Block Diagram shows alternative structures. One or all of them may be necessary depending upon the communication channel(s) which is employed [See, 5<sup>th</sup> CCO, 14:4-8];</p> <p>(2) each communication channel type is accessed through the use of a communication adaptor board or processor connecting the data</p>

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			<p>(‘992 patent, 2:26-61).</p> <p>“As shown in FIG. 1a, the transmission and receiving system may preferably comprise a peer to peer configuration where one transmission system 100 communicates with one reception system 200. As shown in FIG. 1b, the transmission and receiving system of the present invention may alternatively comprise a plurality of reception systems 200, 200’, 200, and 200’, which are each associated with a single transmission system 100.</p> <p>FIG. 1c shows a high level block diagram of the transmission and receiving system of the present invention including remote order processing and item database 300, described in more detail with respect to FIG. 3. Remote order processing and item database 300 preferably enables users to access desired items by remote communication. The remote order processing and item database 300 may communicate with a plurality of transmission systems 100, 100’, 100, and 100’, each of which communicates with a respective set of reception systems 200, 200’, 200, and 200’. Each of the reception systems in sets 200, 200’, 200, and 200’ may preferably communicate with a plurality of users.</p> <p>FIG. 1d shows a high level block diagram of the transmission and receiving system of the present invention including a transmission system 100 distributing to a plurality of users via a reception system 200 configured as a cable television system.</p> <p>FIG. 1e shows a high level block diagram of the</p>	<p>processed in the transmission format converter 119 to the transmission channel;</p> <p>(3) the possible communication channels includes, but is not limited to, common telephone service, ISDN, B-ISDN, DBS, cable television systems, microwave, MAN, LAN, high speed modems, communication couplers.</p> <p>(4) the transmitter 122 places the formatted data onto the communications channel; the signal is sent to the reception system in either a two-way or a one-way communication process;</p> <p>(5) in a standard telephone connection, the transmitter is a modem, in an ISDN channel, the transmitter is a data coupler;</p> <p>(6) the data rate of the transmission is up to 10 Mb/sec;</p> <p>(7) the transmitted data blocks can be multiplexed or non-multiplexed;</p> <p>(8) the transmitted data blocks can be addressed or non-addressed blocks of items, where a block of an</p>

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			<p>transmission and receiving system of the present invention including a transmission system 100 distributing to a plurality reception systems 200 and 200'. In the configuration shown in FIG. 1e, reception system 200 is a direct connection system wherein a user is directly connected to transmission system 100. Reception system 200' preferably includes a first cable television system 200a and a second cable television system 200b. Users of cable television systems 200a and 200b are indirectly connected to transmission system 100.</p> <p>FIG. 1f shows a high level block diagram of the transmission and receiving system of the present invention including transmission system 100 distributing via several channels to reception systems 200 and 200'. Reception system 200 is preferably non-buffering. In such a system, users are directly connected to transmission system 100, as in reception system 200 in FIG. 1e.</p> <p>Reception system 200' shown in FIG. 1fis a cable television system, as shown in reception systems 200' of FIG. 1e. In FIG. 1f, the reception system 200' is preferably buffering, which means that users may receive requested material at a delayed time. The material is buffered in intermediate storage device 200c in reception system 200'.</p> <p>In the configuration of FIG. 1f, decompression of the requested material may preferably occur at the head end</p>	<p>item may be an entire item or a portion of an item;</p> <p>(9) the transmitted data blocks may be composed of either compressed, partially compressed, or fully decompressed data, as required by the reception system;</p> <p>(10) the same data block may be simultaneously transmitted over different distribution channels and the blocks may have receiver addresses appended thereto or the reception system may have been preconfigured to receive the blocks; and</p> <p>(11) audio and/or video information is transmitted.</p>

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			<p>of a cable television reception system 200'. Thus, distribution may be provided to users via standard television encoding methods downstream of the head end of the cable distribution system. This method is preferred for users who only have cable television decoders and standard television receivers.</p> <p>FIG. 1g shows a high level block diagram of the transmission and receiving system of the present invention including transmission system 100 distributing to a reception system 200, which then preferably transmits requested material over airwave communication channels 200d, to a plurality of users. The transmission and receiving system shown in FIG. 1g may preferably transmit either compressed or uncompressed data, depending on the requirements and existing equipment of the user. The airwave transmission and receiving system shown in FIG. 1g may preferably employ either VHF, UHF or satellite broadcasting systems." ('992 patent, 3:61-4:63).</p> <p>"FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b." (5:59-65).</p>	

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			<p>“Transmission system 100 of a preferred embodiment of the present invention preferably includes source material library means for temporary storage of items prior to conversion and storage in a compressed data library means. The items of information may include analog and digital audio and video information as well as physical objects such as books and records which require conversion to a compatible media type before converting, compressing and storing their audio and video data in the compressed data library means.” (‘992 patent, 5:66-6:7).</p> <p>“Prior to being made accessible to a user of the transmission and receiving system of the present invention, the item must be stored in at least one compressed data library 118, and given a unique identification code by identification encoder 112. Storage encoding, performed by identification encoder 112, aside from giving the item a unique identification code, optionally involves logging details about the item, called program notes, and assigning the item a popularity code. Storage encoding may be performed just prior to conversion of the item for transmission to reception system 200, at any time after starting the conversion process, or after storing the item in the compressed data library 118.” (‘992 patent, 6:35-47).</p> <p>“In accordance with a preferred embodiment of the present invention, the transmission system 100 may further comprise compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data with the unique identification</p>	

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			<p>code received from the data compression means. After compression processing by compressor 116, the compressed audio and video data is preferably formatted and placed into a single file by the compressed data storage means 117. The file may contain the compressed audio and/or video data, time markers, and the program notes. The file is addressable through the unique identification code assigned to the data by the identification encoder 112.</p> <p>Further, according to the present invention, the transmission system preferably includes compressed data library means for separately storing composite formatted data blocks for each of the files. The compressed data storage means preferably includes compressed data library 118, as shown in FIG. 2b. After the data is processed into a file by the compressed data storage means 117, it is preferably stored in a compressed data library 118. In a preferred embodiment, compressed data library 118 is a network of mass storage devices connected together via a high speed network. Access to any of the files stored in compressed data library 118 is available from multiple reception systems 200 connected to the transmission and receiving system.</p> <p>Stored items are preferably accessed in compressed data library 118 through a unique address code. The unique address code is a file address for uniquely identifying the compressed data items stored in the compressed data library section of a library system. This file address, combined with the frame number, and the library system</p>	

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			<p>address allow for complete addressability of all items stored in one or more compressed data libraries 118. Compressed data library addresses along with receiving system addresses are used to form a completely unique address for distribution system control.</p> <p>The unique address code is an address assigned to the item by the system operator during storage encoding, which is preferably done prior to long term storage in the compressed data library 118. In a preferred embodiment, the unique address code is used for requesting and accessing information and items throughout the transmission and receiving system. The unique address code makes access to the requested data possible.” (‘992 patent, 10:17-65).</p> <p>“As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very</p>	



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			<p>easily thereby allowing for retrieval from the compressed data library 118 without any help from an interactive system.” (‘992 patent, 11:22-39).</p> <p>“The item database master may reside in the system control computer 1123 where may be is updated and kept current to the contents of the compressed data library 118. The data stored in the item database master may be accessed by users via application programs, running on the system control computer 1123, and on the reception system 200 of the user. Users may connect to the item database via any available telecommunication channels. Copies of the item database master may be updated and informed of new entries into compressed data library 118 at periodic intervals determined by the system manager.</p> <p>Other copies of the item database master may also be made available to users from the remote order processing and item database 300 which batch processes and downloads user requests to the control computer 1123 of the compressed data library 118 via standard telecommunications or high speed communication channels. Moreover, multiple remote order processing and item database 300 sites make it possible for more locations to process orders than there are library facilities, and thus make order processing more efficient.” (‘992 patent, 11:54-12:7).</p> <p>“The storage encoding process performed by identification encoder 112 also allows entry of a popularity code. The popularity code is preferably</p>	

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			<p>assigned on the basis of how often the corresponding item is expected to be requested from the compressed data library 118. This popularity code can be used to determine the most appropriate form of media for storage of the compressed data in a mixed media system. Mixed media systems are preferably employed as more cost effective storage in very large compressed data libraries 118. Once assigned, the popularity code may be dynamically updated, by factoring item usage against system usage. Thus, stored items are dynamically moved to the most appropriate media over their life in the compressed data library 118. If a particular item stored in compressed data library 118 is retrieved frequently by users, storage in compressed data library 118 is preferably on higher speed, more reliable, and probably more expensive media. Such media includes Winchester and magneto-optical disks.</p> <p>If an item stored in compressed data library 118 is retrieved less frequently, it may be stored in the compressed data library 118 on a digital cassette tape. Examples of such cassette tapes are a Honeywell RSS-600 (Honeywell Inc. Minneapolis, Minn.), Summus JukeBoxFilm and tape library (Summus Computer Systems, Houston, Tex. 800-255-9638), or equivalent cassette tapes. All items stored in the compressed data library 118 are on line and are connected to the high speed network. Thus, they may be readily accessed.</p> <p>Instead of using a remote order processing and item database 300, the compressed data library 118 may</p>	

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			<p>include the program notes which were input by the system operator. The program notes may preferably include the title of the item stored in the compressed data library 118, chapter or song titles, running times, credits, the producer of the item, acting and production credits, etc. The program notes of an item stored in the compressed data library 118 may be thus contained within the compressed data file formed in the compressed data formatter 117.</p> <p>In some cases, where multiple compressed data libraries 118 are organized, the popularity code may dictate distribution of a particular item to multiple distribution systems. In such cases, a copy of the compressed data is sent to another library and the other library can then distribute the compressed data to users concurrently with the original compressed data library 118.</p> <p>The compressed data library 118 is composed of a network of storage devices connected through a High Performance Parallel Interface (HPPI) Super Controller (available from Maximum Strategy Inc., San Jose, Calif.). Therefore, multiple communication controllers may preferably access the large quantity of data stored in compressed data library 118 at very high speeds for transfer to a reception system 200 of a user upon request. For more details on this configuration see Ohrenstein, "Supercomputers Seek High Throughput and Expandable Storage", Computer Technology Review, pp. 33-39 April 1990.</p>	

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			<p>The use of an HPPI controller allows file placement onto multiple mass storage devices of the compressed data library 118 with a minimum of overhead. Database management software controls the location and tracking of the compressed data library 118 which can be located across multiple clusters of file servers connected together by one or more high speed networks over multiple systems.</p> <p>The transmission system 100 of the present invention may also preferably include library access/interface means for receiving transmission requests to transmit items and for retrieving formatted data blocks stored in the compressed data library 118 corresponding to the requests from users. The compressed audio and/or video data blocks, along with any of the information about the item stored in the compressed data library 118 may be accessed via library access interface 121. The library access interface 121 receives transmission requests either directly from the users or indirectly by remote order processing and item database 300. The transmission format means 119 receives the request and retrieves the composite formatted data block of the requested item stored in compressed data library 118 and converts the compressed formatted data block into a format suitable for transmission. The requested item is then sent to the user via the transmitter 122 or directly via interface 121.</p> <p>In a preferred embodiment of the present invention, customer access of an item stored in compressed data library 118 via the library access interface 121 may be</p>	

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			<p>performed in various ways. The methods of requesting a stored item are analogous to making an airline reservation or transferring funds between bank accounts. Just as there are different methods available for these processes it is desirable to have several ordering methods available to the users of the system of the present invention. For example, telephone tone decoders and voice response hardware may be employed. Additionally, operator assisted service or user terminal interfaces may be used.” (‘992 patent, 12:28-13:60).</p> <p>“To complete an order, the remote order processing and item database 300 preferably connects to the compressed data library 118 of choice via the library access interface 121 and communicates with the library system control computer 1123. Preferably the user's account ID, identification of the item for transmission and the chosen destination for the item are communicated. Through employment of distributed order processing systems of this type many orders may be processed with minimal library overhead.</p> <p>All transmission requests from the access methods are placed into a transmission queue managed by the library system control computer 1123. This queue is managed by a program that controls the distribution of the requested items to the reception system 200 of the user. The queue manager program also operates in the system control computer and keeps track of the user ID, the chosen program and price, the user channel type, the number of requests for a given program, the latest delivery time, and</p>	

