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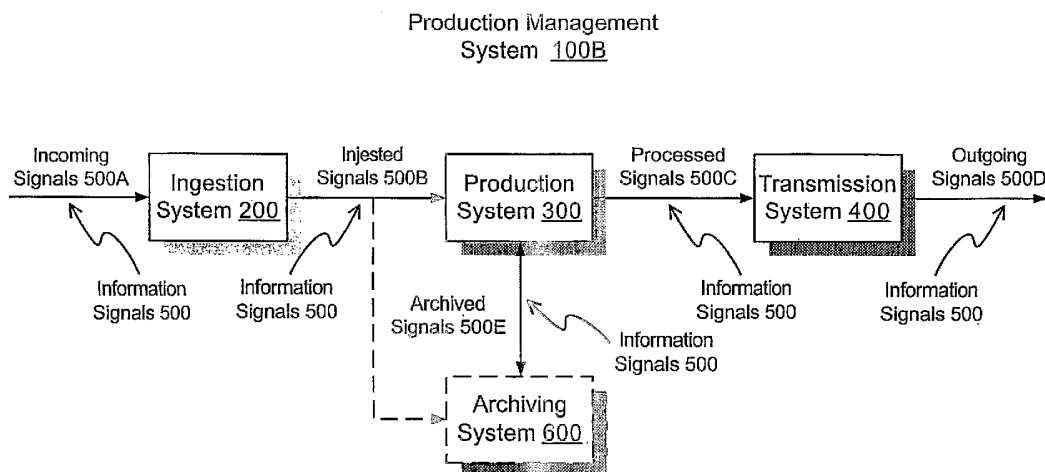
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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR PROCESSING MULTIMEDIA CONTENT



(57) Abstract: A production management system for producing multimedia content and methods for manufacturing and using same. The production management system is configured to ingest incoming information, such as multimedia content that is associated with live and/or recorded media events, and includes a production system for processing the ingested information for broadcast. For example, the production system can be configured to form a story with regard to a selected media event by combining and editing associated content from multiple information sources and/or to store information, including ingested information or processed information, in a data management system for identifying and tracking the associated content. Once formed, the story can be scheduled for broadcast in accordance with a predetermined transmission schedule.

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SYSTEM AND METHOD FOR PROCESSING MULTIMEDIA CONTENT

FIELD OF THE INVENTION

[0001] The present invention relates generally to production management systems for processing multimedia content and more particularly, but not exclusively, to production management systems for producing audio and/or video television content for transmission.

BACKGROUND OF THE INVENTION

[0002] Modern broadcasting organizations rely on a vast array of best-of-breed technologies to capture, organize, play-out, and distribute their content. In order to compete in a multi-channel, "always on" future, these broadcasting organizations must increase the quantity and quality of their output and achieve high-availability operational service levels while managing their overhead to deal with, for example, downturns in advertising revenue. This has resulted in complex working environments built around disparate technologies that have limited interoperability.

[0003] To address the trend in increased operational complexity, including the change from analog broadcasting to digital, high definition broadcasting, broadcasting organizations face a choice. The broadcasting organizations must either develop further specialized, costly operational disciplines or modernize current working practices. The simplification of current working practices inevitably requires increased interoperability between the various technologies and normally results in a massive capital expenditure and retraining outlay.

[0004] In view of the foregoing, a need exists for an improved production management system that overcomes the aforementioned obstacles and deficiencies of currently-available production management systems.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Fig. 1A is an exemplary top-level block diagram of an embodiment of a production management system for processing multimedia content.

[0006] Fig. 1B is an exemplary top-level block diagram of an alternative embodiment of the production management system of Fig. 1A.

[0007] Fig. 2 illustrates an exemplary structure for a media item created by the production management systems of Figs. 1A-B.

[0008] Fig. 3A is an exemplary block diagram illustrating one embodiment of a production system for the production management systems of Figs. 1A-B.

[0009] Fig. 3B is an exemplary block diagram of the production system of Fig. 3A to illustrate the manner by which the production system processes and stores incoming media items.

[0010] Fig. 4A illustrates an exemplary structure of a processed media item provided by the production system of Figs. 3A-B, in which the processed media item substantially comprises the created media item of Fig. 2.

[0011] Fig. 4B illustrates an exemplary structure of the processed media item of Fig. 5A, in which the processed media item comprises a selected portion of the created media item of Fig. 2.

[0012] Fig. 5A is an exemplary block diagram illustrating one embodiment of a data management system for the production system of Figs. 3A-B.

[0013] Fig. 5B is an exemplary block diagram illustrating an alternative embodiment of the data management system of Fig. 5A.

[0014] Fig. 6 illustrates an exemplary bin structure for organizing content stored in the data management system of Figs. 5A-B.

[0015] Fig. 7 is an exemplary block diagram of the production system of Figs. 3A-B to illustrate the manner by which the production system processes the stored media items to form compositions.

[0016] Fig. 8A illustrates an exemplary structure for a composition formed by the production system of Fig. 7.

[0017] Fig. 8B illustrates an exemplary composition chart for forming the composition of Fig. 8A.

[0018] Fig. 9 is an exemplary block diagram of the production system of Figs. 3A-B to illustrate the manner by which the production system processes the stored media items and/or compositions to form stories for transmission.

[0019] Fig. 10 is an exemplary flow diagram illustrating the manner by which logging tasks are processed by the production management systems of Figs. 1A-B.

[0020] Fig. 11 illustrates an exemplary user interface by which system users can interact with the production management systems of Figs. 1A-B.

[0021] It should be noted that the figures are not drawn to scale and that elements of similar structures or functions are generally represented by like reference numerals for illustrative purposes throughout the figures. It also should be noted that the figures are only intended to facilitate the description of the preferred embodiments of the present invention.

The figures do not describe every aspect of the present invention and do not limit the scope of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Since currently-available production management systems are insufficient in light
5 of the trend toward increased operational complexity, a production management system that provides enhanced scalability, performance, and reliability can prove much more desirable and provide a basis for a wide range of multimedia applications, such as ingestion, production, and transmission of television content. This result can be achieved, according to one embodiment of the present invention, by employing the production management system 100A as illustrated
10 in Fig. 1A.

[0023] The production management system 100A shown in Fig. 1A is configured to process, preferably at least partially in real-time, information signals 500 and comprises an ingestion system 200, a production system 300, and a transmission system 400. The information signals 500 include multimedia content that is associated with one or more live
15 and/or recorded media events 530 (shown in Fig. 6), such as local, regional, national, and/or global newsworthy events of any kind, and are received by the ingestion system 200 as incoming information signals 500A. The incoming information signals 500A can be provided in any suitable manner, such as via a video camera system 210 (shown in Fig. 3A) and/or an audio recording system 220 (shown in Fig. 3A), and can include live (or real-time) multimedia
20 content, such as backhaul (or direct) feeds and/or fronthaul (or scheduled) feeds and/or recorded (or time-delayed) multimedia content. Time-delayed multimedia content can comprise content stored on appropriate media, such as archival tapes and/or field tapes, and accessible via one or more recording systems 230 (shown in Fig. 3A), such as a video tape recording (VTR) system. Further details with regard to the control of such media storage
25 devices are provided in a co-pending patent application entitled "Media Storage Control," Attorney Docket No. IK/26520WO, filed on April 5, 2004, the disclosure of which is hereby incorporated by reference in its entirety.

[0024] The ingestion system 200 includes sufficient resources to receive and process the incoming information signals 500A, preferably substantially in real-time, to provide ingested
30 information signals 500B. For example, the incoming information signals 500A preferably are associated with one or more arrival bookings 540 (shown in Fig. 6) for managing the manner by which the incoming information signals 500A are received and/or processed. To facilitate the receipt and/or processing of the incoming information signals 500A substantially in accordance with a predetermined reception schedule, the arrival bookings 540 can schedule

and assign the resources, such as communication ports (not shown) on media ingestion devices (not shown), of the ingestion system 200. Further details with regard to the structure, contents, and use of arrival bookings 540 are provided in a co-pending patent application, entitled "A Method and Apparatus for Dynamically Controlling a Broadcast Media Production System,"
5 Attorney Docket No. IK/26271WO, filed on April 5, 2004, the disclosure of which is hereby incorporated by reference in its entirety. Although shown and described herein as receiving and/or processing the incoming information signals 500A substantially in accordance with one or more arrival bookings 540, it is understood that the ingestion system 200 can manage the receipt and/or processing of the incoming information signals 500A in any suitable manner.

10 [0025] The ingestion system 200 preferably is configured to divide each incoming information signal 500A into a plurality of signal segments to create one or more media items 550 (shown in Fig. 2). By dividing the incoming information signal 500A into media items 550, the associated content is more easily managed by the production management system 100A. In accordance with the associated arrival bookings 540, the ingestion system 200 can
15 create the media items 550, receive media objects (or tracks) MT (shown in Fig. 2), and associate the media tracks MT with the media items 550. The media items 550 include a selected portion of the incoming information signals 500A and substantially comprise content managed by the production management system 100A. Each media item 550 can be associated with at least one media track MT and/or at least one attribute. Typically being provided as
20 metadata, the attributes of the media items 550 can be associated with the media items 550, in whole or in part, and are configured to facilitate the processing of the associated media tracks by the production management system 100A.

[0026] Illustrative attributes of the media items 550 can include an aspect ratio, a format type, a media type, and/or a status code. The format types associated with the media items 550
25 can comprise any conventional format types, including monaural and/or stereo, and can include an indication of the presence of any noise reduction. Exemplary media types can include video, audio, text, and/or graphics. The current status of the media items 550 can be indicated via the status codes. The status codes, for example, can indicate whether a selected media item 550 is being recorded and/or has been recorded as well as whether the content of the selected
30 media item 550 remains in a raw (or unprocessed) form or has been processed (or edited). It will be appreciated that the attributes identified above are merely exemplary and not exhaustive.

[0027] Fig. 2 illustrates an exemplary structure for a typical media item 550 created by the ingestion system 200. The media tracks MT of the media item 550 preferably comprise

substantially separate media tracks MT and can include at least one audio track AT and/or at least one video track VT. Typically comprising one or two video tracks VT and up to six audio tracks AT, the media item 550 can include any suitable number of audio tracks AT and/or video tracks VT. As shown in Fig. 2, for example, the media item 550 can include N audio
5 tracks AT1-ATN and/or M video tracks VT1-VTM. The media tracks MT are illustrated as being associated with a begin time t_B and an end time t_E , defining a track duration D.

Comprising any suitable time duration, the track duration D can be adjustable based on, for example, the nature of the incoming information signal 500A and can be substantially uniform, and/or different, among the media items 550. Further details with regard to the structure and
10 contents of the media items 550 are provided in co-pending patent applications, entitled "System and Method for Media Management," Attorney Docket No. IK/26521WO, filed on April 5, 2004, and "A Method and Apparatus for Dynamically Controlling a Broadcast Media Production System," Attorney Docket No. IK/26271WO, filed April 5, 2004, the disclosures of both of which are hereby incorporated by reference in their entirety.