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			<p>the compressed data library media type (for example, high speed or low speed). From this information, the queue manager program makes best use of the available distribution channels and media for efficient transmission and storage of the requested items.</p> <p>The queue manager program also manages the file transmission process for multiple requests for a single file, stored in the compressed data library 118. During a given time period, the queue manager program will optimize access to the compressed data library 118, wherever possible it will place the data on multiple outputs for simultaneous transmission to more than one requesting user.</p> <p>The conversion performed by transmission data converter 119 encodes the data for the transmission channel. The transmission data converter transfers the desired segments of data from the compressed data library 118 onto the communication channel which is used to deliver the data to the reception system 200.</p> <p>The transmission system 100 of the present invention preferably further includes transmitter means 122, coupled to the compressed data library 118, for sending at least a portion of a specific file to at least one remote location. The transmission and receiving system of the present invention preferably operates with any available communication channels. Each channel type is accessed through the use of a communications adaptor board or processor connecting the data processed in the</p>	

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			<p>transmission format converter 119 to the transmission channel.” (‘992 patent, 15:23-16:3).</p> <p>“A preferred embodiment of the present invention also includes means by which to access users via common access lines. These may include standard telephone, ISDN or B-ISDN, microwave, DBS, cable television systems, MAN, high speed modems, or communication couplers. Metropolitan Area Networks (MANs) which are common carrier or private communication channels are designed to link sites in a region. MANs are described by Morreale and Campbell in “Metropolitan-area networks” (IEEE Spectrum, May 1990 pp. 40-42). The communication lines are used to transmit the compressed data at rates up to, typically, 10 Mb/sec.</p> <p>In order to serve a multitude of channel types, a preferred embodiment of the present invention includes a multitude of output ports of each type connected to one or more computers on the transmission and receiving system. The management of transmission is then distributed. That is, the computer controlling the transmission queue tells the transmission encoding computer its task and then the task is executed by the transmission encoding computer, independent of the transmission queue computer. The transmission queue computer provides the data for transmission by the file server which also distributes to other transmitters located in the same or other transmission encoding computers.” (‘992 patent, 16:4-28).</p>	

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			<p>“FIG. 5 is a flowchart of a preferred method of implementing a queue manager program of the present invention. The queue manager program, in the distribution process, preferably confirms availability of an item from the compressed data library 118 and logically connects the item stored in compressed data library 118 to the communications controller, illustrated in FIG. 2a (step 5010). After availability is confirmed in step 5010, the data awaits transmission by the transmitter 122.” (‘992 patent, 16:29-37).</p> <p>“The system may also preferably include dispatching control software which receives input from the remote order processing and item database 300 and sends distribution requests to the distribution systems. In instances where not all items are contained in each of the compressed data libraries 118, the dispatching software will keep a list of the available titles in a particular compressed data library 118. The dispatch software may also preferably coordinate network traffic, source material library 111 utilization, source material library 111 contents, and connection costs. By proper factoring of these variables, efficient use of the available distribution channels may be achieved.” (‘992 patent, 17:54-66).</p> <p>“After the information is processed for efficient transfer, in substeps 413a-e of step 413, the distribution method 400 of the present invention preferably includes the step of storing the processed information is stored in a compressed data library (step 414). Preferably, the</p>	



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			<p>compressed data library is analogous to compressed data library 118, described with respect to FIG. 2a.” (‘992 patent, 19:11-17).</p> <p>“FIG. 8e shows methods of distribution to reception systems 200 with both multiplexed and non-multiplexed signal paths, both addressed and non-addressed blocks of items. A block of an item may be an entire item or, alternatively, may be only a portion of an item, as selected by a user. Further, the blocks may be composed of either compressed, partially compressed, or fully decompressed data, as required by the configuration of the reception system 200.</p> <p>As shown in FIG. 8e, the same block, for example, block 1, may be simultaneously transmitted over different distribution channels. The blocks when transmitted over one of the distribution channels may have receiver addresses appended to the blocks or the reception system 200 may have been preconfigured to receive the blocks comprising data frames for particular items from the active distribution channel.” (‘992 patent, 19:57-20:5).</p>	
‘992-19, step 4	receiving the sent information by the receiving system at the selected remote location;	The component described in the specification and illustrated by Block Diagram 6, labeled 201.	“The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to	The transceiver 201: (1) receives audio and/or video information transmitted by the transmission system; and (2) outputs information to the receiver format converter 201.

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			<p>the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” ('992 patent, 2:49-61).</p> <p>“Additionally, the present invention comprises a receiving system responsive to a user input identifying a choice of an item stored in a source material library to be played back to the subscriber at a location remote from the source material library, the item containing information to be sent from a transmitter to the receiving system, and wherein the receiving system comprises transceiver means for automatically receiving the requested information from the transmitter as compressed formatted data blocks; receiver format conversion means, coupled to the transceiver means, for converting the compressed formatted data blocks into a format suitable for storage and processing resulting in playback in real time; storage means, coupled to the receiver format conversion means, for holding the compressed formatted data; decompressing means, coupled to the receiver format conversion means, for decompressing the compressed formatted information; and output data conversion means, coupled to the decompressing means, for playing back the decompressed information in real time at a time specified by the user.” ('992 patent, 2:62-3:14).</p> <p>“In order that reception is performed efficiently, the reception system 200 confirms reception of the initial</p>	

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			<p>data block before receiving the remaining data blocks whenever possible (step 5060). After all data blocks have been received and reception is confirmed, the communications controller breaks the physical connection to the reception system 200 (step 5070). Then, confirmation of the transmission is sent to the queue manager (step 5080). Finally, the queue manager updates the list and sends the information to the billing program, which updates the account of the user (step 5090).</p> <p>When item distribution occurs through a broadcasting method such as a communications satellite, the process is one way, with ongoing reception not being confirmed by the reception system 200. In these situations, some further redundancy is included by transmission formatter 122 with the data blocks for error correction processing to be performed in the reception system 200. In such one way communication situations, the queue manager program running in library system control computer 1123 confirms reception, via telephone line connection for example, to the reception system 200 after distribution. This should occur prior to updating the user's account and the dispatch lists." ('992 patent, 17:1-24).</p> <p>"The reception system 200 includes transceiver 201 which receives the audio and/or video information transmitted by transmitter 122 of the transmission system 100. The transceiver 201 automatically receives the information from the transmitter 122 as compressed</p>	

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			<p>formatted data blocks.</p> <p>The transceiver 201 is preferably connected to receiver format converter 202.” (‘992 patent, 18:3-10).</p> <p>“The information is preferably transmitted over an existing communication channel to a reception system 200, and is received by that system (step 417). When the information is received in step 417, it is preferably formatted for the particular type of reception system 200 to which the information is sent.” (‘992 patent, 19:24-29).</p> <p>“FIG. 8e shows methods of distribution to reception systems 200 with both multiplexed and non-multiplexed signal paths, both addressed and non-addressed blocks of items. A block of an item may be an entire item or, alternatively, may be only a portion of an item, as selected by a user. Further, the blocks may be composed of either compressed, partially compressed, or fully decompressed data, as required by the configuration of the reception system 200.</p> <p>As shown in FIG. 8e, the same block, for example, block 1, may be simultaneously transmitted over different distribution channels. The blocks when transmitted over one of the distribution channels may have receiver addresses appended to the blocks or the reception system 200 may have been preconfigured to receive the blocks comprising data frames for particular items from the active distribution channel.” (‘992 patent, 19:57-20:5).</p>	

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‘992-19, step 5	storing a complete copy of the received information in the receiving system at the selected remote location; and	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.	<p>“The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” (‘992 patent, 2:49-61).</p> <p>“Additionally, the present invention comprises a receiving system responsive to a user input identifying a choice of an item stored in a source material library to be played back to the subscriber at a location remote from the source material library, the item containing information to be sent from a transmitter to the receiving system, and wherein the receiving system comprises transceiver means for automatically receiving the requested information from the transmitter as compressed formatted data blocks; receiver format conversion means, coupled to the transceiver means, for converting the compressed formatted data blocks into a format suitable for storage and processing resulting in playback in real time; storage means, coupled to the receiver format conversion means, for holding the compressed formatted data; decompressing means, coupled to the receiver</p>	<p>See, ‘992 patent, claim 19, step 3.</p> <p>The storage devices 203 and 200c:</p> <p>(1) receive information from the receiver format converter;</p> <p>(2) may output compressed information to an output format converter 206 or may output information to a data formatter 204 or to a video decompressor 208 or audio decompressor 209;</p> <p>(3) may be part of the head end of a cable television system;</p> <p>(4) stores the received information in the event that the user wants to play back the information at a later time than when initially requested; and</p> <p>(5) may perform a combination of buffering and non-buffering by buffering some of the requested material and decompressing the remainder of the material for immediate viewing as it is distributed by transmission system.</p>

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			<p>format conversion means, for decompressing the compressed formatted information; and output data conversion means, coupled to the decompressing means, for playing back the decompressed information in real time at a time specified by the user.” (‘992 patent, 2:62-3:14).</p> <p>“Reception system 200’ shown in FIG. 1f is a cable television system, as shown in reception systems 200’ of FIG. 1e. In FIG. 1f, the reception system 200’ is preferably buffering, which means that users may receive requested material at a delayed time. The material is buffered in intermediate storage device 200c in reception system 200’.” (‘992 patent, 4:37-43).</p> <p>“With respect to the transmission and receiving systems set forth in FIGS. 1a-1g, the requested material may be fully compressed and encoded, partly decompressed at some stage in transmission system 100, or fully decompressed prior to transmission. The reception systems 200 may either buffer the requested material for later viewing, or decompress in real time the requested material as it is distributed by transmission system 100. Alternatively, the reception systems 200 of the present invention may perform a combination of buffering and non-buffering by buffering some of the requested material and decompressing the remainder of the requested material for immediate viewing as it is distributed by transmission system 100.” (‘992 patent, 4:64-5:9).</p>	

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			<p>“In non-direct connection reception systems such as shown in reception system 200’ of FIG. 1f, intermediate storage device 200c may preferably include, for example, sixteen hours of random access internal audio and video storage. A reception system with such storage is capable of storing several requested items for future playback. The user could then view and/or record a copy of the decompressed requested material in real time, or compressed in non-real time, at a time of their choosing. Accordingly, the user would not have to make a trip to the store to purchase or rent the requested material.” (‘992 patent, 5:22-33).</p> <p>“The transceiver 201 is preferably connected to receiver format converter 202. The receiver format converter 202 converts the compressed formatted data blocks into a format suitable for playback by the user in real time.” (‘992 patent, 18:9-13).</p> <p>“In the reception system 200 of the present invention, the user may want to play back the requested item from the source material library 111 at a time later than when initially requested. If that is the case, the compressed formatted data blocks from receiver format converter 202 are stored in storage 203. Storage 203 allows for temporary storage of the requested item until playback is requested.” (‘992 patent, 18:14-21).</p> <p>“The received information is preferably buffered (step 418) by a storage means analogous to element 203 shown in FIG. 3. The information is preferably buffered so that</p>	

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			it may be stored by the user for possible future viewings. The requested information is then payed back to the reception system 200 of the user at the time requested by the user (step 419).” (‘992 patent, 19:30-36).	
‘992-19, step 6	playing back the stored copy of the information using the receiving system at the selected remote location at a time requested by the user.	The components described in the specification and illustrated by Block Diagram 6, labeled output data formatter labeled “compressed”, output data formatters labeled 211, 212, 213, and/or 214. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.	<p>“The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” (‘992 patent, 2:49-61).</p> <p>“Additionally, the present invention comprises a receiving system responsive to a user input identifying a choice of an item stored in a source material library to be played back to the subscriber at a location remote from the source material library, the item containing information to be sent from a transmitter to the receiving system, and wherein the receiving system comprises transceiver means for automatically receiving the requested information from the transmitter as compressed formatted data blocks; receiver format conversion means, coupled to the transceiver means, for converting the</p>	<p>The data formatter 204:</p> <p>(1) is optional, because it is unnecessary in a system that receives only audio information or only video information;</p> <p>(2) receives information from the storage 203 or from the receiver format converter 202;</p> <p>(3) outputs information to the video and/or audio decompressors 208 and 209; and</p> <p>(4) processes the compressed formatted data blocks and distinguishes audio information from video information.</p> <p>The video decompressor 208 and audio decompressor 209:</p> <p>(1) may receive information from the data formatter (if both audio and video information is received) or from the receiver format converter or storage (if only audio or video</p>



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			<p>compressed formatted data blocks into a format suitable for storage and processing resulting in playback in real time; storage means, coupled to the receiver format conversion means, for holding the compressed formatted data; decompressing means, coupled to the receiver format conversion means, for decompressing the compressed formatted information; and output data conversion means, coupled to the decompressing means, for playing back the decompressed information in real time at a time specified by the user.” (‘992 patent, 2:62-3:14).</p> <p>“When playback is requested, the compressed formatted data blocks are sent to data formatter 204. Data formatter 204 processes the compressed formatted data blocks and distinguishes audio information from video information.</p> <p>The separated audio and video information are respectively decompressed by audio decompressor 209 and video decompressor 208. The decompressed video data is then sent simultaneously to converter 206 including digital video output converter 211 and analog video output converter 213. The decompressed audio data is sent simultaneously to digital audio output converter 212 and analog audio output converter 214. The outputs from converters 211-214 are produced in real time.</p> <p>The real time output signals are output to a playback system such as a TV or audio amplifier. They may also be sent to an audio/video recorder of the user. By using</p>	<p>information is received); and</p> <p>(2) outputs information to output format converters 211, 212, 213, and 214 depending upon whether audio and/or video information is included and whether analog or digital output is desired.</p> <p>The output format converters:</p> <p>(1) output format converters 211 and 213 are only required if any video information is received;</p> <p>(2) output format converters 212 and 214 are only required if any audio information is received;</p> <p>(3) output format converters 211 and 212 are only required if digital output is desired;</p> <p>(4) output format converters 213 and 214 are only required if audio output is desired;</p> <p>(5) output format converters 211 and 213 receive information from the video decompressor;</p> <p>(6) output format converters 212 and 214 receive information from the audio decompressor;</p>

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			the reception system 200 of the present invention, the user may utilize the stop, pause, and multiple viewing functions of the receiving device. Moreover, in a preferred embodiment of the present invention, the output format converters may be connected to a recorder which enables the user to record the requested item for future multiple playbacks.” (‘992 patent, 18:22-45).	(7) output format converters 211, 212, 213, and 214 each output information at a real time rate and output information to a playback system such as a TV or audio amplifier or to an audio video/recorder; and  (8) output from the output format converters 211-214 may be controlled by playback controls, such as play, fast forward, rewind, stop, pause, and play slow.
‘992-20, step 1	converting the analog signals of the information to digital components;	The component described in the specification and illustrated by Block Diagram 2a, labeled as components 123a and/or 123b.	See, ‘992 patent, claim 41, step 4.	See, ‘992 patent, claim 41, step 4.
‘992-20, step 2	formatting the digital signals of the information;	The components described in the specification and illustrated by Block Diagram 2a, labeled as components 125a	See, ‘992 patent, claim 41, step 4.	See, ‘992 patent, claim 41, step 4.

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		and/or 125b.		
'992-20, step 3	ordering the converted analog signals and the formatted digital signals into a sequence of addressable data blocks and;	The component described in the specification and illustrated by Block diagram 2a, labeled 114.	See, '992 patent, claim 41, step 5.	See, '992 patent, claim 41, step 5.
'992-20, step 4	compressing the ordered information.	The component described in the specification and illustrated by Block diagram 2a, labeled 116, including audio compressor 128 and/or video compressor 129. The precompression processor 115 is optional.	See, '992 patent, claim 41, step 6.	See, '992 patent, claim 41, step 6.
'992-21,	storing the items in a	The component described in the	See, '992 patent, claim 19, step 1.	See, '992 patent, claim 19, step 1.

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step 1	plurality of compressed audio and video libraries in the transmission system.	specification and illustrated by Block Diagram 2b, labeled compressed data library 118. More than one compressed data library 118 is required.		
'992-22, step 1	storing a list of items available to the user from at least one compressed data library; and	The components described in the specification and illustrated by Block diagram 2a, labeled library system control computer 1123, the component described in the specification and illustrated in Figure 1c, labeled as the remote order processing and item database 300, the dispatching control software, multiple	“Item addresses are mapped to item names by identification encoder 112 and may preferably be used as an alternative method of accessing items. The item names are easier to remember, thus making user access more intuitive by using item names. The storage encoding entry process performed in identification encoder 112 operates a program which updates a master item database containing facts regarding items in the compressed data library system. The storage encoding process may be run by the system operator whereby the system operator accesses the master item database to track and describe items stored in one or more compressed data libraries. The names and other facts in the item database may preferably be updated at any time via the storage encoding process. Changes made to the master item database may be periodically sent to the remote order processing and item database 300.	The library access interface 121, remote order processing and item database 300, and library system control computer 1123:  (1) the remote order processing and item database 300 may connect to the compressed data library of choice via the library access interface 121 and communicates with the library system control computer 1123;  (2) the item database master may reside in the library system control computer 1123;  (3) users may access the data stored in the item database master via application programs running on the

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		database servers, and/or other computer systems.	<p>As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very easily thereby allowing for retrieval from the compressed data library 118 without any help from an interactive system.</p> <p>To achieve user access via an interactive system, facts about the items may be kept in files as a part of the items or the facts may be kept separately, for example, by systems which only to inform users of the available items and take orders. For example, in systems which have portions split in separate locations, the facts about the items may be separated from the items themselves and stored in separate files. A system of this type can distribute user orders to other portions of the transmission and receiving system for ultimate distribution to the requesting user. Further, to support a</p>	<p>system control computer 1123 and on the reception system 200 of the user;</p> <p>(4) users may connect to the item database via any available telecommunication channel;</p> <p>(5) the library access interface 121 sends information to the library system control computer 1123;</p> <p>(6) the library system control computer sends information to the transmission format conversion CPU(s) and/or to the compressed data library;</p> <p>(7) the names and other facts in the item data base may be updated at any time via the storage encoding process;</p> <p>(8) a catalog listing some or all of the available titles may be published;</p> <p>(9) Facts about the items may be kept in files as part of the items or the facts may be kept separately;</p> <p>(10) the item database master may reside in the library system control computer 1123;</p>

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			<p>plurality of users, multiple versions of the item database may preferably reside either on multiple database servers, in catalogs, or on other computer systems.</p> <p>The item database master may reside in the system control computer 1123 where may be is updated and kept current to the contents of the compressed data library 118. The data stored in the item database master may be accessed by users via application programs, running on the system control computer 1123, and on the reception system 200 of the user. Users may connect to the item database via any available telecommunication channels. Copies of the item database master may be updated and informed of new entries into compressed data library 118 at periodic intervals determined by the system manager.</p> <p>Other copies of the item database master may also be made available to users from the remote order processing and item database 300 which batch processes and downloads user requests to the control computer 1123 of the compressed data library 118 via standard telecommunications or high speed communication channels. Moreover, multiple remote order processing and item database 300 sites make it possible for more locations to process orders than there are library facilities, and thus make order processing more efficient.</p> <p>Preferably, access of a requested item via the remote order processing and item database 300 operates as follows. If the user does not know the title of the desired item, he or she may request the item by naming other</p>	<p>(11) the data stored in the item database master may be accessed by users via application programs running on the library system control computer 1123 and on the reception system 200;</p> <p>(12) the item database may be made available to users from the remote order processing and item database 300;</p> <p>(13) the user may search the remote order processing and item database or the library system computer 1123 for available titles and may select a title from the search results.</p>

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			<p>unique facts related to the item. For example, a user would be able to access an item about Tibetan Medicine by asking for all items which include information about “Tibet” and include information about “Medicine.” The remote order processing and item database 300 would then be searched for all records matching this request. If there is more than one item with a match, each of the names of the matching items are preferably indicated to the user. The user then selects the item or items that he or she desires. Upon selection and confirmation, by the user, a request for transmission of a particular item or items is sent to the distribution manager program of the system control computer 1123. The request contains the address of the user, the address of the item, and optionally includes specific frame numbers, and a desired viewing time of the item.” (‘992 patent, 11:5-12:27).</p> <p>“This process of access, performed by remote order processing and item database configuration 300, shown in FIG. 1c, preferably includes the following steps, shown in flowchart 3000 of FIG. 3. First, the user calls the system access number (step 3010). Upon successfully dialing the system access number, the user receives instructions from the system (step 3020). The instructions may preferably include steps the user must take in order to place an order. Preferably, the instructions may be bypassed by the experienced user who knows how to place an order.</p> <p>The user then enters a customer ID code by which the system accesses the user's account, and indicates to the</p>	

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			<p>system that the user is a subscriber of the system (step 3030). In response to the user entering his ID code in step 3030 the system confirms whether the user is in good standing (step 3040). If the user is in good standing, the system queues the user to input his request (step 3050).</p> <p>The user request may preferably be made from a catalog sent to each of the subscribers of the system. The user will preferably identify his choice and enter the corresponding identification code of the item (step 3060). The system then preferably confirms the selection that the user has made and informs the user of the price of the selection (step 3070).</p> <p>The user then indicates whether the confirmation performed in step 3070 is correct (step 3080). If the confirmation performed in step 3070 is correct, the user so indicates and then inputs a desired delivery time and delivery location (step 3090).</p> <p>If the confirmation performed in step 3070 does not result in the selection desired by the user, the user re-inputs the item identification code in step 3060 and the confirmation steps 3070 and 3080 are repeated. Therefore, proper selection of the selected item is insured. Once there is confirmation, the user enters the playback time and destination in step 3090.</p> <p>The user then preferably confirms that the order is correct (step 3100). The confirmation performed in step 3100 includes confirmation of the entire transaction including the selected item, the selected time of</p>	



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			<p>playback, and the location of playback. The transaction is then completed and the request is placed on a transmission queue at the appropriate compressed data library 118 (step 3110).</p> <p>Access by the users via operator assisted service includes telephone operators who answer calls from the users. The operators can sign up new customers, take orders, and help with any billing problems. The operators will preferably have computer terminals which give them access to account information and available program information. Operators can also assist a user who does not know a title by looking up information stored in files which may contain the program notes, as described above. Once the chosen program is identified, the operator informs the user of the price. After the user confirms the order, the user indicates the desired delivery time and destination. The operator then enters the user request into the system. The request is placed in the transmission queue.</p> <p>Access by a user terminal interface method provides the user with access from various terminals including personal computers, and specialized interfaces built into the reception system 200 for the user. Such access allows a user to do a search of available programs from a computer screen. This process involves the steps 4000 shown in FIG. 4.</p> <p>FIG. 4 is a flowchart of a preferred method of user request via a user interface of the present invention. In</p>	

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			<p>the preferred method of FIG. 4, the user first logs onto the user terminal interface (step 4010). After the user logs on, the user may preferably select a desired item by searching the database of available titles in the library system control computer 1123 or any remote order processing and item database 300 (step 4020). The search may preferably be performed using the database containing the program notes, described above with respect to FIGS. 2a and 2b. It is possible to process orders and operate a database of available titles at multiple locations remote of the source material library 111. Users and order processing operators may preferably access such remote systems and may place transmission requests from these systems. Orders placed on these systems will be processed and distributed to the appropriate libraries. After the desired item is found, the user selects the item for transmission at a specific time and location (step 4030).” (‘992 patent, 14:3-15:22).</p>	
‘992-22, step 2	providing the user with the list so that the user may remotely select a particular item for transmission.	The component described in the specification and illustrated by Block diagram 2a, labeled library access interface 121 and library system control computer 1123, an application interface program	See, ‘992 patent, claim 22, step 2.	See, ‘992 patent, claim 22, step 1.