15 [0028] Returning to Fig. 1A, the ingestion system 200 likewise can be configured to perform at least partial signal pre-processing and/or pre-conditioning on the incoming information signals 500A. Since the multimedia content, such as the media items 550, comprising the incoming information signals 500A typically is provided in an analog format, for instance, the ingestion system 200 can convert analog-format incoming information signals
20 500A into ingested information signals 500B with a suitable digital format. Illustrative digital formats for video signals include Audio Video Interleave (AVI) format, Eight-Level Vestigial Sideband (8-VSB), Joint Photographic Experts Group (JPEG) format, and Moving Picture Experts Group (MPEG) format; whereas, Waveform (WAV) format and MPEG Audio Layer 3 (MP3) format comprise exemplary digital formats for audio signals. It will be appreciated that
25 the digital formats identified above are merely exemplary and not exhaustive. As desired, one or more processor amplifiers (not shown) can be employed to alter audio and/or video quality levels of the media items 550 to achieve a predetermined content quality. Further details with regard to the structure and operation of the ingestion system 200 are provided in co-pending patent applications, entitled "System and Method for Media Management," Attorney Docket
30 No. IK/26521WO, filed on April 5, 2004, and "Media Processor," Attorney Docket No. IK/26519WO, filed on April 5, 2004, the disclosures of both of which are hereby incorporated by reference in their entirety.

[0029] Once initially processed by the ingestion system 200, the ingested information signals 500B can be provided to the production system 300 for further processing. The

ingested information signals 500B can be provided to the production system 300 in any suitable manner. Stated somewhat differently, the resources of the ingestion system 200 can be configured to communicate with the production system 300 via any conventional type of communication system (not shown), including a wired communication system and/ or a wireless communication system. The communication system likewise can comprise an analog and/or a digital communication system. The video camera system 210, the audio recording system 220, and the recording system 230, for example, are illustrated as being substantially directly coupled with the production system 300. Other resources of the ingestion system 200 can be configured to indirectly communicate with the production system 300 via one or more intermediate systems, such as via a receiver system 240 (shown in Fig. 3A). The receiver system 240 can comprise any conventional type of receiver system, including a satellite receiver system, an analog receiver system, such as a radio receiver system, and/or a digital receiver system, such as a fiber optic receiver system, without limitation.

[0030] The production system 300, upon receiving the ingested information signals 500B, can perform one or more processes, such as viewing, editing, editorial, and/or logging, on the media items 550 to prepare form compositions 560 (shown in Figs. 7 and 8A-B) and/or at least one story 570 (shown in Fig. 9) about the selected media events 530 for transmission. For example, the production system 300 can include one or more monitoring systems 370 (shown in Fig. 3A) for viewing the media items 550 and/or one or more content editing systems, such as workstations 380A, 380B, non-linear editing systems 380C (shown in Fig. 3A), for editing the media items 550. The content editing systems, for instance, can be configured to edit and/or combine the media items 550 to form the compositions 560 and/or the stories 570. The media items 550, the compositions 560, and/or the stories 570 can be stored in a data management system 360 (shown in Fig. 3A), such as a relational database system, for identifying and tracking the content associated with the stored media items 550, compositions 560, and/or stories 570. The production system 300 can be configured to provide processed information signals 500C to the transmission system 400 as shown in Fig. 1A. The processed information signals 500C can include the content associated with the media items 550, the compositions 560, and/or the stories 570 as stored in the data management system 360.

[0031] The transmission system 400 includes sufficient resources to receive the processed information signals 500C from the production system 300 and to prepare the content associated with the media items 550, the compositions 560, and/or the stories 570 for transmission as outgoing information signals 500D. For example, the media items 550, the compositions 560, and/or the stories 570 can be associated with one or more departure bookings (not shown) for

managing the manner by which the associated content is transmitted. To facilitate transmitting the associated content substantially in accordance with a predetermined transmission schedule, the departure bookings can schedule and assign the resources, such as communication ports (not shown) on media transmission devices (not shown), of the transmission system 400.

5 Further details with regard to the structure, contents, and use of departure bookings are provided in a co-pending patent application, entitled "A Method and Apparatus for Dynamically Controlling a Broadcast Media Production System," Attorney Docket No. IK/26271WO, filed on April 5, 2004, the disclosure of which is hereby incorporated by reference in its entirety.

10 [0032] Although shown and described herein as transmitting the associated content substantially in accordance with one or more departure bookings, it is understood that the transmission system 400 can manage the transmission of the associated content in any suitable manner. Illustrative transmission management systems for managing the transmission of the associated content include an Electronic News Production Service (ENPS) system, an
15 Integrated Broadcast Interaction System (IBIS) system, a National Communication System (NCS) system, and/or a ProBel system. It will be appreciated that the digital formats identified above are merely exemplary and not exhaustive.

[0033] The processed information signals 500C preferably includes clones (or copies) of the media items 550, the compositions 560, and/or the stories 570 stored the data management
20 system 360. By providing cloned media items 550, compositions 560, and/or stories 570 to the transmission system 400, the original media items 550, compositions 560, and/or stories 570 can be maintained by the production system 300 regardless of whether the cloned media items 550, compositions 560, and/or stories 570 are further processed by the transmission system 400 in preparation for transmission. For example, the transmission system 400 can be configured
25 to perform at least partial signal post-processing and/or post-conditioning on the processed information signals 500C to prepare the associated content for transmission. Since multimedia content typically is transmitted in an analog format, for instance, the transmission system 400 can be configured to convert digital-format processed information signals 500C into outgoing information signals 500D with an analog format. As desired, the cloned media items 550,
30 compositions 560, and/or stories 570, as further processed by the transmission system 400, can be provided to the production system 300 for storage in the data management system 360.

[0034] The content associated with the cloned media items 550, compositions 560, and/or stories 570 can be transmitted in any suitable manner. For example, the associated content can be transmitted via one or more live (or real-time) transmissions and/or recorded (or time-

delayed) transmissions. Exemplary real-time transmissions include communication feeds, such as backhaul (or direct) feeds and/or fronthaul (or scheduled) feeds, and/or broadcasts to air. The real-time transmissions can be transmitted via any suitable type of transmitter system 410 (shown in Fig. 9), such as one or more satellite transmitter systems 420 (shown in Fig. 9) and/or one or more fiber optic transmitter systems 430 (shown in Fig. 9). The time-delayed transmissions can include storing the content associated with the cloned media items 550, compositions 560, and/or stories 570 to appropriate media, such as magnetic tape, via a recording system 440 (shown in Fig. 9), such as a video tape recording (VTR) system. Further details with regard to the structure and operation of the transmission system 400 are provided in a co-pending patent application, entitled "System and Method for Media Management," Attorney Docket No. IK/26522WO, filed on April 5, 2004, the disclosure of which is hereby incorporated by reference in its entirety.

[0035] Turning to Fig. 1B, a production management system 100B is shown that illustrates an alternative embodiment of the production management system 100A. In the manner discussed in more detail above with reference to Fig. 1A, the production management system 100B includes an ingestion system 200, a production system 300, and a transmission system 400, each being provided in the manner set forth above. The production management system 100B is illustrated as further comprising an archiving system 600. Being configured to provide long term preservation and tracking of multimedia content, the archiving system 600 can exchange archived information signals 500E with the production system 300. The archiving system 600 thereby can provide archived media items 550A (shown in Fig. 3B), archived compositions 560A (shown in Fig. 9), and/or archived stories (not shown) to the production system 300. Exemplary archived media items 550A, compositions 560A, and/or stories include media items 550, compositions 560, and/or stories 570 with content that has become less current over time and/or for which delayed access becomes permissible. The archived media items 550A, compositions 560A, and/or stories can be edited and combined with the media items 550 to form compositions 560 and/or stories 570 in the manner discussed above with reference to Fig. 1A.

[0036] As desired, the archived media items 550A, compositions 560A, and/or stories can be stored in the data management system 360 in accordance with a predetermined criteria, for example, if interest in the content of the archived media items 550A increases. Interest in the content of one or more selected media items 550 stored in the data management system 360 likewise can decrease such that the selected media items 550 become dated media items 550D (shown in Fig. 3B). In accordance with the predetermined criteria, the dated media items 550D

can be transferred to the archiving system 600 for long term preservation. Upon receiving the dated media items 550D from the production system 300, the archiving system 600 can store the dated media items 550D on appropriate media, such as one or more magnetic tapes (not shown), and can catalog the media such that the dated media items 550D can be subsequent
5 located, as desired.

[0037] The archiving system 600 preferably includes at least one nearline storage system 610 (shown in Fig. 3A) and/or at least one offline storage system 620 (shown in Fig. 3A). The nearline storage system 610 can comprise a set of cataloged magnetic tapes, such as a robotic tape library, that can be automatically accessed and that can provide access to the archived
10 media items 550A, compositions 560A, and/or stories in minutes; whereas, the offline storage system 620 can include a set of cataloged magnetic tapes that can be manually accessed. Since an access time for the offline storage system 620 typically is significantly greater than an access time for the nearline storage system 610, magnetic tapes can be exchanged between the nearline storage system 610 and the offline storage system 620 to accommodate changing
15 requirements for content stored in the archiving system 600. Further details with regard to the structure and operation of the archiving system 600 are provided in co-pending patent applications, entitled "System and Method for Media Management," Attorney Docket No. IK/26521WO, filed on April 5, 2004, and "Data Storage and Retrieval System and Method," Attorney Docket No. IK/26523WO, filed April 5, 2004, the disclosures of both of which are
20 hereby incorporated by reference in their entirety.

[0038] The production management systems 100A, 100B advantageously use a number of resources, constructs, and workflows to facilitate and streamline the manner by which information, such as multimedia content, associated with media events 530 is processed into one or more stories 570 for transmission. For example, the production management systems
25 100A, 100B are configured to increase accessibility to, and to automate the movement of, the information within the production system 300, resulting in fewer production errors. The production management systems 100A, 100B likewise inhibit the use of copied content within the production system 300 such that story quality increased. The increase in quality is evident in the stories 570 transmitted by the production management systems 100A, 100B as well as in
30 the stories 570, compositions 560, media items 550, and other information and content, stored by the production management systems 100A, 100B for later use.

[0039] In the manner discussed above, the production system 300 can be configured to receive and process current media items 550 and/or archived media items 550A to form one or more compositions 560 and/or stories 570 and to provide the stories 570 for transmission.

Although shown and described herein as substantially comprising digital signals for purposes of illustration, it will be appreciated that the ingested information signals 500B, the processed information signals 500C, and the archived information signals 500E each can comprises any suitable type of signals, including analog signals. Fig. 3A illustrates one embodiment of a production system 300A of a production management system 100C. The production system 300A is shown as comprising a plurality of system resources 310. The system resources 310 of the production system 300A can be provided in any suitable predetermined number and configuration, as desired. For example, the number and/or configuration of system resources 310 can be based, at least in part, upon the quantity and nature of the ingested information signals 500B, the processed information signals 500C, and/or the archived information signals 500E associated with the production system 300A.