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		<p>running on the system control computer 1123, the component described in the specification and illustrated in Figure 1c, labeled as the remote order processing and item database 300, the dispatching control software, multiple database servers, and/or other computer systems. Alternatively, the component is a system operator.</p>		
'992-22, step 3	<p>providing the user with the list so that the user may remotely select a particular item for transmission.</p>	<p>The component described in the specification and illustrated by Block diagram 6 labeled user/computer interface 207 and/or the user's telephone.</p>	<p>See, '992 patent, claim 22, step 1.</p>	<p>See, '992 patent, claim 22, step 1.</p>

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'992-41, step 1	storing items having information in a source material library;	The component described in the specification and illustrated by Block Diagram 2a, labeled 111.	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” ('992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100</p>	<p>The Court has already held that the source material library is the structure for storing items having information. In its 1st CCO, the Court held that the corresponding structure in the specification for performing the claimed function of “storing items having information” is source material library 111. (1st CCO, at 12:12-15).</p> <p>The source material library 111:</p> <p>(1) provides temporary storage of items prior to conversion and storage in a compressed data library means;</p> <p>(2) may be a single source material library or a plurality of source material libraries which may be geographically located close together or far apart;</p> <p>(3) may communicate with one another using methods and channels similar to the communication with a receiving system 200 or they may communicate via any available method;</p>

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			<p>may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“Transmission system 100 of a preferred embodiment of the present invention preferably includes source material library means for temporary storage of items prior to conversion and storage in a compressed data library means. The items of information may include analog and digital audio and video information as well as physical objects such as books and records which require conversion to a compatible media type before converting, compressing and storing their audio and video data in the compressed data library means.” (‘992 patent, 5:66-6:7).</p> <p>“As shown in FIG. 2a, the source material library means included in transmission system 100 preferably includes a source material library 111. The source material library 111 may include different types of materials including television programs, movies, audio recordings, still pictures, files, books, computer tapes, computer disks, documents of various sorts, musical instruments, and other physical objects. These materials are converted to or recorded on a media format compatible to the digital and analog inputs of the system prior to being compressed and stored in a compressed data library 118. The different media formats preferably include digital or analog audio and video tapes, laser disks, film images, optical disks, magnetic disks, computer tapes, disks and,</p>	<p>(4) may output information to an identification encoder or to one or both types of input receivers, depending on which is present in the converter and depending on whether the information comprises audio and/or video information;</p> <p>(5) may be coordinated using dispatching software to coordinate network traffic, source material library 111 utilization, source material library 111 contents, and connection costs; and</p> <p>(6) may receive user requests for the transmission of an item.</p>

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			<p>cartridges.</p> <p>The source material library 111, according to a preferred embodiment of the present invention, may preferably include a single source material library or a plurality of source material libraries. If there are a plurality of source material libraries, they may be geographically located close together or may be located far apart. The plurality of source material libraries may communicate using methods and channels similar to the methods and channel types which libraries may employ for communication with the receiving system 200 of the user, or the source material libraries may communicate via any available method.” (‘992 patent, 6:8-34).</p> <p>“Prior to being made accessible to a user of the transmission and receiving system of the present invention, the item must be stored in at least one compressed data library 118, and given a unique identification code by identification encoder 112. Storage encoding, performed by identification encoder 112, aside from giving the item a unique identification code, optionally involves logging details about the item, called program notes, and assigning the item a popularity code. Storage encoding may be performed just prior to conversion of the item for transmission to reception system 200, at any time after starting the conversion process, or after storing the item in the compressed data library 118.” (‘992 patent, 6:35-47).</p> <p>“In a preferred embodiment of the present invention, the</p>	

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			<p>method of encoding the information involves assigning a unique identification code and a file address to the item, assigning a popularity code, and inputting the program notes. This process is identical for any of the different media types stored in the source material library 111.</p> <p>The transmission system 100 of the present invention also preferably includes conversion means 113 for placing the items from source material library 111 into a predetermined format as formatted data. In the preferred embodiment, after identification encoding is performed by identification encoder 112, the retrieved information is placed into a predetermined format as formatted data by the converter 113. The items stored in source material library 111 and encoded by identification encoder 112 may be in either analog or digital form. Converter 113 therefore includes analog input receiver 127 and digital input receiver 124. If items have only one format, only one type of input receiver 124 or 127 is necessary.” (‘992 patent, 6:48-68).</p> <p>“The system may also preferably include dispatching control software which receives input from the remote order processing and item database 300 and sends distribution requests to the distribution systems. In instances where not all items are contained in each of the compressed data libraries 118, the dispatching software will keep a list of the available titles in a particular compressed data library 118. The dispatch software may also preferably coordinate network traffic, source material library 111 utilization, source material library</p>	

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			<p>111 contents, and connection costs. By proper factoring of these variables, efficient use of the available distribution channels may be achieved.” (‘992 patent, 17:54-66).</p> <p>“FIG. 6 illustrates a block diagram of a preferred implementation of the reception system 200 according to the present invention. The reception system 200 is responsive to user requests for information stored in source material library 111.” (‘992 patent, 17:67-18:3).</p> <p>“As illustrated in FIG. 7, the first step of the distribution method 400 involves retrieving the information for selected items in the source material library 111, upon a request by a user of the distribution system (step 412). This is analogous to taking books off of a shelf at the local public library after the person has decided that he or she would like to read them.” (‘992 patent, 18:53-59).</p> <p>“The combination of the audio frames 812, video frames 822, and data frames 832 comprise the elements of a single item. FIG. 8d shows a block representation of for three illustrative items which may be stored in the source material library 111. Each of items 1-3 contains its own arrangement of video frames 812, audio frames 822, and data frames 832.” (‘992 patent, 19:49-56).</p>	
‘992-41, step 2	retrieving the information in the items from the source	The component described in the specification and understood by	“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises	The telecine device and the audio digital playback devices are optional devices, used in instances when the item having information is a film



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	material library;	<p>persons of ordinary skill in the art at the time of the '992 patent as a playback device for playing back physical items, such as video tapes, film, or computer disks, which contain audio information, video information, or both.</p> <p>In the context of the item being a film, the specification provides the example of a digital telecine device for the video portion of the film and an optical or magnetic digital playback device for the audio information of the film.</p> <p>Such playback devices utilize system operator</p>	<p>source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” ('992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“Transmission system 100 of a preferred embodiment of</p>	<p>having digital audio. Although no other device is explicitly recited in the specification for retrieving the information in the items, persons skilled in the art in 1991 would have known which devices would be used to play back items having information and the patentees did not need to describe each and every possible device used to playback physical items having information, such as video tapes, film, or computer disks, which contain audio information, video information, or both.</p> <p>The playback device is optional, because one would be unnecessary if the item is received via interlibrary transfer and the item is already in a compressed format.</p>

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		interaction.	<p>the present invention preferably includes source material library means for temporary storage of items prior to conversion and storage in a compressed data library means. The items of information may include analog and digital audio and video information as well as physical objects such as books and records which require conversion to a compatible media type before converting, compressing and storing their audio and video data in the compressed data library means.</p> <p>As shown in FIG. 2a, the source material library means included in transmission system 100 preferably includes a source material library 111. The source material library 111 may include different types of materials including television programs, movies, audio recordings, still pictures, files, books, computer tapes, computer disks, documents of various sorts, musical instruments, and other physical objects. These materials are converted to or recorded on a media format compatible to the digital and analog inputs of the system prior to being compressed and stored in a compressed data library 118. The different media formats preferably include digital or analog audio and video tapes, laser disks, film images, optical disks, magnetic disks, computer tapes, disks and, cartridges.” (‘992 patent, 5:66-6:22).</p> <p>“If, for example, the retrieved information to be converted from the source material library 111 is a motion picture film, the picture frames in the film are passed through a digital telecine device to the digital input receiver 124. Format conversion is then preferably</p>	

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			<p>performed by digital video formatter 125b. Accompanying audio information is passed through an optical or magnetic digital playback device. This device is connected to digital audio formatter 125a.” (‘992 patent, 7:35-43).</p> <p>“In some cases, such as in inter-library transfers, incoming materials may be in a previously compressed form so that there is no need to perform compression by precompression processor 115 and compressors 128 and 129. In such a case, retrieved items are passed directly from identification encoder 112 to the compressed data formatter 117. The item database records, such as the program notes which may also be input from another system, to the compressed data formatting section 117, where this data, if necessary, is reformatted to make it compatible with the material stored in compressed data library 118. Such material may be received in the form of digital tapes or via existing communication channels and may preferably input directly to a short term storage 117’ in the compressed data formatting section 117.” (‘992 patent, 7:44-58).</p>	
‘992-41, step 3	assigning a unique identification code to the retrieved information;	The components described in the specification and illustrated by Block Diagram 2a, labeled 112 and identified in the specification as	“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source	<p>In its 2nd CCO, the Court delineated the possible functions (optional and mandatory) disclosed in the specification for the identification encoder:</p> <p>(1) the identification encoder 112 gives a unique identification code to</p>

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		the identification encoder and a system operator.	<p>material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” (‘992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“Prior to being made accessible to a user of the transmission and receiving system of the present invention, the item must be stored in at least one compressed data library 118, and given a unique</p>	<p>items stored in a compressed data library (6:34-35 [referring in each instance to the column:line numbers in the ‘702 patent]);</p> <p>(2) performs storage encoding (giving the item a unique identification code, optionally logging details about the item, called program notes, and assigning the item a popularity code) just prior to conversion of the item for transmission to reception system, at any item after starting the conversion process, or after storing the item in the compressed data library (6:34-42);</p> <p>(3) preferably assigns: a unique identification code, a file address, a popularity code and input program notes (6:43-48);</p> <p>(4) inputs digital signal to digital input receiver (6:62-64);</p> <p>(5) inputs analog signal to analog-to-digital converter (7:6-8);</p> <p>(6) passes previously compressed items directly to the compressed data library (7:36-41);</p>

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			<p>identification code by identification encoder 112. Storage encoding, performed by identification encoder 112, aside from giving the item a unique identification code, optionally involves logging details about the item, called program notes, and assigning the item a popularity code. Storage encoding may be performed just prior to conversion of the item for transmission to reception system 200, at any time after starting the conversion process, or after storing the item in the compressed data library 118.</p> <p>In a preferred embodiment of the present invention, the method of encoding the information involves assigning a unique identification code and a file address to the item, assigning a popularity code, and inputting the program notes. This process is identical for any of the different media types stored in the source material library 111.</p> <p>The transmission system 100 of the present invention also preferably includes conversion means 113 for placing the items from source material library 111 into a predetermined format as formatted data. In the preferred embodiment, after identification encoding is performed by identification encoder 112, the retrieved information is placed into a predetermined format as formatted data by the converter 113. The items stored in source material library 111 and encoded by identification encoder 112 may be in either analog or digital form. Converter 113 therefore includes analog input receiver 127 and digital input receiver 124. If items have only one format, only</p>	<p>(7) allows entry of item notes and production credits (10:45-51);</p> <p>(8) maps item addresses to item names as an alternative method of accessing items (10:52-53);</p> <p>(9) operates a program which updates a master item database (on the library access control computer 1123) containing facts regarding items in the compressed data library system (10:56-59); and</p> <p>(10) generates a unique address code which makes access to the requested data possible (10:43-44).</p> <p>The specification also states that storage encoding is performed by a system operator and, in its 3rd CCO, the Court held that the system operator is a part of the transmission system (3<sup>rd</sup> CCO, at 13:10-14:6).</p>

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			<p>one type of input receiver 124 or 127 is necessary.</p> <p>When the information from identification encoder 112 is digital, the digital signal is input to the digital input receiver 124 where it is converted to a proper voltage. A formatter 125 sets the correct bit rates and encodes into least significant bit (lsb) first pulse code modulated (pcm) data. Formatter 125 includes digital audio formatter 125a and digital video formatter 125b. The digital audio information is input into a digital audio formatter 125a and the digital video information, if any, is input into digital video formatter 125b. Formatter 125 outputs the data in a predetermined format.</p> <p>When the retrieved information from identification encoder 112 is analog, the information is input to an analog-to-digital converter 123 to convert the analog data of the retrieved information into a series of digital data bytes. Converter 123 preferably forms the digital data bytes into the same format as the output of formatter 125.” (‘992 patent, 6:35-7:18).</p> <p>“User and system addressing requirements dictate the level of granularity available to any particular section of the system. Users are able to move through data in various modes, thus moving through frame addresses at various rates. For example, a user may desire to listen to a particular song. They may preferably enter the song number either when requesting the item from the compressed data library 118 and only have that song sent to their receiving system 200 or they may preferably</p>	