[0040] Each of the system resources 310 can comprise any type of conventional production system resource, such as a video tape recording (VTR) system, a media routing system 320, a media server system 340, and/or a monitoring system 370, without limitation and may be reserved in accordance with one or more associated bookings, including arrival bookings 540 (shown in Fig. 6) and/or departure bookings (not shown). Being configured to be managed by the production system 300, the system resources 310 each can perform at least one preselected function and includes a predetermined number of communication ports 312, such as one or more serial digital interface (SDI) communication ports, as illustrated with the media routing systems 320 of Fig. 3A. The system resources 310 preferably can be configured to substantially automatically perform the preselected functions in accordance with the associated bookings; however, one or more of the system resources 310 may require at least partial manual control under certain circumstances, such as with regard to media events 530 that have beginning times and/or ending times that are not fixed. As desired, the communication ports 312 of the system resources 310 likewise can comprise system resources 310 to be managed by the production system 300. Although the communication ports 312 are shown and described in association with the media routing systems 320 for purposes of illustration, it is understood that each system resource 310 can include a suitable number of communication ports 312.

[0041] Each system resource 310 likewise can be associated with one or more resource characteristics. For example, the communication port 312 can include an operational direction, such as by being defined as being an input port 314, an output port 316, or a bi-directional port (not shown), and/or an operational status, including an indication of whether the communication port 312 is available or busy. Similarly, at least one resource type can be associated with the system resources 310. The resource types can identify one or more

resource-specific behaviors and/or attributes of the system resources 310, such as whether an associated system resource 310 is compatible with video signals in a high definition (HD) format and/or a standard definition (SD) format. As desired, the system resources 310 can be divided into any selected number of resource groups and can be provided with a resource designation, such as being a primary or a secondary system resource.

[0042] As shown in Fig. 3A, for example, the production system 300A can include at least one media routing system 320. Being provided as any suitable type of conventional media routing system, each media routing system 320 includes a predetermined number of input ports 314 and a predetermined number of output ports 316. In accordance with an associated arrival booking 540, each input port 314 can be configured to receive an ingested information signal 500B from the ingestion system 200 and to route the ingested information signal 500B to at least one of the output ports 316. The operation and configuration of the communication ports 312 of the media routing system 320 can be substantially automatically and/or manually controllable. The production system 300A includes sufficient media routing systems 320, which preferably are arranged in a matrix to provide a suitable number of input ports 314 and output ports 316, to accommodate the preselected number of ingested information signals 500B provided by the ingestion system 200.

[0043] As desired, two or more media routing systems 320 can be cascaded in any conventional manner to provide a sufficient number of input ports 314 and/or output ports 316 to accommodate the ingested information signals 500B. A selected output port 316 of one media routing system 320, for example, can be coupled with, and configured to communicate with, a selected input port 314 of another media routing system 320 as illustrated in Fig. 3A. Thereby, the ingested information signals 500B, such as ingested information signal 500B', can be routed among the output ports 316 of a plurality of media routing systems 320, as desired. Although shown and described with reference to Fig. 1 as comprising two media routing systems 320A, 320B for purposes of illustration, it is understood that the production system 300A can include a matrix of media routing systems 320 comprising any suitable number and/or arrangement of media routing systems 320.

[0044] The output ports 316 of the media routing systems 320 are shown in Fig. 3A as being coupled with, and in communication with, the communication ports 312 of other system resources 310 of the production system 300A. The system resources 310 can be configured to communicate in any suitable manner, such as substantially directly and/or indirectly via, for example, one or more intermediate system resources 310 and/or a communication network 330. Typically being provided as a conventional computer network system, the communication

network 330 can comprise a communication network of any suitable type such that the system resources 310 are configured to communicate. The communication network 330, for example, can be provided as a wired and/or wireless communication network, including a telephone network, a local area network (LAN), a wide area network (WAN), a campus-area network (CAN), and/or a wireless local area network (WLAN), of any kind. Exemplary wireless local area networks include wireless fidelity (Wi-Fi) networks in accordance with Institute of Electrical and Electronics Engineers (IEEE) Standard 802.11 and/or wireless metropolitan-area networks (MANs), which also are known as WiMax Wireless Broadband, in accordance with IEEE Standard 802.16. Preferably being configured to support high data transfer rates, the communication network 330 preferably comprises a high-speed Ethernet network, such as any type of Fast Ethernet (100Base-X) communication network and/or Gigabit (1000Base-X) Ethernet communication network, with a typical data transfer rate of at least approximately one hundred megabits per second (100 Mbps).

[0045] The communication network 330 likewise can be provided with any appropriate topology, protocol, and/or architecture. Comprising a geometric arrangement of the system resources 310, common network topologies include mesh, star, bus, and ring network topologies. The topology of the communication network 330 likewise can comprise a hybrid of the common network topologies, such as a network tree topology. Network protocols define a common set of rules and signals by which the system resources 310 can communicate via the communication network 330. Illustrative types of network protocols include Ethernet and Token-Ring network protocols; whereas, peer-to-peer and client/server network architectures are examples of typical network architectures. It will be appreciated that the network system types, topologies, protocols, and architectures identified above are merely exemplary and not exhaustive.

[0046] The other system resources 310 of the production system 300A can include a media server system 340 and/or an online storage system 350 as shown in Fig. 3A. The media server system 340 typically comprises one or more computer systems, such as personal computer systems, of any suitable type and is employed to manage network resources, including the system resources 310. For example, the media server system 340 can comprise a file server system for storing files to a mass storage system, such as the online storage system 350. The media server system 340 is coupled with the communication network 330 and configured to communicate with one or more of the other system resources 310, including at least one of the communication ports 312 of the media routing systems 320, in any suitable manner. Preferably, the media server system 340 is configured to manage media, to manipulate massive

amounts of information, and/or to integrate with one or more broadcast media devices, such as video tape recording (VTR) systems.

[0047] In the manner set forth above, the media server system 340 as illustrated in Fig. 3A can be configured to communicate with the media routing systems 320 via the communication network 330 and/or via one or more other system resources 310. The ingested information signals 500B thereby can be communicated to the media server system 340. If the ingested information signals 500B are provided in an analog format, for example, a system resource 310, such as an analog-to-digital conversion (ADC) system (not shown), can be disposed substantially between the media routing systems 320 and the media server system 340 such that the ingested information signals 500B can be provided to the media server system 340 in a suitable digital format. Illustrative digital formats for video signals include Audio Video Interleave (AVI) format, Eight-Level Vestigial Sideband (8-VSB), Joint Photographic Experts Group (JPEG) format, and Moving Picture Experts Group (MPEG) format; whereas, Waveform (WAV) format and MPEG Audio Layer 3 (MP3) format comprise exemplary digital formats for audio signals. It will be appreciated that the digital formats identified above are merely exemplary and not exhaustive.

[0048] The media server system 340 likewise is configured to communicate with the online storage system 350. The online storage system 350 can be configured to store and provide information, including current content (or media items 550), data files, instruction code, and other types of information. Preferably comprising a non-volatile memory system with a relatively fast access time, the online storage system 350 can be provided as any conventional type of mass memory system, such as any electronic, magnetic, and/or optical storage media, without limitation. Exemplary online storage systems 350 include video tape recording (VTR) systems and/or redundant array of inexpensive disk (RAID) systems. Operating substantially under the control of the media server system 340, the online storage system 350 can be configured to receive and store the ingested information signals 500B. The media server system 340 and/or the online storage system 350 thereby can provide a data management system 360, such as a relational database system, for identifying and tracking the media items 550 associated with the ingested information signals 500B.

[0049] In the manner discussed above with reference to Fig. 1B, the production system 300A likewise can be coupled with, and configured to communicate with, an archiving system 600. Archived information signals 500E thereby can be exchanged between the production system 300A and the archiving system 600. In contrast to the online storage system, the archiving system 600 has a relatively slow access time and is configured to provide long term

preservation and tracking of less-current content, including archived media items 550A. Being provided in the manner set forth above, the archiving system 600 can include at least one nearline storage system 610 and/or at least one offline storage system 620. The nearline storage system 610 can comprise a set of cataloged magnetic tapes, such as a robotic tape library, that can be automatically accessed and that can provide access to archived media items 550 in minutes; whereas, the offline storage system 620 can include a set of cataloged magnetic tapes that can be manually accessed.

[0050] As desired, the production system 300A can include any predetermined number of monitoring systems 370 and/or computer systems 380. Being provided as any type of conventional monitoring system for audibly and/or visually presenting content, each of the monitoring systems 370 can be coupled with the communication network 330, and configured to communicate with one or more of the other system resources 310, in any suitable manner. As shown in Fig. 3A, for example, the monitoring system 370 is illustrated as being coupled with the media routing system 320A. Typically having one input port 314, the monitoring systems 370 preferably are configured to view media items 550 and generally lack capability to alter, such as pause, stop, rewind, and/or edit, the media items 550.

[0051] In the manner described above with reference to the media server system 340, the computer systems 380 preferably are configured to manage media and can comprise any suitable type of computer systems. The computer systems 380 generally are provided as conventional single-user computer systems, such as personal computer systems, without limitation and can include a processing system (not shown) and a memory system (not shown). Being configured to perform, and/or control the performance or, at least one of the preselected functions performed by the computer system 380, the processing system can be provided as a conventional processing system of any appropriate kind. Exemplary processing systems include microprocessors (μ Ps), central processing units (CPUs), digital signal processors (DSPs), field-programmable gate arrays (FPGAs), and/or application-specific integrated circuits (ASICs).

[0052] Being coupled with, and configured to communicate with, the processing system, the memory system is configured to store and provide information, including instruction code, such as software or firmware, associated with the processing system. The memory system likewise can include sufficient resources to store a suitable number of media items 550, compositions 560, and/or stories 570. Preferably comprising a non-volatile memory system, the memory system 340 can comprise any appropriate type of conventional memory system, such as any electronic, magnetic, and/or optical storage media, without limitation. For

example, exemplary storage media can include one or more static random access memories (SRAMs), dynamic random access memories (DRAMs), electrically-erasable programmable read-only memories (EEPROMs), hard drives (HDDs), compact disks (CDs), and/or digital video disks (DVDs) of any kind.

5 [0053] System users (not shown) can interact with the computer systems 380 via at least one input system (not shown) and at least one output system (not shown). The input systems can be provided in any suitable manner and normally include conventional pushbutton devices, such as a keyboard or a keypad, and/or conventional pointing devices, such as a mouse or
10 trackball. Typical output systems can include conventional video display systems 810 (shown in Fig. 11), such as computer monitors of any kind, for visually presenting information and/or conventional audio systems, such as a soundcard and speakers, for audibly presenting information. The computer systems 380 can be coupled with the communication network 330, and configured to communicate with one or more of the other system resources 310, in any suitable manner such as via one or more communication ports 312.

15 [0054] As illustrated in Fig. 3A, the computer systems 380 can perform one or more functions, including operating as a workstation 380A, 370B, a non-linear editing (NLE) system 380C, a server system 380D, and/or a news production system, such as an Electronic News Production Service (ENPS) system. Preferably, one or more selected computer systems 380 can be configured to operate as content editing systems. The selected computer systems 380
20 thereby can alter, such as pause, stop, rewind, and/or edit, content associated with the media items 550, compositions 560, and/or stories 570. Preferably, the computer systems 380 are reconfigurable such that the functionality of each computer system 380 can be modified as desired.

[0055] Although some of the computer systems 380 can be proximate to the media server
25 system 340, it will be appreciated that one or more computer systems 380, such as a portable computer system (not shown), can be remote from the media server system 340 in the manner illustrated in Fig. 3A with regard to the server system 380D. The server system 380D, for example, can comprise a remote server system that is configured to provide content from one or more information sources. As such, the communication network 330 preferably is
30 configured to accommodate communications between the server system 380D and the media server system 340. The communication network 330 can provide communications between the server system 380D and the media server system 340 in any suitable manner, such as via the telephone network, a wide area network (WAN), and/or the Internet.