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			<p>select that particular song from the items buffered in their receiving system 200. Internal to the system, the song is associated with a starting frame number, which was indexed by the system operator via the storage encoding process. The system item database may contain information records for individual frames or groups of frames. These can represent still frames, chapters, songs, book pages, etc. The frames are a subset of, and are contained within, the items stored in the compressed data library 118. Time encoding by time encoder 114 makes items and subsets of items retrieveable and addressable throughout the transmission system 100. Time encoding enables subsequent compression of the information to be improved because data reduction processes may be performed in the time dimension. This is described in greater detail below.” (‘992 patent, 8:32-56).</p> <p>“The unique address code is an address assigned to the item by the system operator during storage encoding, which is preferably done prior to long term storage in the compressed data library 118. In a preferred embodiment, the unique address code is used for requesting and accessing information and items throughout the transmission and receiving system. The unique address code makes access to the requested data possible.</p> <p>The storage encoding process performed by encoder 112 also allows entry of item notes and production credits. Production credits may include the title, names of the creators of the item such as the producer, director, actors, etc. Other details regarding the item which may be of</p>	

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			<p>interest and which may make the items more accessible are kept in an item database.</p> <p>“Item addresses are mapped to item names by identification encoder 112 and may preferably be used as an alternative method of accessing items. The item names are easier to remember, thus making user access more intuitive by using item names. The storage encoding entry process performed in identification encoder 112 operates a program which updates a master item database containing facts regarding items in the compressed data library system. The storage encoding process may be run by the system operator whereby the system operator accesses the master item database to track and describe items stored in one or more compressed data libraries. The names and other facts in the item database may preferably be updated at any time via the storage encoding process. Changes made to the master item database may be periodically sent to the remote order processing and item database 300.” (‘992 patent, 10:58-11:21).</p> <p>“After the information for the selected items is retrieved in step 412, the distribution method 400 of the present invention further comprises the step of processing the information for efficient transfer (step 413). The processing performed in step 413 preferably includes assigning a unique identification code to the retrieved information performed by identification encoder 112 shown and described with respect to FIG. 2a (step</p>	



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			413a).” (‘992 patent, 18:60-68).	
‘992-41, step 4	placing the retrieved information into a predetermined format as formatted data;	The components described in the specification and illustrated by Block Diagram 2a, labeled as 113. Component 113 includes components 124 and/or 127. Component 113 also includes component 123 which includes components 123a and/or 123b and includes component 125, which includes components 125a and/or 125b.	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” (‘992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100</p>	<p>The converter 113:</p> <p>(1) is optional, because one is unnecessary if the item is received via interlibrary transfer and the item is already in a compressed format;</p> <p>(2) includes a digital input receiver 124 if information is input in a digital format;</p> <p>(3) includes an analog input receiver 127 if information is input in an analog format;</p> <p>(4) includes both a digital input receiver 124 and an analog input receiver 127 if both types of information are contemplated as being input (not necessarily at the same time);</p> <p>(5) receives input information from the identification encoder;</p> <p>(6) has digital input receiver 124 which outputs information to a formatter 125, which includes digital audio formatter 125a and/or digital video formatter 125b and which outputs information to video and/or</p>

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			<p>may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“The transmission system 100 of the present invention also preferably includes conversion means 113 for placing the items from source material library 111 into a predetermined format as formatted data. In the preferred embodiment, after identification encoding is performed by identification encoder 112, the retrieved information is placed into a predetermined format as formatted data by the converter 113. The items stored in source material library 111 and encoded by identification encoder 112 may be in either analog or digital form. Converter 113 therefore includes analog input receiver 127 and digital input receiver 124. If items have only one format, only one type of input receiver 124 or 127 is necessary.</p> <p>When the information from identification encoder 112 is digital, the digital signal is input to the digital input receiver 124 where it is converted to a proper voltage. A formatter 125 sets the correct bit rates and encodes into least significant bit (lsb) first pulse code modulated (pcm) data. Formatter 125 includes digital audio formatter 125a and digital video formatter 125b. The digital audio information is input into a digital audio formatter 125a and the digital video information, if any, is input into digital video formatter 125b. Formatter 125</p>	<p>audio time encoders 114 associated with the formatter 125;</p> <p>(7) has analog input receiver 127 which outputs information to an analog-to-digital converter 123, which includes analog audio converter 123a and/or analog video converter 123b, which outputs information to video and/or audio time encoders 114 associated with the analog-to-digital converter.</p>

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
			<p>outputs the data in a predetermined format.</p> <p>When the retrieved information from identification encoder 112 is analog, the information is input to an analog-to-digital converter 123 to convert the analog data of the retrieved information into a series of digital data bytes. Converter 123 preferably forms the digital data bytes into the same format as the output of formatter 125.</p> <p>Converter preferably includes an analog audio converter 123a and an analog video converter 123b. The analog audio converter 123a preferably converts the retrieved audio signal into pcm data samples at a fixed sampling rate. The analog video converter 123b preferably converts the analog video information, retrieved from identification encoder 123, into pcm data also at fixed sampling rates.</p> <p>If the retrieved information being converted contains only audio information, then the audio signal is fed to the appropriate digital audio input or analog input. When the retrieved information contains both audio and video information, the audio and video signals are passed simultaneously to the audio and video converter inputs. Synchronization between the audio and video data can be maintained in this way.</p> <p>If, for example, the retrieved information to be converted from the source material library 111 is a motion picture film, the picture frames in the film are passed through a digital telecine device to the digital input receiver 124. Format conversion is then preferably performed by</p>	

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
			<p>digital video formatter 125b. Accompanying audio information is passed through an optical or magnetic digital playback device. This device is connected to digital audio formatter 125a.</p> <p>In some cases, such as in inter-library transfers, incoming materials may be in a previously compressed form so that there is no need to perform compression by precompression processor 115 and compressors 128 and 129. In such a case, retrieved items are passed directly from identification encoder 112 to the compressed data formatter 117. The item database records, such as the program notes which may also be input from another system, to the compressed data formatting section 117, where this data, if necessary, is reformatted to make it compatible with the material stored in compressed data library 118. Such material may be received in the form of digital tapes or via existing communication channels and may preferably input directly to a short term storage 117' in the compressed data formatting section 117." ('992 patent, 6:55-7:58).</p> <p>“The processing performed in step 413 preferably includes assigning a unique identification code to the retrieved information performed by identification encoder 112 shown and described with respect to FIG. 2a (step 413a). The processing also preferably includes placing the retrieved information into a predetermined format as formatted data by converter 113 (step 413b), and placing the formatted data into a sequence of addressable data blocks by ordering means 114 (step</p>	

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
			413c).” (‘992 patent, 18:63-19:4).	
‘992-41, step 5	placing the formatted data into a sequence of addressable data blocks;	The component described in the specification and illustrated by Block diagram 2a, labeled 114.	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” (‘992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100</p>	<p>Time encoder 114:</p> <p>(1) is optional, because one is unnecessary if the item is received via interlibrary transfer and the item is already in a compressed format;</p> <p>(2) receives information from audio and/or video converters 123a, 123b and/or audio and/or video formatters 125a, 125b;</p> <p>(3) outputs information to the pre-compression processors or to the compression means;</p> <p>(4) places the blocks of converted formatted information from converter 113 into a group of addressable data blocks;</p> <p>(5) places formatted data into a sequence of addressable data blocks; and</p> <p>(6) employs time encoding as the addressing scheme and time encoding allows realignment of the audio and video information in the compressed data formatting section 117 after separate audio and video</p>

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
			<p>may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“The transmission system 100 of the present invention also preferably includes ordering means for placing the formatted information into a sequence of addressable data blocks. As shown in FIG. 2a, the ordering means in the preferred embodiment includes time encoder 114. After the retrieved information is converted and formatted by the converter 113, the information may be time encoded by the time encoder 114. Time encoder 114 places the blocks of converted formatted information from converter 113 into a group of addressable blocks. The preferred addressing scheme employs time encoding. Time encoding allows realignment of the audio and video information in the compressed data formatting section 117 after separate audio and video compression processing by precompression processor 115 and compressor 116.</p> <p>The converted formatted information of the requested material is then preferably in the form of a series of digital data bytes which represent frames of video data and samples of the audio data. A preferred relationship of the audio and video bytes to each other is shown in FIG. 8. Incoming signals are input and converted in sequence, starting with the first and ending with the last frame of the video data, and starting with the first and ending with</p>	<p>compression processing by precompression processor 115 and compressor 116 and time encoding is achieved by assigning relative time markers to the audio and video data as it passes from the converter 113 through the time encoder 114 to the precompression processor 115.</p>

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			<p>the last sample of the audio data. Time encoding by time encoder 114 is achieved by assigning relative time markers to the audio and video data as it passes from the converter 113 through the time encoder 114 to the precompression processor 115. Realignment of audio and video data, system addressing of particular data bytes, and user addressing of particular portions of items are all made possible through time encoding.</p> <p>Through the use of the address of an item and its frame number it is possible to address any particular block of audio or video data desired. From here, further addressing down to the individual byte is possible. Frames and groups of frames may preferably be further broken down, as necessary to the individual bytes and bits, as required for certain processing within the system.</p> <p>User and system addressing requirements dictate the level of granularity available to any particular section of the system. Users are able to move through data in various modes, thus moving through frame addresses at various rates. For example, a user may desire to listen to a particular song. They may preferably enter the song number either when requesting the item from the compressed data library 118 and only have that song sent to their receiving system 200 or they may preferably select that particular song from the items buffered in their receiving system 200. Internal to the system, the song is associated with a starting frame number, which was indexed by the system operator via the storage encoding process. The system item database may contain</p>	

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			<p>information records for individual frames or groups of frames. These can represent still frames, chapters, songs, book pages, etc. The frames are a subset of, and are contained within, the items stored in the compressed data library 118. Time encoding by time encoder 114 makes itmes and subsets of items retrieveable and addressable throughout the transmission system 100. Time encoding enables subsequent compression of the information to be improved because data reduction prpcesses may be performed in the time dimension. This is described in greater detail below.” (‘992 patent, 7:59-8:56).</p>	
<p>‘992-41, step 6</p>	<p>compressing the formatted and sequenced data blocks;</p>	<p>The component described in the specification and illustrated by Block diagram 2a, labeled 116, including audio compressor 128 and/or video compressor 129. The precompression processor 115 is optional.</p>	<p>“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises source material library means prior to identification and compression; identification encoding means for retrieving the information for the items from the source material library means and for assigning a unique identification code to the retrieved information; conversion means, coupled to identification encoding means, for placing the retrieved information into a predetermined format as formatted data; ordering means, coupled to the conversion means, for placing the formatted data into a sequence of addressable data blocks; compression means, coupled to the ordering means, for compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed</p>	<p>The compressor 116:</p> <p>(1) is optional, because one is unnecessary if the item is received via interlibrary transfer and the item is already in a compressed format;</p> <p>(2) includes an audio compressor 128 and/or a video compressor 129;</p> <p>(3) may compress audio information by adaptive differential pulse code modulation (ADPCM) which may be implemented by the apt-x 100 digital audio compression system by APT;</p> <p>(4) may compress video on a group of 24 video frames passed in sequence and may involve applying direct cosine transform and motion</p>



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			<p>sequenced data received from the compression means with the unique identification code assigned by the identification encoding means; and transmitter means, coupled to the compressed data storing means, for sending at least a portion of a specific file to a specific one of the remote locations.” (‘992 patent, 2:26-48).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“The transmission system 100 of the present invention also preferably includes data compression means for compressing the formatted and sequenced data. The sequence of addressable data blocks which was time encoded and output by time encoder 114 is preferably sent to precompression processor 115. The data arriving from time encoder 114 may be at various frame rates and of various formats. Precompression processor 115 preferably includes audio precompressor 115a and video precompressor 115b.</p> <p>Video precompression processor 115b buffers incoming video data and converts the aspect ratio and frame rate of the data, as required by compression processor 116. The frame buffer 131 of video precompression processor</p>	<p>compensation.</p> <p>The precompression processor 115:</p> <p>(1) is optional, because one is unnecessary if the item is received via interlibrary transfer and the item is already in a compressed format and because it is only necessary if the frame rate and aspect ratio of the video data must be converted and if the audio information requires transcoding;</p> <p>(2) has a video precompression processor 115b and/or an audio precompression processor 115a, where video precompression processor processes the video so that it fits in the aspect ratio of the transmission and receiving system and audio precompression processor processes audio information for sample rate and word length optimization;</p> <p>(3) output from video precompression processor 115b is stored in frame buffer 131, which is dual ported and is directly addressable by video compressor</p>

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			<p>115b holds all incoming data until the data is compressed by the data compressor 116. The incoming video data is processed for sample rate optimization, aspect ratio fitting and buffered in buffer 130 for compression processing by the video precompression processor 115b.</p> <p>Video precompression processor 115b processes the incoming video data so that it fits into the aspect ratio of the transmission and receiving system of the present invention. When incoming material with a different aspect ratio than the aspect ratio of the system is selected, a chosen background is preferably placed around the inactive region of the video information. In this way, no data is lost to differences in the aspect ratio between incoming material, and the converted and compressed data stored in transmission system 100. Images resulting from a different aspect ratio may have an inactive region where background information is contained, or may be converted into a best fit arrangement. Output from the video precompression processor 115b is stored in the frame buffer 131, which is dual ported and is directly addressable by video compressor 129.</p> <p>The incoming audio data is processed for sample rate and word length optimization and is then buffered in buffer 130 for compression processing by the audio precompression processor 115a. Audio precompression processor 115a may preferably transcode incoming audio information, as required, to create the optimum sample rate and word lengths for compression processing. The output of the audio precompression processor 115a is a</p>	<p>129;</p> <p>(4) audio precompression processor 115a may transcode incoming audio information, as required, to create the optimum sample rate and word lengths for compression processing; and</p> <p>(5) output of audio precompressor 115a is a constant sample rate signal of a fixed word length which is buffered in frame buffer 130, which is dual ported and is directly addressable by audio compressor 128.</p>

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			<p>constant sample rate signal of a fixed word length which is buffered in frame buffer 130. The frame buffer 130 is dual ported and is directly addressable by audio compressor 128. Blocking the audio data into frames at audio precompression processor 115a makes it possible to work with the audio data as addressable packets of information.</p> <p>Once precompression processing is finished, the frames are compressed by the data compressor 116. Compressor 116 preferably comprises an audio data compressor 128 and a video data compressor 129. The benefits of data compression performed by data compressor 116 are shortened transmission time, faster access time, greater storage capacity, and smaller storage space requirements. Compression processing performed by compressors 128 and 129 requires multiple samples of data to perform optimum compression. Audio and video information is preferably converted into blocks of data organized in groups for compression processing by audio compressor 128 and video compressor 129, respectively. These blocks are organized as frames, and a number of frames are contained respectively in the buffers 130 and 131. By analyzing a series of frames it is possible to optimize the compression process.</p> <p>Audio data is preferably compressed by audio compressor 128 by application of an adaptive differential pulse code modulation (ADPCM) process to the audio data. This compression process, which may be implemented by the apt-x 100 digital audio compression</p>	

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			<p>system, is manufactured by Audio Processing Technology (APT). Audio compression ratios of 8X or greater are achieved with the APT system.</p> <p>Compression by compressor 116 may be performed on a group of 24 video frames may preferably be passed in sequence to the frame buffer 130 of the video precompression processor 115b where they are analyzed by video compressor 129 which performs data reduction processing on the video data. Video compression is preferably performed by video compressor 129. Video compression is achieved by the use of processors running algorithms designed to provide the greatest amount of data compression possible. Video data compression preferably involves applying two processes: a discrete cosine transform, and motion compensation. This process is described in “A Chip Set Core of Image Compression”, by Artieri and Colavin. Multiple frames of video data may preferably be analyzed for patterns in the horizontal (H), vertical (V), diagonal (zigzag) and time (Z) axis. By finding repetition in the video data, redundancy may be removed and the video data may be compressed with a minimal loss of information.” (‘992 patent, 8:57-9:16).</p>	
‘992-41, step 7	storing, as a file, the compressed, formatted, and sequenced data	The components described in the specification and illustrated by Block Diagram 2a, labeled	“To achieve the objects in accordance with the purposes of the present invention, as embodied and described herein, the transmission and receiving system for providing information to remote locations comprises . . . compression means, coupled to the ordering means, for	The compressed data formatter 117: (1) places audio and/or video data received from the compressor into a file, where the file may contain the compressed audio and/or video data,

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	blocks with the assigned unique identification code; and	as 117 (including, but only optionally, 117') and 118.	<p>compressing the formatted and sequenced data; compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data received from the compression means with the unique identification code assigned by the identification encoding means . . . .</p> <p>The present invention further comprises a distribution method responsive to requests identifying information to be sent from a transmission system to a remote location, the method comprising the steps of storing audio and video information in a compressed data form; requesting transmission, by a user, of at least a part of the stored compressed information to the remote location; sending at least a portion of the stored compressed information to the remote location; receiving the sent information at the remote location; buffering the processed information at the remote location; and playing back the buffered information in real time at a time requested by the user.” ('992 patent, 2:26-61).</p> <p>“FIGS. 2a and 2b illustrate detailed block diagrams of preferred implementations of the transmission system 100 of the present invention. Transmission system 100 may either be located in one facility or may be spread over a plurality of facilities. A preferred embodiment of transmission system 100 may preferably include only some of the elements shown in FIGS. 2a and 2b.” (5:59-65).</p> <p>“Transmission system 100 of a preferred embodiment of</p>	<p>the time markers, and the program notes;</p> <p>(2) in inter-library transfers, passes the compressed information directly from the identification encoder to the compressed data formatter;</p> <p>(3) may include a short term storage 117' for storing inter-library transfer materials; and</p> <p>(4) outputs files to the compressed data library 118.</p> <p>See also, '992 patent, Claim 19, step 1.</p>

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			<p>the present invention preferably includes source material library means for temporary storage of items prior to conversion and storage in a compressed data library means. The items of information may include analog and digital audio and video information as well as physical objects such as books and records which require conversion to a compatible media type before converting, compressing and storing their audio and video data in the compressed data library means.” (‘992 patent, 5:66-6:7).</p> <p>“Prior to being made accessible to a user of the transmission and receiving system of the present invention, the item must be stored in at least one compressed data library 118, and given a unique identification code by identification encoder 112. Storage encoding, performed by identification encoder 112, aside from giving the item a unique identification code, optionally involves logging details about the item, called program notes, and assigning the item a popularity code. Storage encoding may be performed just prior to conversion of the item for transmission to reception system 200, at any time after starting the conversion process, or after storing the item in the compressed data library 118.” (‘992 patent, 6:35-47).</p> <p>“In some cases, such as in inter-library transfers, incoming materials may be in a previously compressed form so that there is no need to perform compression by precompression processor 115 and compressors 128 and 129. In such a case, retrieved items are passed directly from identification encoder 112 to the compressed data</p>	

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			<p>formatter 117. The item database records, such as the program notes which may also be input from another system, to the compressed data formatting section 117, where this data, if necessary, is reformatted to make it compatible with the material stored in compressed data library 118. Such material may be received in the form of digital tapes or via existing communication channels and may preferably input directly to a short term storage 117' in the compressed data formatting section 117." ('992 patent, 7:44-58).</p> <p>“In accordance with a preferred embodiment of the present invention, the transmission system 100 may further comprise compressed data storing means, coupled to the compression means, for storing as a file the compressed sequenced data with the unique identification code received from the data compression means. After compression processing by compressor 116, the compressed audio and video data is preferably formatted and placed into a single file by the compressed data storage means 117. The file may contain the compressed audio and/or video data, time markers, and the program notes. The file is addressable through the unique identification code assigned to the data by the identification encoder 112.</p> <p>Further, according to the present invention, the transmission system preferably includes compressed data library means for separately storing composite formatted data blocks for each of the files. The compressed data storage means preferably includes compressed data</p>	

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			<p>library 118, as shown in FIG. 2b. After the data is processed into a file by the compressed data storage means 117, it is preferably stored in a compressed data library 118. In a preferred embodiment, compressed data library 118 is a network of mass storage devices connected together via a high speed network. Access to any of the files stored in compressed data library 118 is available from multiple reception systems 200 connected to the transmission and receiving system.</p> <p>Stored items are preferably accessed in compressed data library 118 through a unique address code. The unique address code is a file address for uniquely identifying the compressed data items stored in the compressed data library section of a library system. This file address, combined with the frame number, and the library system address allow for complete addressability of all items stored in one or more compressed data libraries 118. Compressed data library addresses along with receiving system addresses are used to form a completely unique address for distribution system control.</p> <p>The unique address code is an address assigned to the item by the system operator during storage encoding, which is preferably done prior to long term storage in the compressed data library 118. In a preferred embodiment, the unique address code is used for requesting and accessing information and items throughout the transmission and receiving system. The unique address code makes access to the requested data possible.” (‘992</p>	



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			<p>patent, 10:17-65).</p> <p>“As described in more detail later, a user may preferably access an item via its unique identification code, via its title, or the user may use other known facts for accessing an item. The user may access items in the compressed data library 118 directly using the unique address code or the user may obtain access via the remote order processing and item database 300. Indirect access via the remote order processing and item database 300 is possible using, for example, a synthesized voice system, a query type of computer program interface, or customer assistance operators. In addition to providing interactive access to the remote order processing and item database 300, a catalog listing some or all available titles may also preferably be published. With a published catalog, users may obtain the unique address code for an item very easily thereby allowing for retrieval from the compressed data library 118 without any help from an interactive system.” (‘992 patent, 11:22-39).</p> <p>“The item database master may reside in the system control computer 1123 where may be is updated and kept current to the contents of the compressed data library 118. The data stored in the item database master may be accessed by users via application programs, running on the system control computer 1123, and on the reception system 200 of the user. Users may connect to the item database via any available telecommunication channels. Copies of the item database master may be updated and informed of new entries into compressed data library 118</p>	

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			<p>at periodic intervals determined by the system manager.</p> <p>Other copies of the item database master may also be made available to users from the remote order processing and item database 300 which batch processes and downloads user requests to the control computer 1123 of the compressed data library 118 via standard telecommunications or high speed communication channels. Moreover, multiple remote order processing and item database 300 sites make it possible for more locations to process orders than there are library facilities, and thus make order processing more efficient.” (‘992 patent, 11:54-12:7).</p> <p>“The storage encoding process performed by identification encoder 112 also allows entry of a popularity code. The popularity code is preferably assigned on the basis of how often the corresponding item is expected to be requested from the compressed data library 118. This popularity code can be used to determine the most appropriate form of media for storage of the compressed data in a mixed media system. Mixed media systems are preferably employed as more cost effective storage in very large compressed data libraries 118. Once assigned, the popularity code may be dynamically updated, by factoring item usage against system usage. Thus, stored items are dynamically moved to the most appropriate media over their life in the compressed data library 118. If a particular item stored in compressed data library 118 is retrieved frequently by users, storage in compressed data library 118 is</p>	

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			<p>preferably on higher speed, more reliable, and probably more expensive media. Such media includes Winchester and magneto-optical disks.</p> <p>If an item stored in compressed data library 118 is retrieved less frequently, it may be stored in the compressed data library 118 on a digital cassette tape. Examples of such cassette tapes are a Honeywell RSS-600 (Honeywell Inc. Minneapolis, Minn.), Summus JukeBoxFilm and tape library (Summus Computer Systems, Houston, Tex. 800-255-9638), or equivalent cassette tapes. All items stored in the compressed data library 118 are on line and are connected to the high speed network. Thus, they may be readily accessed.</p> <p>Instead of using a remote order processing and item database 300, the compressed data library 118 may include the program notes which were input by the system operator. The program notes may preferably include the title of the item stored in the compressed data library 118, chapter or song titles, running times, credits, the producer of the item, acting and production credits, etc. The program notes of an item stored in the compressed data library 118 may be thus contained within the compressed data file formed in the compressed data formatter 117.</p> <p>In some cases, where multiple compressed data libraries 118 are organized, the popularity code may dictate distribution of a particular item to multiple distribution systems. In such cases, a copy of the compressed data is</p>	