[0056] Turning to Fig. 3B, the production system 300A is shown as receiving an exemplary ingested information signal 500B' from the video camera system 210 of the ingestion system 200. Being associated with at least one arrival booking 540, the ingested information signal 500B' is available during a predetermined period of time and can include one or more raw (or unprocessed) media items 550'. In accordance with the arrival booking 540, a selected input port 314 of a selected media routing system 320A preferably is reserved in advance for the preselected period such that the each media item 550' can be received via the selected input port 314. The selected media routing system 320A is further configured to route the media items 550' to one or more selected output ports 316 and to provide the media items 550' via the selected output ports 316. The selected media routing system 320A thereby can provide the media items 550' to the communication ports 312 of one or more other selected system resources 310, such as the media server system 340 and the monitoring system 370 as shown in Fig. 3B. As desired, the routing of ingested information signal 500B' among the system resources 310, such as between the media routing system 320A and the media server system 340, can be substantially static and/or dynamic.

[0057] In the manner discussed above, the other selected system resources 310 can be associated with resource designation in accordance with the arrival booking 540. For example, the arrival booking 540 can designate the media server system 340 as being a primary destination for the media items 550'; whereas, the monitoring system 370 can be designated as a secondary destination. Thereby, the media items 550' are provided to the media server system 340, and/or one or more of the media items 550' can be viewed via the monitoring system 370, substantially in real-time as the associated ingested information signal 500B' is being received by the production system 300A. The media server system 340, in turn, can provide the media items 550' to the online storage system 350 in the data management system 360.

[0058] Fig. 3B likewise illustrates the media routing systems 320A, 320B as being cascaded such that the selected media routing system 320A provides the media items 550' to the input port 314 of another media routing system 320B, which can provide the media items 550' via one or more selected output ports 316. The media items 550' thereby can be provided to at least one additional system resource 310, which can be designated as a tertiary destination for the media items 550' in accordance with the arrival booking 540 in the manner discussed above. As shown in Figs. 3A-B, the media items 550' can be provided to a content editing system, such as workstation 380A. One or more media items 550' can be processed, such as by being viewed and edited, via the workstation 380A to form a processed media item 550'' that is

associated with processed ingested information signal 500B". The workstation 380A preferably can process the media item 550' substantially in real-time as the ingested information signal 500B' is being received by the production system 300A and can provide the processed media item 550" to the media server system 340. In the manner set forth above, the media server system 340 can provide the processed media item 550" to the online storage system 350 such that the processed media item 550", like the media items 550', can be stored in the data management system 360.

[0059] The production system 300A can process the media item 550' in any suitable manner to provide the processed media item 550". For example, a content editing system, such as the workstation 380B, can be configured to receive the media item 550' from the data management system 360. The workstation 380B is illustrated in Fig. 3B as being in communication with the media server system 340 such that the media item 550' can be provided to the workstation 380B substantially in real-time as the ingested information signal 500B' is being received by the production system 300A. In the manner discussed above with regard to the workstation 380A, the workstation 380B can be configured to process the media item 550' to form the processed media item 550", preferably substantially in real-time, and to provide the processed media item 550" to the media server system 340. The media server system 340, in turn, can provide the processed media item 550" to the online storage system 350 for storage in the data management system 360 in the manner set forth above.

[0060] As shown in Figs. 4A-B, the unprocessed media items 550' and the processed media items 550" each can be provided in the manner described in more detail above with reference to the media item 550 (shown in Fig. 2). Comprising content managed by the production management system 100C (shown in Figs. 3A-B), each media item 550', 550" can be associated with at least one media track MT and/or at least one attribute as discussed above. Preferably comprising substantially separate media tracks MT, the media tracks MT of the media item 550' can include any suitable number of audio tracks AT and/or video tracks VT. In the manner described above regarding the media item 550, the media item 550' is illustrated as having N audio tracks AT1-ATN and/or M video tracks VT1-VTM and as being associated with a begin time t_B and an end time t_E .

[0061] Similarly, the processed media item 550" can have any suitable number of audio tracks AT and/or video tracks VT. As shown in Fig. 4A, for example, the processed media item 550" can have a substantially the same number of audio tracks AT and/or video tracks VT as the unprocessed media items 550'. The content associated with the audio tracks AT and/or the video tracks VT of the unprocessed media item 550' and the processed media item 550"

likewise can be substantially the same. A track duration D'' of the media tracks MT of the processed media item 550'' therefore can be substantially equal to a track duration D' of the media tracks MT of the unprocessed media item 550' as illustrated in Fig. 4A. Stated somewhat differently, the content associated with the processed media item 550'' can substantially
5 comprise the content associated with the unprocessed media item 550'.

[0062] Alternatively, or in addition, the content associated with the processed media item 550'' can comprise selected portions of the content associated with the unprocessed media item 550'. For example, the number of audio tracks AT and/or video tracks VT associated with the processed media item 550'' can be less than the number of audio tracks AT and/or video tracks
10 VT associated with the unprocessed media item 550' as shown in Fig. 4B. Thereby, the processed media item 550'' can include selected audio tracks AT and/or video tracks VT from the unprocessed media item 550'. As illustrated in Fig. 4B, the video track VT1 of the processed media item 550'' includes content from the video track VT2 of the unprocessed media item 550'; whereas, the audio tracks ATN, AT1 of the unprocessed media item 550'
15 respectively provide content to the first and second audio tracks AT1, AT2 of the processed media item 550''. Having a track duration D'' that is shown as being less than the track duration D' of the media tracks MT of the unprocessed media item 550', the media tracks MT of the processed media item 550'' likewise can include selected portions of the content associated with the media tracks MT of the unprocessed media item 550'.

[0063] Advantageously, by previewing the media items 550' substantially in real-time as the ingested information signal 500B' is being received by the production system 300A, any portions of the media items 550' that may be suitable for transmission can be instantly identified and, as desired, prepared for transmission. If the media items 550' relate to a live media event 530 (shown in Fig. 6), such as a news conference, a sporting event, and/or a police
25 car chase, for example, highlights of the media event 530 can be identified by previewing the media items 550' as the live media event 530 occurs. Previewing the associated content likewise can prove advantageous for any type of media event 530, including live media events 530 and recorded media events 530, that occur over extended periods of time and/or that have beginning times and/or ending times that are not fixed. To conserve storage space within the
30 online storage system 350, returning again to Fig. 3B, the production system 300A can transfer the media items 550', in whole or in part, from the online storage system 350 to the archiving system 600 if no portion of the media items 550' is identified as being currently suitable for transmission. The transfer of the media items 550' to the archiving system 600 can be

performed in any suitable manner, including periodically and/or at the conclusion of the media event 530.

[0064] While the media items 550' can be previewed via one or more monitoring systems 370 and/or content editing systems, the content editing systems can be further configured to alter, such as pause, stop, rewind, and/or edit, the media items 550' during the preview. For example, a selected media item 550' can be previewed substantially in real-time via the workstation 380B in the manner described above. Upon identifying the selected media item 550', in whole or in part, as being potentially suitable for transmission, the workstation 380B can temporarily suspend the real-time preview such that the selected media item 550' can be further analyzed. The workstation 380B likewise can provide any suitable functionality for facilitating the review and further analysis of the selected media item 550'.

[0065] As desired, the workstation 380B can repeatedly present the selected media item 550', in whole or in part, during the analysis. The workstation 380B likewise can modify and/or enhance the presentation of the selected media item 550', such as by providing zooming functionality and/or slow-motion functionality, to facilitate the analysis of the selected media item 550'. The selected media item 550' thereby can be selected for transmission, identified for further review, and/or deselected. By providing an annotation function, the workstation 380B can include annotations, such as reviewer notes and comments, with the selected media item 550', in whole or in part, to form the processed media item 550''. The workstation 380B likewise can include an indexing function for providing indexing information, such as a start time and/or an end time, for each portion of the selected media item 550' that comprises the processed media item 550''. Any information, such as the disposition information, the annotation information, and/or the indexing information, related to the analysis of the selected media item 550' can be included in the attributes (not shown) of the media item 550'' and stored with the media item 550'' in the data management system 360 in the manner discussed above.

[0066] During the analysis of the selected media item 550', the production system 300A can continue to receive additional media items 550' associated with the ingested information signal 500B'. The workstation 380B however is unavailable to perform a real-time preview of any additional media items 550' received during the analysis of the selected media item 550'. Although preview of the additional media items 550' can be foregone, the production system 300A preferably is configured to allocate at least one system resource 310 to perform the preview. The additional media items 550' can be previewed in any suitable manner. As desired, one or more of the other system resources 310, such as the monitoring system 370

and/or another content editing system, including the workstation 380A, can be configured to preview the additional media items 550' while the workstation 380B analyzes the selected media item 550'.

[0067] The workstation 380B likewise can preview the additional media items 550' once the analysis of the selected media item 550' is complete. For example, since the data management system 360 illustrated as being configured to store the media items 550' substantially in real-time as the ingested information signal 500B' is being received, the workstation 380B can receive the additional media items 550' via the media server system 340 upon completing the analysis of the selected media item 550'. In the manner discussed above, the workstation 380B can modify and/or enhance the presentation of the additional media items 550'. The workstation 380B thereby can be configured to preview the additional media items 550' at a suitable increased previewing rate until the current media item 550' associated with the ingested information signal 500B' is reached. Upon reaching the current media item 550', the workstation 380B can return to previewing the media items 550' in real-time in the manner discussed in more detail above.

[0068] In the manner discussed in more detail above with reference to Fig. 1B, the archiving system 600 is configured to provide long term preservation and tracking of multimedia content and can be configured to communicate with at least one of the system resources 310, such as the media server system 340 as illustrated in Fig. 3B, of the production system 300A. Media items 550 thereby can be exchanged between with the production system 300A and the archiving system 600. Under certain circumstances, such as when the ingested information signal 500B' is associated with important content, for example, it may prove advantageous to provide the media items 550' to the archiving system 600 substantially in real-time as the ingested information signal 500B' is being received by the production system 300A.

[0069] Likewise, as media items 550 continue to be received from the ingestion system 200 and stored in the data management system 360, one or more media items 550 stored in the data management system 360 can be identified as being suitable for transfer to the archiving system 600 as dated media items 550D in accordance with a predetermined criteria. For example, the dated media items 550D can include media items 550 comprising content that has become less current over time and/or media items 550 for which delayed access becomes permissible. Upon receiving the dated media items 550D from the production system 300, the archiving system 600 can store and catalog the dated media items 550D such that the dated media items 550D can be subsequent located, as desired. To facilitate with cataloging the dated media items 550D, each dated media item 550D preferably includes identifying information, such as a

content summary, a time duration, and/or a data format. The identifying information can be provided in any suitable manner, including as header information associated with the dated media item 550D and/or as one or more attribute of the dated media item 550D. Once transferred to the archiving system 600, the selected portion of the media items 550 can be
5 deleted from the data management system 360.