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			<p>sent to another library and the other library can then distribute the compressed data to users concurrently with the original compressed data library 118.</p> <p>The compressed data library 118 is composed of a network of storage devices connected through a High Performance Parallel Interface (HPPI) Super Controller (available from Maximum Strategy Inc., San Jose, Calif.). Therefore, multiple communication controllers may preferably access the large quantity of data stored in compressed data library 118 at very high speeds for transfer to a reception system 200 of a user upon request. For more details on this configuration see Ohrenstein, "Supercomputers Seek High Throughput and Expandable Storage", Computer Technology Review, pp. 33-39 April 1990.</p> <p>The use of an HPPI controller allows file placement onto multiple mass storage devices of the compressed data library 118 with a minimum of overhead. Database management software controls the location and tracking of the compressed data library 118 which can be located across multiple clusters of file servers connected together by one or more high speed networks over multiple systems.</p> <p>The transmission system 100 of the present invention may also preferably include library access/interface means for receiving transmission requests to transmit items and for retrieving formatted data blocks stored in the compressed data library 118 corresponding to the</p>	

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			<p>requests from users. The compressed audio and/or video data blocks, along with any of the information about the item stored in the compressed data library 118 may be accessed via library access interface 121. The library access interface 121 receives transmission requests either directly from the users or indirectly by remote order processing and item database 300. The transmission format means 119 receives the request and retrieves the composite formatted data block of the requested item stored in compressed data library 118 and converts the compressed formatted data block into a format suitable for transmission. The requested item is then sent to the user via the transmitter 122 or directly via interface 121.</p> <p>In a preferred embodiment of the present invention, customer access of an item stored in compressed data library 118 via the library access interface 121 may be performed in various ways. The methods of requesting a stored item are analogous to making an airline reservation or transferring funds between bank accounts. Just as there are different methods available for these processes it is desirable to have several ordering methods available to the users of the system of the present invention. For example, telephone tone decoders and voice response hardware may be employed. Additionally, operator assisted service or user terminal interfaces may be used.” (‘992 patent, 12:28-13:60).</p> <p>“To complete an order, the remote order processing and item database 300 preferably connects to the compressed data library 118 of choice via the library access interface</p>	

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			<p>121 and communicates with the library system control computer 1123. Preferably the user's account ID, identification of the item for transmission and the chosen destination for the item are communicated. Through employment of distributed order processing systems of this type many orders may be processed with minimal library overhead.</p> <p>All transmission requests from the access methods are placed into a transmission queue managed by the library system control computer 1123. This queue is managed by a program that controls the distribution of the requested items to the reception system 200 of the user. The queue manager program also operates in the system control computer and keeps track of the user ID, the chosen program and price, the user channel type, the number of requests for a given program, the latest delivery time, and the compressed data library media type (for example, high speed or low speed). From this information, the queue manager program makes best use of the available distribution channels and media for efficient transmission and storage of the requested items.</p> <p>The queue manager program also manages the file transmission process for multiple requests for a single file, stored in the compressed data library 118. During a given time period, the queue manager program will optimize access to the compressed data library 118, wherever possible it will place the data on multiple outputs for simultaneous transmission to more than one</p>	

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			<p>requesting user.</p> <p>The conversion performed by transmission data converter 119 encodes the data for the transmission channel. The transmission data converter transfers the desired segments of data from the compressed data library 118 onto the communication channel which is used to deliver the data to the reception system 200.</p> <p>The transmission system 100 of the present invention preferably further includes transmitter means 122, coupled to the compressed data library 118, for sending at least a portion of a specific file to at least one remote location. The transmission and receiving system of the present invention preferably operates with any available communication channels. Each channel type is accessed through the use of a communications adaptor board or processor connecting the data processed in the transmission format converter 119 to the transmission channel.” (‘992 patent, 15:23-16:3).</p> <p>“FIG. 5 is a flowchart of a preferred method of implementing a queue manager program of the present invention. The queue manager program, in the distribution process, preferably confirms availability of an item from the compressed data library 118 and logically connects the item stored in compressed data library 118 to the communications controller, illustrated in FIG. 2a (step 5010). After availability is confirmed in step 5010, the data awaits transmission by the transmitter 122.” (‘992 patent, 16:29-37).</p>	

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			<p>“The system may also preferably include dispatching control software which receives input from the remote order processing and item database 300 and sends distribution requests to the distribution systems. In instances where not all items are contained in each of the compressed data libraries 118, the dispatching software will keep a list of the available titles in a particular compressed data library 118. The dispatch software may also preferably coordinate network traffic, source material library 111 utilization, source material library 111 contents, and connection costs. By proper factoring of these variables, efficient use of the available distribution channels may be achieved.” (‘992 patent, 17:54-66).</p> <p>“After the information is processed for efficient transfer, in substeps 413a-e of step 413, the distribution method 400 of the present invention preferably includes the step of storing the processed information is stored in a compressed data library (step 414). Preferably, the compressed data library is analogous to compressed data library 118, described with respect to FIG. 2a.” (‘992 patent, 19:11-17).</p>	
‘992-41, step 8	sending at least a portion of the file to one of the remote locations.	The components described in the specification and illustrated by Block Diagram 2b, labeled:	See, ‘992 patent, Claim 19, step 3.	See, ‘992 patent, Claim 19, step 3.



<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
		(1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.		
'992-42, step 1	A/D converting analog signals of the retrieved information into a series of digital data bytes; and	The components described in the specification and illustrated by Block Diagram 2a, labeled as 127, including 123a and/or 123b.	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.
'992-42, step 2	converting the series of digital data bytes into formatted data	The components described in the specification and illustrated by Block	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	with a predetermined format.	Diagram 2a, labeled as 127, including 123a and/or 123b.		
'992-43, step 1	<b>converting digital signals of the retrieved information into predetermined voltage levels; and</b>	The components described in the specification and illustrated by Block Diagram 2a, labeled as 124.	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.
'992-43, step 2	converting the predetermined voltage levels into formatted data with a predetermined format.	The components described in the specification and illustrated by Block Diagram 2a, labeled as 125a and/or 125b.	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.
'992-44, step 1	converting digital signals of the retrieved information	The components described in the specification and illustrated by Block	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	into formatted data with a predetermined format	Diagram 2a, labeled as 124, including 125a and/or 125b.		
'992-45, step 1	separately storing a plurality of files, each including compressed, sequenced data blocks.	The component described in the specification and illustrated by Block Diagram 2b, labeled compressed data library 118.	See, '992 patent, claim 41, step 7.	See, '992 patent, claim 41, step 7.
'992-46, step 1	generating a listing of available items;	The component described in the specification and illustrated by Block diagram 2a, labeled library access interface 121 and library system control computer 1123, an application interface program running on the	See, '992 patent, claim 22, step 1.	See, '992 patent, claim 22, step 1.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		<p>system control computer 1123, the component described in the specification and illustrated in Figure 1c, labeled as the remote order processing and item database 300, the dispatching control software, multiple database servers, and/or other computer systems. Alternatively, the component is a system operator.</p>		
<p>'992-46, step 2</p>	<p>receiving transmission requests to transmit available items; and</p>	<p>The components described in the specification and illustrated by Block Diagram 1c, 2a, and 2b labeled:</p> <p>(1) the library system control computer 1123; or</p> <p>(2) the library</p>	<p>See, '992 patent, claim 19, step 2.</p>	<p>See, '992 patent, claim 19, step 2.</p>

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		<p>system control computer 1123 and the library access interface 121; or</p> <p>(3) the library system control computer 1123, the library access interface 121, and an operator; or</p> <p>(4) the source material library 111; or</p> <p>(5) the remote order processing and item database 300.</p>		
'992-46, step 3	retrieving stored formatted data blocks corresponding to requests from users.	The components described in the specification and illustrated by Block Diagram 2b, labeled Transmission Conversion CPU 119.	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
‘275-2, step 1	storing, in the transmission system, information from items in a compressed data form, the information including an identification code and being placed into ordered data blocks;	The component described in the specification and illustrated by Block Diagram 2b, labeled compressed data library 118.	See, ‘992 patent, claim 19, step 1.	See, ‘992 patent, claim 19, step 1.
‘275-2, step 2	sending a request, by the user to the transmission system, for at least a part of the stored information to be transmitted to a reception system associated with a receiving system at one	The components described in the specification and illustrated by Block Diagram 1c, 2a, and 2b labeled:  (1) the library system control computer 1123; or  (2) the library system control computer 1123 and the library access	See, ‘992 patent, claim 19, step 2.	See, ‘992 patent, claim 19, step 2.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	of the remote locations selected by the user;	interface 121; or  (3) the library system control computer 1123, the library access interface 121, and an operator; or  (4) the source material library 111; or  (5) the remote order processing and item database 300.		
'275-2, step 3	sending at least a portion of the stored information from the transmission system to the reception system;	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
		122, or (2) compressed data library 118, library system control computer 1123, and library access interface 121.		
'275-2, step 4	receiving the sent information by the reception system;	The component described in the specification and illustrated by Block Diagram 6, labeled 201.	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.
'275-2, step 5	storing a complete copy of the received information in the reception system; and	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.
'275-2,	playing back	The components	See, '992 patent, claim 19, step 6.	See, '992 patent, claim 19, step 6.



<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
step 6	the stored copy of the information from the reception system to the receiving system at the selected remote location at a time requested by the user.	described in the specification and illustrated by Block Diagram 6, labeled compressed output data formatter, output data formatters 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or by Block Diagram 1g, labeled 200d. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.		
'275-5, step 1	storing, in the transmission system, information from items in a compressed data form, the information including an	The component described in the illustrated by Block Diagram 2b, labeled compressed data library 118. specification and	See, '992 patent, claim 19, step 1.	See, '992 patent, claim 19, step 1.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	identification code and being placed into ordered data blocks;			
'275-5, step 2	sending a request, by the user to the transmission system, for at least a part of the stored information to be transmitted to a reception system associated with a receiving system at one of the remote locations selected by the user;	<p>The components described in the specification and illustrated by Block Diagram 1c, 2a, and 2b labeled:</p> <p>(1) the library system control computer 1123; or</p> <p>(2) the library system control computer 1123 and the library access interface 121; or</p> <p>(3) the library system control computer 1123, the library access interface 121, and an operator; or</p> <p>(4) the source material library 111;</p>	See, '992 patent, claim 19, step 2.	See, '992 patent, claim 19, step 2.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		or (5) the remote order processing and item database 300.		
'275-5, step 3	sending at least a portion of the stored information from the transmission system to the reception system;	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.
'275-5, step 4	receiving the sent	The component described in the	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
	information by the reception system;	specification and illustrated by Block Diagram 6, labeled 201.		
'275-5, step 5	storing a complete copy of the received information in the reception system; and	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.
'275-5, step 6	playing back the stored copy of the information sent over a cable communication path from the reception system to the receiving system at the	The components described in the specification and illustrated by Block Diagram 6, labeled compressed output data formatter, output data formatters 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or	See, '992 patent, claim 19, step 6.	See, '992 patent, claim 19, step 6.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	selected remote location at a time requested by the user.	by Block Diagram 1g, labeled 200d. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.		
'863-14, step 1	transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information at a non-real time rate from a central processing location;	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
		interface 121.		
'863-14, step 2	receiving the transmitted compressed, digitized data representing a complete copy of the at least one item of audio/video information, at a local distribution system remote from the central processing location;	The component described in the specification and illustrated by Block Diagram 6, labeled 201.	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.
'863-14, step 3	storing the received compressed digitized data representing the complete copy of the at least one item at the local distribution	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	system;	Diagram 1f, labeled 200c.		
'863-14, step 4	in response to the stored compressed, digitized data, transmitting a representation of the at least one item at a real-time rate to at least one of a plurality of subscriber receiving stations coupled to the local distribution system; and	The components described in the specification and illustrated by Block Diagram 6, labeled output data formatters 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or by Block Diagram 1g, labeled 200d.	<p>See, '992 patent, claim 41, step 8.</p> <p>“FIG. 1f shows a high level block diagram of the transmission and receiving system of the present invention including transmission system 100 distributing via several channels to reception systems 200 and 200'. Reception system 200 is preferably non-buffering. In such a system, users are directly connected to transmission system 100, as in reception system 200 in FIG. 1e.</p> <p>Reception system 200' shown in FIG. 1fis a cable television system, as shown in reception systems 200' of FIG. 1e. In FIG. 1f, the reception system 200' is preferably buffering, which means that users may receive requested material at a delayed time. The material is buffered in intermediate storage device 200c in reception system 200'.</p> <p>In the configuration of FIG. 1f, decompression of the requested material may preferably occur at the head end of a cable television reception system 200'. Thus, distribution may be provided to users via standard television encoding methods downstream of the head end of the cable distribution system. This method is preferred for users who only have cable television decoders and standard television receivers.</p> <p>FIG. 1g shows a high level block diagram of the</p>	<p>See, '992 patent, claim 41, step 8.</p> <p>According to the specification, compressed or decompressed information can be transmitted from a receiving system using transmitter 200d or a cable television transmitter.</p>

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
			<p>transmission and receiving system of the present invention including transmission system 100 distributing to a reception system 200, which then preferably transmits requested material over airwave communication channels 200d, to a plurality of users. The transmission and receiving system shown in FIG. 1g may preferably transmit either compressed or uncompressed data, depending on the requirements and existing equipment of the user. The airwave transmission and receiving system shown in FIG. 1g may preferably employ either VHF, UHF or satellite broadcasting systems.” (‘992 patent, 3:61-4:63).</p> <p>“In non-direct connection reception systems such as shown in reception system 200’ of FIG. 1f, intermediate storage device 200c may preferably include, for example, sixteen hours of random access internal audio and video storage. A reception system with such storage is capable of storing several requested items for future playback. The user could then view and/or record a copy of the decompressed requested material in real time, or compressed in non-real time, at a time of their choosing. Accordingly, the user would not have to make a trip to the store to purchase or rent the requested material.” (‘992 patent, 5:22-33).</p>	
‘863-14, step 5	decompressing the compressed, digitized data	The components described in the specification and illustrated by Block	See, ‘992 patent, claim 19, step 6.	See, ‘992 patent, claim 19, step 6.



<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	representing the at least one item of audio/video information after the transmission step wherein the decompressing step is performed in the local distribution system to produce the representation of the at least one item for transmission to the at least one subscriber station;	Diagram 6, labeled 204, 208 and/or 209.		
'863-14, step 6	inputting an item having information into the transmission	The component described in the specification and illustrated by Block Diagram 2a, labeled source material	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
	system;	library 111 and/or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.		
'863-14, step 7	assigning a unique identification code to the item having information;	The components described in the specification and illustrated by Block Diagram 2a, labeled 112 and identified in the specification as the identification encoder and a system operator.	See, '992 patent, claim 41, step 3.	See, '992 patent, claim 41, step 3.
'863-14, step 8	formatting the item having information as a sequence of addressable data blocks;	The components described in the specification and illustrated by Block Diagram 2a, components 123a and/or 123b and /or components 125a and/or 125b. The component	See, '992 patent, claim 41, steps 4 and 5.	See, '992 patent, claim 41, steps 4 and 5.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		described in the specification and illustrated by Block diagram 2a, labeled 114.		
'863-14, step 9	compressing the formatted and sequenced data blocks;	The component described in the specification and illustrated by Block diagram 2a, labeled 116, including audio compressor 128 and/or video compressor 129. The precompression processor 115 is optional.	See, '992 patent, claim 41, step 6.	See, '992 patent, claim 41, step 6.
'863-14, step 10	storing, as a file, the compressed, formatted, and sequenced data blocks with the assigned unique identification code; and	The components described in the specification and illustrated by Block Diagram 2a, labeled as 117 (including, but only optionally, 117') and 118.	See, '992 patent, claim 41, step 7.	See, '992 patent, claim 41, step 7.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
'863-14, step 11	sending at least a portion of the file at the non-real time rate to the local distribution system.	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.	See, '992 patent, claim 41, step 8.	See, '992 patent, claim 41, step 8.
'863-15, step 1	inputting the item having information as blocks of digital data.	The component described in the specification and illustrated by Block Diagram 2a, labeled	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
		source material library 111 and/or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.		
'863-16, step 1	inputting the item having information as an analog signal;	The component described in the specification and illustrated by Block Diagram 2a, labeled source material library 111 and/or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.
'863-16, step 2	converting the analog signal to blocks of digital data.	The components described in the specification and illustrated by Block Diagram 2a, labeled	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		as 127, including 123a and/or 123b.		
'863-17, step 1	transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information from the central processing location;	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.
'863-17,	receiving the transmitted compressed,	The component described in the specification and	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
step 2	digitized data representing a complete copy of the at least one item of audio/video information, at a local distribution system;	illustrated by Block Diagram 6, labeled 201.		
'863-17, step 3	storing the received compressed, digitized data representing the complete copy of the at least one item at a local distribution system; and	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.
'863-17, step 4	using the stored compressed, digitized data to transmit a representation of the at least	The components described in the specification and illustrated by Block Diagram 6, labeled compressed output	See, '863 patent, claim 14, step 4.	See, '863 patent, claim 14, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	one item to at a plurality of subscriber receiving stations coupled to the local distribution system;	data formatter, output data formatters 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or by Block Diagram 1g, labeled 200d. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.		
'863-17, step 5	inputting an item having information into the transmission system;	The component described in the specification and illustrated by Block Diagram 2a, labeled source material library 111 or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.
'863-17,	assigning a unique	The components described in the	See, '992 patent, claim 41, step 3.	See, '992 patent, claim 41, step 3.



<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
step 6	identification code to the item having information;	specification and illustrated by Block Diagram 2a, labeled 112 and identified in the specification as the “identification encoder” and a system operator.		
‘863-17, step 7	formatting the item having information as a sequence of addressable data blocks; and	The components described in the specification and illustrated by Block Diagram 2a, components 123a and/or 123b and /or components 125a and/or 125b.  The component described in the specification and illustrated by Block diagram 2a, labeled 114.	See, ‘992 patent, claim 41, steps 4 and 5.	See, ‘992 patent, claim 41, steps 4 and 5.
‘863-17, step 8	compressing the formatted and sequenced data blocks;	The component described in the specification and illustrated by Block	See, ‘992 patent, claim 41, step 6.	See, ‘992 patent, claim 41, step 6.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		diagram 2a, labeled 116, including audio compressor 128 and/or video compressor 129. The precompression processor 115 is optional.		
'863-18, step 1	inputting the item having information as blocks of digital data.	The component described in the specification and illustrated by Block Diagram 2a, labeled source material library 111 and/or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.
'863-19,	inputting the item having information as	The component described in the specification and	See, '992 patent, claim 41, steps 1 and 4.	See, '992 patent, claim 41, steps 1 and 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
step 1	an analog signal;	illustrated by Block Diagram 2a, labeled source material library 111 and/or components described in the specification and illustrated by Block Diagram 2a labeled as 124 and/or 127.		
'863-19, step 2	converting the analog signal to blocks of digital data.	The components described in the specification and illustrated by Block Diagram 2a, labeled as 127, including 123a and/or 123b.	See, '992 patent, claim 41, step 4.	See, '992 patent, claim 41, step 4.
'720-8, step 1	transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information at	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library	See, '992 patent, claim 41, step 8.	See, '992 patent, claim 41, step 8.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	a non-real time rate from a central processing location to a local distribution system remote from the central processing location;	system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.		
'720-8, step 2	receiving, into a receiving means, the transmitted compressed, digitized data representing a complete copy of the at least one item;	The component described in the specification and illustrated by Block Diagram 6, labeled 201.	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.
'720-8, step 3	storing, in a storing means, the received compressed, digitized data	The components described in the specification and illustrated by Block Diagram 6, labeled	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	representing the complete copy of the at least one item at the local distribution system; and	203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.		
'720-8, step 4	in response to the stored compressed, digitized data, transmitting, using a transmitting means, a representation of the at least one item at a real-time rate to at least one of a plurality of subscriber selectable receiving stations coupled to the local distribution system,	The components described in the specification and illustrated by Block Diagram 6, output data formatter labeled "compressed", output data formatters labeled 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or by Block Diagram 1g, labeled 200d. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.	See, '863 patent, claim 14, step 4.	See, '863 patent, claim 14, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	<p>wherein the receiving means, the storing means, and the transmitting means are positioned at the same location, and wherein the at least one of the plurality of subscriber selectable stations is located at a premises geographically separated from the local distribution system.</p>			
<p>'720-11, step 1</p>	<p>formatting items of audio/video information as</p>	<p>The components described in the specification and illustrated by Block</p>	<p>See, '992 patent, claim 41, steps 4, 5, and 6.</p>	<p>See, '992 patent, claim 41, steps 4, 5, and 6.</p>

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	compressed digitized data at a central processing location	<p>Diagram 2a, labeled as 113. Component 113 includes components 124 and/or 127. Component 113 also includes component 123 which includes components 123a and/or 123b and includes component 125, which includes components 125a and/or 125b.</p> <p>The component described in the specification and illustrated by Block diagram 2a, labeled 114 is optional.</p> <p>The component described in the specification and illustrated by Block diagram 2a, labeled 116, including audio compressor 128 and/or video compressor 129.</p>		

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
		The precompression processor 115 is optional.		
'720-11, step 2	transmitting compressed, digitized data representing a complete copy of at least one item of audio/video information from the central processing location;	The components described in the specification and illustrated by Block Diagram 2b, labeled:  (1) compressed data library 118, library system control computer 1123, transmission format conversion CPU 119, and transceiver 122, or  (2) compressed data library 118, library system control computer 1123, and library access interface 121.	See, '992 patent, claim 19, step 3.	See, '992 patent, claim 19, step 3.
'720-11, step 3	receiving, into a receiving means, the transmitted	The component described in the specification and illustrated by Block	See, '992 patent, claim 19, step 4.	See, '992 patent, claim 19, step 4.



<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	compressed, digitized data representing a complete copy of the at least one item of audio/video information at a local distribution system;	Diagram 6, labeled 201.		
'720-11, step 4	storing, in a storing means, the received compressed, digitized data representing the complete copy of the at least one item at the local distribution system; and	The components described in the specification and illustrated by Block Diagram 6, labeled 203 or the components described in the specification and illustrated by Block Diagram 1f, labeled 200c.	See, '992 patent, claim 19, step 5.	See, '992 patent, claim 19, step 5.
'720-11, step 5	using the stored compressed, digitized data to transmit using a	The components described in the specification and illustrated by Block Diagram 6, output	See, '863 patent, claim 14, step 4.	See, '863 patent, claim 14, step 4.

<u>Claim No.</u>	<u>Patent Claim Language</u>	<u>Component Necessary to Perform Step</u>	<u>Supporting Reference(s) from Specification</u>	<u>Commentary</u>
	<p>transmitting means a representation of the at least one item to at least one of a plurality of subscriber selectable receiving stations coupled to the local distribution system, wherein the receiving means, the storing means, and the transmitting means are positioned at the same location, and wherein the at least one of the plurality of subscriber</p>	<p>data formatter labeled “compressed”, output data formatters labeled 211, 212, 213, and/or 214 and illustrated by Block Diagram 1f, and/or by Block Diagram 1g, labeled 200d. Components labeled data formatter 204 and decompressors 208 and/or 209 are optional.</p>		

<b><u>Claim No.</u></b>	<b><u>Patent Claim Language</u></b>	<b><u>Component Necessary to Perform Step</u></b>	<b><u>Supporting Reference(s) from Specification</u></b>	<b><u>Commentary</u></b>
	selectable stations is located at a premises geographically separated from the location of the local distribution system.			