[0070] The system resources 310 of the production system 300A likewise can be configured to access archived media items 550A stored in the archiving system 600. Typically comprising media items 550 with content that has become less current, the archived media items 550A can include the dated media items 550D previously transferred to the archiving
10 system 600 in the manner described above. Once provided to the production system 300A, the archived media items 550A can be edited and combined with the media items 550 to form compositions 560 (shown in Figs. 7 and 8A-B) and/or stories 570 (shown in Fig. 9) in the manner discussed above with reference to Fig. 1A. As desired, the archived media items 550A can be transferred to the data management system 360 for storage in accordance with a
15 predetermined criteria, for example, if interest in the content of the archived media items 550A increases. It is understood that reference to media items 550 stored in the data management system 360 includes any appropriate type of media items 550, including unprocessed media items 550', processed media items 550'', dated media items 550D, and/or archived media items 550A, that are stored in the data management system 360 without limitation.

[0071] Turning to Figs. 5A-B, the data management systems 360A-B are shown as comprising at least one media server system 340, at least one online storage system 350, and a media server management system 345. The media server systems 340 and the online storage systems 350 are provided, and configured to communicate, in the manner discussed in more detail above with regard to the media server system 340 (shown in Figs. 3A-B) and the online
25 storage system 350 (shown in Figs. 3A-B), respectively. The media server management system 345 can be provided in any suitable manner, including the manner discussed above with regard to the media server system 340 and/or the computer systems 380 of Fig. 3A, and can be configured to communicate with the associated media server systems 340 and/or the associated online storage system 350 in any appropriate manner, such as via the communication network
30 330. As desired, the media server management system 345 can be incorporated into one or more the media server systems 340 as shown via media server management system 345A of Fig. 5A and/or can be substantially separate from the media server systems 340 as illustrated by media server management system 345B of Fig. 5B.

[0072] The media server management system 345 is configured provide centralized control for the data management systems 360A-B. For example, the media server management system 345 can manage the manner by which the media items 550 (shown in Fig. 3B) are processed by the data management systems 360A-B. Illustrative processes managed by the media server management system 345 include the cloning and/or the deletion of the media items 550 stored in the data management systems 360A-B. It will be appreciated that the processes enumerated above are merely exemplary and not exhaustive. The use of the media server management system 345B can prove advantageous with data management systems 360A-B that are configured to store a large number of media items 550 and/or that comprise a plurality of media server systems 340A-N and/or a plurality of online storage systems 350A-N as shown in Fig. 5B. Although the data management system 360 is shown and described as comprising the data management system 360A in Fig. 5A and the data management system 360B in Fig. 5B for purposes of illustration, it is understood that the data management system 360 can comprise any type of data management system and is not limited to the illustrated embodiments.

[0073] Once stored in the data management system 360, the media items 550 can be associated with one or more folders (or bins) 520 as shown in Fig. 6. The media server management system 345 and/or the data management system 360 can associate the media items 550 with the bins 520 in any suitable manner. Providing additional operational functionality for the production management system 100C (shown in Figs. 3A-B), the bins 520 can be configured, for example, to associate components of the production system 300A (shown in Figs. 3A-B) and/or to operate as a conduit between the production system 300A and one or more third-party (or external) applications and/or products (not shown), such as an external server system, such as the server system 380D (shown in Figs. 3A-B), and/or an external editing system, such as the non-linear editing (NLE) system 380C (shown in Figs. 3A-B). The bins 520 thereby can facilitate the manner by which the media items 550 are edited and/or combined to form compositions 560 and/or stories 570 about selected media events 530.

[0074] When configured to associate the components of the production system 300A, the bins 520 provide a taxonomy for the production management system 100C. The bins 520 can be provided in any suitable number, and each bin 520 can be associated with a bin 520 name, which can be user definable. Typical contents of the bins 520 include one or more bookings, such as arrival bookings 540 and/or departure bookings, media items 550, compositions 560, and/or stories 570. It will be appreciated that the enumerated bin contents are merely exemplary and not exhaustive. Preferably, the contents in each bin 520 are related in some manner, and the bin contents and/or the relationship among the bin contents can be defined by

a system user. An exemplary bin 520 is illustrated in Fig. 6 as having bin contents related to a selected media event 530. As shown in Fig. 6, the media event 530 is associated with one arrival booking 540, three media items 550X-Z, two compositions 560X-Y, and one story 570. The bins 520 likewise can provide a hierarchical structure for the bin contents, for example, by being configured to associate parent bins 520 with one or more child bins 520.

[0075] As desired, the bins 520 can be associated with at least one attribute and/or type. The bins 520, for example, can be provided as public bins or private bins. A public bin is a bin 520 whose bin contents can be viewed by substantially all system users. In a manner that can be set forth by a system administrator, some or substantially all system users can be provided with permission to modify, such as store, edit, and/or delete, the bin contents of the public folders. A private bin, in contrast, substantially comprises a private work area such that the bin contents of the private bins 520 can be viewed and/or modified only by a few associated system users. The bin contents of private bins typically include work in progress; whereas, completed work, such as stories 570, generally are included in the public bins.

[0076] In the manner discussed above, the bins 520 likewise can be configured to operate as a conduit between the production system 300A and one or more third-party (or external) applications and/or products. Sometimes referred to as being gateway bins, the bins 520 can be configured to communicate with external applications and/or products, such as one or more external ingestion systems, external production systems, external content editing systems, external media object server (MOS) systems, external transmission systems, and/or external archiving systems, without limitation. As desired, access to the external applications and/or products can be provided to substantially all, and/or selected, system users. The system administrator, for example, can regulate access to the external applications and/or products in any suitable manner.

[0077] If configured to communicate with an external production system, the gateway bin can provide a conduit for communicating with a main production area (not shown) and/or the data management system 360 of the external production system. The gateway bin for communicating with the external production system can be defined by the system administrator, which definition can be used to manage communications between the production management system 100C and the external production system. A selected gateway bin can provide a conduit for communicating with an external content editing system, such as a non-linear editing (NLE) system. One or more media items 550 and/or compositions 560 can be associated with the selected gateway bin and shared with the external content editing system

via the selected gateway bin. The selected gateway bin preferably comprises a unidirectional gateway bin.

[0078] A conduit for communicating with an external media object server (MOS) system, such as an Electronic News Production Service (ENPS) MOS system, likewise can be provided via a selected gateway bin. In the manner set forth above with regard to the gateway bin for communication with the external content editing system, the selected gateway bin for communicating with the external media object server (MOS) system preferably comprises a unidirectional gateway bin. As desired, one or more media items 550 and/or compositions 560 can be associated with the selected gateway bin and shared with the external media object server system via the selected gateway bin. Similarly, if configured to communicate with an external transmission system, a gateway bin can provide a conduit for communicating with a management system of the external transmission system. The main management system controls the data management system 360 of the external transmission system. Preferably comprising a unidirectional gateway bin, the gateway bin can be associated with one or more media items 550 and/or compositions 560, which are cloned to provide cloned media items 550 and/or cloned compositions 560 to the external transmission system.

[0079] Similarly, the gateway bin can comprise a unidirectional gateway bin and can provide a conduit for communication with an external archiving system. Preferably being configured to communicate with a robotic tape manager (RTM) of the external archiving system, the gateway bin the gateway bin can be associated with one or more media items 550 and/or compositions 560 and can provide copies of the media items 550 and/or compositions 560 to the robotic tape manager. For each of the media items 550 and/or compositions 560, the audio portions and/or the video portions, including any very high bit rate (VHBR)/high bit rate (HBR) video portions and/or any low bit rate (LBR) video portions, can be multiplexed during the copying process. The media items 550 and/or compositions 560 thereby can be provided as a data stream in a media exchange format (MXF), which can be stored on appropriate media, such as a magnetic media, via the robotic tape manager.

[0080] Gateway bins likewise can be provided, as desired. For example, one or more craft/production editor bins can be provided to facilitate an exchange of the attributes of one or more media items 550 between the data management system 360 and at least one content editing system, such as the non-linear editing system 380C, for preparing the associated media. One or more selected media items 550, compositions 560, and/or stories 570 can be cloned, preferably substantially manually, from a first media server system 340, such as the media server system 340A (shown in Fig. 5B), to a second media server system 340, such as the

media server system 340B (shown in Fig. 5B) via a selected instant replay gateway bin. A selected archive bin can receive one or more selected media items 550, compositions 560, and/or stories 570, such as dated media items 550D, that have been selected for transfer to the archiving system 600 for long term preservation and tracking.

5 [0081] In the manner discussed above with reference to Figs. 3A-B, the production system 300A can be configured to process content, such as media items 550, to form compositions 560 about selected media events 530. Stated somewhat differently, the compositions 560 represent a group of ordered edits of one or more media items 550, and the media items 550 provide source content for the compositions 560. Being substantially synonymous with conventional
10 content structures such as logs, edit decisions lists (EDLs), and/or timelines, the compositions 560 can be formed, for example, by editing and/or combining media items 550 stored in the data management system 360.

[0082] With reference to Fig. 7, the production management system 100C likewise can be configured to provide one or more compositions 560 that are associated with the selected
15 media event 530 (shown in Fig. 6). The data management system 360 of the production system 300A can include one or more selected media items 550 that are associated with a selected media event 530. Being configured to identify the selected media items 550, the data management system 360 can provide the selected media items 550 to one or more system resources 310 of the production system 300A. For example, the selected media items 550 can
20 be provided to at least one content editing system, such as the workstation 380B and/or the non-linear editing system 380C as shown in Fig. 7. If one or more archived media items 550A are associated with the selected media event 530, the archiving system 600 can provide at least one of the selected archived media items 550A to the production management system 100C, as desired, such that the selected media items 550 likewise can include at least one of the selected
25 archived media items 550A.

[0083] The content editing system can process the selected media items 550 in any suitable manner, including in any conventional manner, to provide at least one selected composition 560 that is associated with the selected media event 530. Similarly, the content editing system can be configured to edit and/or combine the selected media items 550, such as selected media
30 item 550X, selected media item 550Y, and selected media item 550Z, to form a selected composition 560, such as selected composition 560X, in the manner illustrated in Figs. 8A-B. Being provided in the manner described in more detail above with reference to the media item 550 (shown in Fig. 2), the selected media item 550X-550Z can be associated with at least one media track MT and/or at least one attribute. Although each can include any suitable number

of audio tracks AT and/or video tracks VT, as desired, the selected media items 550X-550Z are shown in Fig. 8A as having two audio tracks AT1, AT2 and one video track VT1 for purposes of illustration. The media tracks MT of the selected media items 550X-550Z likewise are illustrated as being associated with a begin time t_B and an end time t_E .

5 [0084] As illustrated in Fig. 8A, the media tracks MT of the selected media item 550X comprise a video track VTX and two audio tracks AT, including a first audio track ATX1 and a second audio track ATX2. The media tracks MT of the selected media item 550X likewise have a begin time t_B of 7:15 and an end time of 12:45, defining a track duration D of approximately three hundred, thirty seconds (330 sec.). Similarly, the selected media item
10 550Y has a video track VTY, a first audio track ATY1, and a second audio track ATY2. The media tracks MT of the selected media item 550Y have a track duration D of approximately sixty seconds (60 sec.), beginning at a begin time t_B of 2:30 and ending at an end time of 3:30. With a begin time t_B of 4:00 and an end time of 11:00, the media tracks MT of the selected media item 550Z comprise a video track VTZ, a first audio track ATZ1, and a second audio
15 track ATZ2 and have a track duration D of approximately four hundred, twenty seconds (420 sec.).

[0085] In the manner described in more detail above with reference to the media item 550 (shown in Fig. 2), the composition 560 comprises content managed by the production management system 100C (shown in Figs. 3A-B) and can be associated with at least one media
20 track MT and/or at least one attribute. Preferably comprising substantially separate media tracks MT, the media tracks MT of the composition 560 can include any suitable number of audio tracks AT and/or video tracks VT. In the manner described above regarding the media item 550, the composition 560 can have N audio tracks AT1-ATN (shown in Fig. 2) and/or M video tracks VT1-VTM (shown in Fig. 2) and as being associated with a begin time t_B and an
25 end time t_E . The begin time t_B and the end time t_E define a track duration D for the composition 560. As discussed above with reference to Fig. 2, the track duration D for the composition 560 can comprise any suitable time duration and can be substantially uniform, and/or different, among the compositions 560.

[0086] With reference to Figs. 8A-B, each media track MT of the composition 560
30 comprises one or more composition items 565. Preferably serving as a pointer to content stored in the data management system 360 (shown in Fig. 7), the composition item 565 refers to a selected media item 550 that provides content for the composition item 565. The composition item 565 likewise identifies a source media track and provides a source start time and a source stop time. The source media track identifies a relevant media track MT of the

selected media item 550; whereas, the source start time and the source stop time identify the relevant content within the relevant media track MT of the selected media item 550. Further providing a destination mode, a destination start time, and a destination stop time, the composition item 565 is configured to identify a relevant portion of a relevant media track MT of the associated composition 560 at which the composition item 565 is to reside.

[0087] The selected composition 560X is illustrated in Figs. 8A-B having a video track VTCX, a first audio track ATCX1, and a second audio track ATCX2 and as being associated with the composition items 565A-565H. The video track VTCX of the selected composition 560X is shown as being associated with the composition items 565A, 565B. Providing information to identify a source for providing content to the composition item 565A, the composition item 565A identifies the video track VTX of the selected media item 550X as being the source media track for providing content for the composition item 565A. The composition item 565A provides a source start time of 9:45 and a source stop time of 12:00. Thereby, the relevant content associated with the composition item 565A is identified as being approximately a one hundred, thirty-five second (135 sec.) portion of the video track VTX of the selected media item 550X beginning at a time 9:45 and ending at a time 12:00.

[0088] The composition item 565A likewise provides information to identify a destination for the relevant content within the selected composition 560X. Providing that the destination mode is video, the composition item 565A provides that the relevant content is to be associated with the video track VTCX of the selected composition 560X. The composition item 565A further provides a destination start time of 0:00 and a destination stop time of 2:15, defining a first track duration D1 of approximately one hundred, thirty-five seconds (135 sec.). Comprising a one hundred, thirty-five second (135 sec.) portion of the video track VTX beginning at a time 9:45 and ending at a time 12:00, the relevant content associated with the composition item 565A is suitable to reside in the one hundred, thirty-five second (135 sec.) portion of the video track VTCX of the selected composition 560X beginning at a time 0:00 and ending at a time 2:15. The composition item 565A thereby is configured to identify the relevant content from the selected media item 550X and to associated the relevant content with a relevant portion of the associated composition 560X at which the relevant content is to reside.

[0089] Similarly, the composition item 565B is configured to identify relevant content from an associated media item 550 and to identify a destination for the relevant content within the selected composition 560X. The composition item 565B identifies the video track VTZ of the selected media item 550Z as being the source media track for providing content for the composition item 565B. The composition item 565B likewise provides a source start time of

7:15 and a source stop time of 10:45. Thereby, the relevant content associated with the composition item 565B is identified as being approximately a two hundred, ten second (210 sec.) portion of the video track VTZ of the selected media item 550Z beginning at a time 7:15 and ending at a time 10:45.

5 [0090] Providing that the destination mode is video, the composition item 565B provides that the relevant content is to be associated with the video track VTCX of the selected composition 560X. The composition item 565B further provides a destination start time of 2:15 and a destination stop time of 5:45, defining a track duration D23 of approximately two hundred, ten seconds (210 sec.). Comprising approximately a two hundred, ten second (210
10 sec.) portion of the video track VTZ beginning at a time 7:15 and ending at a time 10:45, the relevant content associated with the composition item 565B is suitable to reside in the two hundred, ten second (210 sec.) portion of the video track VTCX of the selected composition 560X beginning at a time 2:15 and ending at a time 5:45. The composition item 565B thereby is configured to identify the relevant content from the selected media item 550Z and to
15 associated the relevant content with a relevant portion of the associated composition 560X at which the relevant content is to reside.

[0091] Likewise being configured to identify relevant content from an associated media item 550, the composition item 565C identifies the second audio track ATX2 of the selected media item 550X as being the source media track and provides a source start time of 9:45 and a
20 source stop time of 12:00. Thereby, the relevant content associated with the composition item 565C is identified as being approximately a one hundred, thirty-five second (135 sec.) portion of the second audio track ATX2 of the selected media item 550X beginning at a time 9:45 and ending at a time 12:00. The composition item 565C further provides that the relevant content is to be associated with the second audio track ATCX2 of the selected composition 560X and
25 provides a destination start time of 0:00 and a destination stop time of 2:15, which is associated with the first track duration D1. Comprising approximately a one hundred, thirty-five second (135 sec.) portion of the audio track ATX2, the relevant content associated with the composition item 565C is suitable to reside in the second audio track ATX2 of the selected composition 560X beginning at a time 0:00 and ending at a time 2:15.

30 [0092] Similarly, the composition item 565D identifies the first audio track ATY1 of the selected media item 550Y as being the source media track and provides a source start time of 2:30 and a source stop time of 3:30. By selecting a source start time that is substantially equal to the begin time t_B of the first audio track ATY1 and a source stop time that is substantially equal to the end time t_E of the first audio track ATY1, the composition item 565D identifies

substantially the entire content of the first audio track ATY1 as the relevant content. Thereby, the relevant content associated with the composition item 565D is identified as being approximately a sixty second (60 sec.) portion of the first audio track ATY1 beginning at a time 2:30 and ending at a time 3:30. The composition item 565D further provides that the

5 relevant content is to be associated with the second audio track ATCX2 of the selected composition 560X and provides a destination start time of 2:15 and a destination stop time of 3:15, defining a second track duration D2 of approximately sixty seconds (60 sec.).

Comprising a sixty seconds (60 sec.) portion of the audio track ATY1, the relevant content associated with the composition item 565D is suitable to reside in the second audio track

10 ATX2 of the selected composition 560X beginning at a time 2:15 and ending at a time 3:15.

[0093] The composition item 565E identifies the second audio track ATZ2 of the selected media item 550Z as being the source media track and provides a source start time of 7:15 and a source stop time of 10:45. The relevant content associated with the composition item 565E thereby is identified as being approximately a one hundred, fifty second (150 sec.) portion of

15 the second audio track ATZ2 beginning at a time 7:15 and ending at a time 10:45. The composition item 565E likewise provides that the relevant content is to be associated with the second audio track ATCX2 of the selected composition 560X and provides a destination start time of 3:15 and a destination stop time of 5:45, defining a third track duration D3 of approximately one hundred, fifty seconds (150 sec.). Comprising a one hundred, fifty second

20 (150 sec.) portion of the audio track ATZ2, the relevant content associated with the composition item 565E is suitable to reside in the second audio track ATX2 of the selected composition 560X beginning at a time 3:15 and ending at a time 5:45.

[0094] Likewise being configured to identify relevant content from an associated media item 550, the composition item 565F identifies the first audio track ATX1 of the selected

25 media item 550X as being the source media track and provides a source start time of 9:45 and a source stop time of 12:00. Thereby, the relevant content associated with the composition item 565F is identified as being approximately a one hundred, thirty-five second (135 sec.) portion of the first audio track ATX1 beginning at a time 9:45 and ending at a time 12:00. The composition item 565F further provides that the relevant content is to be associated with the

30 first audio track ATCX1 of the selected composition 560X and provides a destination start time of 0:00 and a destination stop time of 2:15, which is associated with the first track duration D1. Comprising approximately a one hundred, thirty-five second (135 sec.) portion of the audio track ATX1, the relevant content associated with the composition item 565F is suitable to

reside in the first audio track ATCX1 of the selected composition 560X beginning at a time 0:00 and ending at a time 2:15.

[0095] Similarly, the composition item 565G identifies the second audio track ATY2 of the selected media item 550Y as being the source media track and provides a source start time of 2:30 and a source stop time of 3:30. In the manner described in more detail above with reference to the composition item 565D, the composition item 565G identifies substantially the entire content of the second audio track ATY2 as the relevant content. Thereby, the relevant content associated with the composition item 565G is identified as being approximately a sixty second (60 sec.) portion of the second audio track ATY2 beginning at a time 2:30 and ending at a time 3:30. The composition item 565G further provides that the relevant content is to be associated with the first audio track ATCX1 of the selected composition 560X and provides a destination start time of 2:15 and a destination stop time of 3:15, which is associated with the second track duration D2. Comprising a sixty seconds (60 sec.) portion of the audio track ATY2, the relevant content associated with the composition item 565G is suitable to reside in the first audio track ATX1 of the selected composition 560X beginning at a time 2:15 and ending at a time 3:15.

[0096] The composition item 565H identifies the first audio track ATZ1 of the selected media item 550Z as being the source media track and provides a source start time of 7:15 and a source stop time of 10:45. The relevant content associated with the composition item 565H thereby is identified as being approximately a one hundred, fifty second (150 sec.) portion of the first audio track ATZ1 beginning at a time 7:15 and ending at a time 10:45. The composition item 565H likewise provides that the relevant content is to be associated with the first audio track ATCX1 of the selected composition 560X and provides a destination start time of 3:15 and a destination stop time of 5:45, which is associated with the third track duration D3. Comprising a one hundred, fifty second (150 sec.) portion of the audio track ATZ1, the relevant content associated with the composition item 565H is suitable to reside in the first audio track ATX1 of the selected composition 560X beginning at a time 3:15 and ending at a time 5:45.

[0097] The composition items 565A-H thereby are configured to identify relevant content from the selected media items 550X-550Z and to associated the relevant content with a relevant portion of the associated composition 560X at which the relevant content is to reside. The resulting selected composition 560X comprises one video track VTCX and two audio tracks ATCX1, ATCX2 and has a total track duration D of approximately three hundred, forty-five seconds (345 sec.). The associations provided by the composition items 565A-H for the

composition 560X are summarized in the Composition Chart shown in Fig. 8B. Although shown and described with reference to Figs. 8A-B as having three media tracks MT and as being associated with eight composition items 565A-565H for purposes of illustration, it is understood that the selected composition 560X can include any appropriate number of video tracks VT and/or audio tracks AT and/or can comprise any suitable number of composition items 565.

[0098] As desired, the compositions 560 can include one or more additional media tracks MT. For example, the compositions 560 can include any suitable number of timecode tracks (not shown) and/or auxiliary tracks (not shown). A timecode track is a media track that is configured to include timecode information, such as a timecode information regarding one or more sources; whereas, an auxiliary track substantially comprises a placeholder track for other content forms. It is understood that the other content forms can include any suitable form of content without limitation.

[0100] In the manner set forth above, the compositions 560 likewise can include one or more attributes (not shown). Illustrative attributes associated with the compositions 560 include a composition status attribute (not shown) and/or a composition type attribute (not shown). The composition status attribute can identify a current status of the associated composition 560 and can indicate, for example, that the associated composition 560 has not yet been created, that the associated composition 560 has been created but remains in progress, and/or that the associated composition 560 is complete. Once created, each composition 560 preferably is substantially automatically associated with the composition status attribute, indicating that the associated composition 560 has been created but remains in progress. When the composition 560 is substantially complete, the composition status attribute can be updated to reflect the completion of the composition 560. The composition status attribute can be updated in any suitable manner, including manually and/or automatically.

[0101] The composition type attribute indicates a composition type of the associated composition 560. Illustrative composition types include a sports log composition type, a highlight composition type, a program log composition type, and/or a program composition type. A sports log composition type can represent compositions 560 that are created by a sports logging application of the production management system 100C; whereas, a highlight composition type can comprise a final result of the sports logging application and be a derivative of the sports log. Similarly, a program log composition type can represent compositions 560 that are created by a program logging application of the production management system 100C. A program composition type can comprise a final result of the

program logging application and be a derivative of the program log. As desired, a default composition type likewise can be included among the composition types. The default composition type can be constructed by a default composition editor with a base client of the production management system 100C and can be unrelated to any application, such as the sports logging application and/or the program logging application, of the production management system 100C. The production management system 100C can be configured to use the default composition type to identify one or more system applications for viewing the associated composition 560.

[0102] Returning to Fig. 7, the content editing system can provide the composition 560 that is associated with the selected media event 530 by processing the selected media items 550. In addition to editing and/or combining the selected media items 550, the content editing system can be further configured to provide one or more additional processing functions. The additional processing functions can include any suitable type of processing functions, such as special effect functions. For example, the special effects functions can include a fading function and/or a transitioning function. The fading function permits the initial content of a selected media item 550 to be presented with a gradually increasing intensity. Stated somewhat differently, the volume of a selected audio track AT of the selected media item 550 can be gradually increased over time, and/or the content of a selected video track VT of the selected media item 550 can be gradually increased in intensity over time. Transitions between adjacent composition items 565 in a selected media track MT can be modified, as desired, to provide more gradual transitions.

[0103] The content editing system, upon processing the selected media items 550 to provide the selected composition 560, can provide the selected composition 560 to the media server system 340. The media server system 340, in turn, can provide the selected composition 560 to the online storage system 350 for storage in the data management system 360 in the manner discussed in more detail above regarding the media items 550', 550" (shown in Figs. 3A-B). The production management system 100C likewise can be configured to provide the selected composition 560 to the archive system 600 as illustrated in Fig. 7 to form an archived composition 560A (shown in Fig. 9). The compositions 560 can be exchanged between the production management system 100C and the archive system 600 in any suitable manner, including in the manner discussed in more detail above regarding the media items 550A, 550D (shown in Figs. 3A-B). Although shown and described with reference to Fig. 7 as being formed by processing the media items 550 for purposes of illustration, a selected composition 560 can be provided in any suitable manner such as by processing any type of content,

including media items 550, compositions 560, and/or stories 570, stored in the production system 300A and/or the archive system 600.

[0104] With reference to Fig. 9, the production management system 100C likewise can be configured to provide one or more stories 570 that are associated with the selected media event 530 (shown in Fig. 6). In the manner described above, the data management system 360 of the production system 300A can include one or more selected media items 550 and/or selected compositions 560 that are associated with the selected media event 530. Being configured to identify the selected media items 550 and/or selected compositions 560, the data management system 360 can provide the selected media items 550 and/or selected compositions 560 to one or more system resources 310 of the production system 300A. If one or more archived media items 550A and/or archived compositions 560A are associated with the selected media event 530, the archiving system 600 can provide at least one of the archived media items 550A and/or archived compositions 560A to the production management system 100C, as desired. The selected media items 550 and/or selected compositions 560 thereby can include at least one of the selected archived media items 550A and/or selected archived compositions 560A.

[0105] The system resources 310 of the production system 300A can process the selected media items 550 and/or selected compositions 560 in any suitable manner, including in any conventional manner, to provide at least one selected story 570 that is associated with the selected media event 530. For example, the selected story 570 can be constructed via an external media object server (MOS) system (not shown), such as an Electronic News Production Service (ENPS) MOS system, and provided to at least one content editing system, such as the workstation 380B and/or the non-linear editing system 380C as shown in Fig. 9, via a selected gateway bin in the manner discussed in more detail above. The media object server (MOS) system can be configured to associate the selected media items 550 and/or selected compositions 560 with the selected story 570 and to provide the selected story and the associations to the content editing system. Although the selected story and the associations preferably cannot be manipulated via system resources 310 of the production system 300A, the selected story 570 and the associations can be viewed via the content editing system to facilitate navigation and script organization. The selected story 570 thereby can be associated with a script (not shown) for providing text to be presented with the selected story 570. As desired, the selected story 570 likewise can be associated with a title (or slug).

[0106] The content editing system can provide the selected story 570 to the media server system 340. The media server system 340, in turn, can provide the selected story 570 to the online storage system 350 for storage in the data management system 360 in the manner

discussed in more detail above regarding the media items 550', 550" (shown in Figs. 3A-B). The production management system 100C likewise can be configured to provide the selected story 570 to the archive system 600 as illustrated in Fig. 9 to form an archived story (not shown). The stories 570 can be exchanged between the production management system 100C and the archive system 600 in any suitable manner, including in the manner discussed in more detail above regarding the media items 550A, 550D (shown in Figs. 3A-B). Although shown and described with reference to Fig. 9 as being formed by processing the media items 550 and/or compositions 560 for purposes of illustration, a selected story 570 can be provided in any suitable manner such as by processing any type of content, including media items 550, compositions 560, and/or stories 570, stored in the production system 300A and/or the archive system 600.

[0107] In the manner set forth above, the content editing systems can be provided via any suitable type of computer systems 380 for receiving and processing media items 550, compositions 560, and/or stories 570. Although the associated content editing functionality may be somewhat limited relative to commercially-available news production systems, such as Electronic News Production Service (ENPS) systems, the use of computer systems 380 as content editing systems offers several advantages. Comprising content editing systems that are less complicated than commercially-available news production systems, for example, the computer systems 380 can be operated by system users who lack the specialized expertise of a production technician. Further, the computer systems 380 can include one or more portable computer systems 380, such as laptop computer systems, such that content, such as media items 550, compositions 560, and/or stories 570, can be processed remotely. The computer systems 380 thereby can be used, for instance, by reporters in the field to produce broadcast-quality content for transmission. As such, the reporters can use the computer systems 380 to rapidly produce broadcast-quality content, such as stories 570 associated with live media events 530 (shown in Fig. 6) such as "breaking news" for transmission substantially in real time.

[0108] Preferably, the computer systems 380 are configured to store and track content associated with one or more media items 550, compositions 560, and/or stories 570 substantially in the manner discussed above with regard to the data management system 360. Stated somewhat differently, the computer systems 380 preferably can provide a small-scale data management system 360 for storing and tracking media items 550, compositions 560, and/or stories 570 associated with selected content. The selected content can include incoming content, such as one or more media items 550 provided by an ingested information signal 500B

(shown in Figs. 1A-B), and/or stored content. Exemplary stored content can include content, including media items 550 and/or compositions 560, stored the data management system 360 and/or content, such as archived media items 550A and/or archived compositions 560A (shown in Fig. 9), provided by the archiving system 600.

5 [0109] The selected content can be provided in any suitable manner. For example, the computer systems 380 can be coupled with, and configured to communicate with, a video camera system 210 (shown in Fig. 3A) and/or an audio recording system 220 (shown in Fig. 3A). The computer systems 380 thereby can be configured to receive incoming content, such as one or more media items 500, via the video camera system 210 and/or the audio recording
10 system 220. Similarly, the stored content can be provided in any suitable manner, for instance, via one or more hard drives (HDDs), compact disks (CDs), and/or digital video disks (DVDs). The stored content can be provided via removable media and/or non-removable media. If the stored content is provided as a collection of one or more compact disks and/or digital video disks, for example, each disk can provide content that is associated with one or more selected
15 topics, which content can be easily updated by replacing the associated disk.

[0110] As desired, the incoming content and/or the stored content can be stored in the memory system of the computer system 380. The computer system 380 preferably has sufficient resources to store and process a suitable number of incoming and/or stored media items 550, compositions 560, and/or stories 570. As desired, the computer system 380 can be
20 configured to exchange media items 550, compositions 560, and/or stories 570 with the data management system 360 and/or the archiving system 600. The computer system 380 can exchange media items 550, compositions 560, and/or stories 570 with the data management system 360 and/or the archiving system 600 in any suitable manner.

[0111] For example, the computer system 380 can provide media items 550, compositions
25 560, and/or stories 570 to the data management system 360 and/or the archiving system 600 at the time of production and/or at preselected time intervals, as desired. Thereby, the field reporters in the above example can provide the broadcast-quality content, including one or more media items 550, compositions 560, and/or stories 570, associated with “breaking news” about the live media events 530 to the data management system 360 and/or the archiving
30 system 600 for further processing and subsequent transmission, for example, as part of a regularly-scheduled new broadcast. The computer system 380 likewise can be configured to receive content from the data management system 360 and/or the archiving system 600. The received content can be associated with a selected media event 530 (shown in Fig. 6), for

instance, if the computer system 380 is preparing a story involving the selected media event 530.

[0112] As illustrated in Fig. 9, the production system 300A is configured to provide outgoing information signals 500D to the transmission system 400 for transmission. To provide at least one outgoing information signal 500D that is associated with at least one selected media event 530 (shown in Fig. 6), the media server system 340 can receive content associated with the selected media event 530 from the data management system 360 and/or the archiving system 600. The associated content can be provided via one or more selected stories 570. Being configured to receive the selected stories 570, the media server system 340 can provide the selected outgoing information signal 500D that includes the selected stories 570, preferably cloned copies of the selected stories 570, to the transmission system 400.

[0113] The media server system 340 is shown in Fig. 9 as being coupled with the communication network 330 and configured to communicate with one or more communication ports 312 of the other system resources 310 in any suitable manner. In the manner set forth above, the media server system 340 can be configured to communicate with the other system resources 310 via the communication network 330 and/or via one or more intermediate system resources 310. The production system 300A is shown as including at least one media routing system 320. Being provided in the manner described above with reference to the media routing systems 320 (shown in Fig. 3A-B), the media routing systems 320 each include a predetermined number of input ports 314 and a predetermined number of output ports 316. The production system 300A includes sufficient media routing systems 320, which preferably are arranged in a matrix to provide a suitable number of input ports 314 and output ports 316, to accommodate the outgoing information signals 500D provided by the production system 300A.

[0114] In the manner described in more detail above with reference to Figs. 3A-B, two or more media routing systems 320 can be cascaded in any conventional manner to provide a sufficient number of input ports 314 and/or output ports 316 to accommodate the outgoing information signals 500D. Thereby, the outgoing information signals 500D can be routed among the output ports 316 of a plurality of media routing systems 320, as desired. Although shown and described with reference to Fig. 9 as comprising two media routing systems 320C, 320D for purposes of illustration, it is understood that the production system 300A can include a matrix of media routing systems 320 comprising any suitable number and/or arrangement of media routing systems 320. As desired, at least one of the media routing systems 320 shown and described with reference to Fig. 9 can substantially comprise at least one of the media

routing systems 320 shown and described above with reference to Figs. 3A-B. Stated somewhat differently, the media routing system 320C and/or the media routing system 320D comprise the substantially the same media routing systems 320 as the media routing system 320A (shown in Fig. 3A-B) and/or the media routing system 320B (shown in Fig. 3A-B).

5 [0115] As shown in Fig. 9, the media server system 340 can be coupled with, and in communication with, at least one selected input port 314 of media routing systems 320. The outgoing information signals 500D thereby can be communicated from the media server system 340 to the media routing systems 320. In the manner described in more detail above with reference to Figs. 3A-B, the media routing systems 320 can be configured to route the
10 outgoing information signals 500D to one or more selected output ports 316, as desired. The selected output ports 316, in turn, can communicate the outgoing information signals 500D to the transmission system 400 for transmission in the manner discussed above. Although shown and described with reference to Fig. 9 as being configured to provide content associated with the stories 570 to the transmission system 400 for transmission for purposes of illustration, it is
15 understood that the production system 300A can provide any type of content, including content associated with one or more media items 550, compositions 560, and/or stories 570, stored in the production system 300A and/or the archive system 600, as desired.

[0116] The production system 300A likewise can be configured to provide content for transmission substantially in real-time. For example, the content for real-time transmission can
20 be associated with at least one live media event 530 (shown in Fig. 6), such as a news conference, a sporting event, and/or a police car chase. The production system 300A can provide content for real-time transmission in any suitable manner. If the content is provided as an ingested information signal 500B (shown in Figs. 1A-B) that includes one or more media items 550, the production system 300A can be configured to process the media items 550
25 substantially in real-time in the manner set forth above with reference to Figs. 3A-B. The media routing systems 320 can be configured to receive the media items 550 via an input ports 314 and to provide the media items 550 via at least two output ports 316. One of the output ports 316 can provide the media items 550 to the media server system 340 for storage in the data management system 360 and/or the archiving system 600; whereas, the other output port
30 316 can provide the media items 550 to, for example, a newsroom (not shown) associated with the transmission system 400 for transmission substantially in real-time. As desired, the production system 300A can inject a predetermined delay into the media items 550 provided to the newroom. Preferably comprising a fixed delay, the predetermined delay can comprise a delay of any suitable amount of time.

[0117] It will be appreciated that the production management system 100C can include a messaging system (not shown) for permitting the system users to communicate via one or more messages (not shown). Like electronic mail (or e-mail) messages, the messages can be sent to one or more system users of the production management system 100C and, when sent, can
5 reside in inboxes associated with the system users. The messaging system can provide any conventional e-mail functionality, including message viewing as well as reply, forward, and/or delete. As desired, one or more attachments (not shown) can be included with the messages. The attachment can comprise any type of attachment, including one or more story 570, logging task, bin 520, composition 560, arrival booking, departure booking, and/or media item 550.

10 Messages can provide the convenience of a single application and provide a collaborative environment for accomplishing tasks associated with preparing content associated with media events 530. Such tasks can include conventional tasks associated with processing content in newsrooms and/or sportsrooms as well as viewing and/or manipulating the attachments.

[0118] Logging is an important task of any newsroom. Logging applications typically
15 enable system users to annotate content associated with media events 530. Annotation of content can provide a representation, such as a textual representation, that identify important media events 530. The identification of a selected media event 530 can include information about the media event 530 such as a description of the media event 530 and/or the time at which the media event 530 is scheduled to occur. Since a large number of media event 530 can
20 occur at a selected time and/or since newsrooms can have to process a large quantities of content, the task of logging is important and should be carefully managed.

[0119] Due to the importance of the task of logging, the management of the logging process preferably is controlled, at least in part by, the production management system 100C. The production management system 100C, for example, can include one or more logging task
25 constructs (not shown). Each logging task construct can be constructed in any suitable manner, such as by a supervisor who is responsible for logging content. As arrival bookings arrive in the newsroom, the supervisor constructs logging tasks and assigns the logging tasks to selected loggers for processing. As shown in Fig. 10, each logging task can include a logging task status 700. The logging task status 700 can comprise any type of logging task status and can
30 include a designation that the logging task is on-time 700A, in-progress 700B, completed 700C, delayed 700D, canceled 700E, and/or failed 700F. An exemplary diagram illustrating the progress of a logging task is shown in Fig. 10. The tasks assigned to each logger by the supervisor can be provided via a list (not shown). The loggers each can initiate each of the assigned logging tasks, thereby commencing the logging process. Each logger can be assigned

any suitable number of selected logging tasks such that the logging task status designation for one or more of the selected logging tasks can be in-progress 700B.

[0120] It also will be appreciated that, in addition to providing centralized control for the data management systems 360, the media server management system 345 (shown in Figs. 5A-
5 B) can be configured to providing other functionality for the production management system 100C. The other functionality provided by the media server management system 345 can comprise any suitable types of functionality without limitation. For example, the media server management system 345 can be configured to provide enterprise-scale services, including transactioning, job scheduling, messaging, connection pooling, and session pooling for the
10 production management system 100C. In a manner set forth below, the media server management system 345 likewise can include workflow and business logic and/or can coordinate activity between clients, the data management systems 360, and broadcast device controllers, such as deck control servers, control nodes, MMP transcoders, control gateways, and the media server systems 340.

[0121] In operation, the control gateway can be configured to receive port assignments from the application server and to submit the port assignments to the control nodes for implementation. The control nodes can serve as intermediaries between the control gateway and the media routing systems 320. Thereby, the input ports 314 and/or the output ports 316 of the media routing systems 320 can be associated with selected port assignments. The clients
20 substantially comprise user interfaces, preferably primary user interfaces, and provide points of service for the system users. The clients can be configured to support any suitable number of system users, including specialist users who may need to control and/or manage different parts and/or functions of the production management system 100C.

[0122] As desired, the client can provide one or more functions to the system users,
25 preferably based at least in part on a status and/or role of the system users. The functions provided by the client can include, for example, booking management capabilities for resource manages, media item 550 search and management capabilities for journalists and archivists, media item 550 creating and editing capabilities for journalists, rough cut editors, and/or package editors, and/or story 570 creation and management for easy search and retrieval of
30 media items 550 from the production management system 100C. As desired, the deck control servers can be configured to control at least one system resource 310, such as one or more video tape recording (VTR) system, preferably receiving timecode information, for example, via a PLC/PCI connection. The MMP transcoders, in turn, facilitate the processing of content once the content has been ingested into the production management system 100C.

[0123] System users can interface with the production management system 100C in any suitable manner. For example, the production management system 100C can provide one or more interface systems 800 as shown in Fig. 11. The interface system 800 can be provided in any suitable manner, including via one or more of the system resources 310 (shown in Figs.

5 3A-B) such as the computer systems 380. As shown in Fig. 11, for instance, the interface system 800 is illustrated as comprising the workstation 380B (shown in Figs. 3A-B). Being provided in the manner described above with reference to Figs. 3A-B, the workstation 380B can include a video display system 810. The system user can interact with the production management system 100C in a conventional manner, such as by utilizing the input system (not
10 shown) of the workstation 380B. In the manner set forth above, the input system of the workstation 380B can be provided in any suitable manner and normally includes a pushbutton device, such as a keyboard or a keypad, and/or a pointing device, such as a mouse or trackball.

[0124] As shown in Fig. 11, the display system 810 can be divided into a plurality of segments 820 for facilitating user interaction with the production management system 100C.

15 The segments 820 can be presented in any suitable quantity and/or arrangement on the display system 810 as desired. Illustrative segments include one or more menu bar segments 820A, toolbar segments 820B, bin pane segments 820C, functional pane segments 820D, media pane segments 820E, list pane segments 820F, and/or new pulldown menu segments 820G as illustrated in Fig. 11. Each menu bar segment 820A can provide access to system functions via
20 menu interaction. Similarly, the toolbar segments 820B each can be configured to activate and/or deactivate one or more functional components, such as media search, bookings search, and/or electronic mail, of the production management system 100C. Each functional component can be activated and/or deactivated, for example, by clicking on a tool button (not shown) associated with the selected functional component. The toolbar segments 820B
25 preferably include at least one adaptive area (not shown) in which one or more contextual controls can be displayed.

[0125] Each of the bin pane segments 820C provide system users with one or more of the bins 520 (shown in Fig. 6) of the production management system 100C. In the manner set forth above, the bins 520 can include public bins, private bins, and/or gateway bins. The
30 system users can access the functional components of the production management system 100C via the functional panes 820D; whereas, the media pane segments 820E enable the system users to view the content and/or metadata associated with one or more selected media items 550, compositions 560, stories 570, and/or feeds. One or more search results, inboxes, and/or queues can be displayed to the system users via the list pane segments 820F.

[0126] The new pulldown menu segments 820G likewise provide the system users with access to initiate one or more of the processes, such as creating new bookings, creating new bins 520, and/or conducting system searches, associated with the production management system 100C. The system searches can comprise any suitable type of system searches. In the manner discussed in more detail above, the system searches can include media searches, such as media searches for one or more media items 550, compositions 560, and/or stories 570, and/or bookings searches, and the search results, as desired, can be displayed to the system users via the list pane segments 820F. The search operations, for example, can include key word searches. As desired, a selected new pulldown menu segment 820G can include at least one search field 820G1 for entering one or more key words and/or at least one search option control 820G2 for refining the keyword search. The new pulldown menu segments 820G preferably are configured to permit the system users to save one or more selected search results and/or one or more selected search settings to facilitate future searches.

[0127] The toolbar segments 820B likewise can include at least one suitable control 820B1 for searching bookings, including arrival bookings and/or departure bookings. The search results of the bookings searches can be displayed via the display system 810, such as via the list pane segments 820F. The search results can include results involving feeds comprising one or more feed types. Exemplary feed types include recorded feeds, recording feeds, lined-up feeds, delayed feeds, and/or cancelled feeds. It will be appreciated that the feed types identified above are merely exemplary and not exhaustive. As desired, the feed types can be color-coded to facilitate identification by the system users.

[0128] The system users can use the search results from the bookings searches in any suitable manner. From the bookings search result screen, for example, the system users can monitor one or more of the associated feeds. The system users likewise can view and/or edit one or more selected bookings, including at least one booking associated with the feeds identified in the search results. As desired, the system users can view the associated media items 550, compositions 560, and/or stories 570 and/or the associated bins 520. One or more "ticker tape" notifications also can be viewed and edited by the system users.

[0129] The search results from previous searches can be displayed in any suitable manner. Preferably, the search results can be associated with one or more tabs (not shown) and/or can be presented via a search results screen (not shown). As desired, the search results from a selected prior search can be displayed by selecting at least one associated tab. For example, the search results related to a selected prior media search can be viewed by selecting the associated tab such that a media search results screen can be presented via the interface system 800. From

the media search results screen, the system users can view the associated media, such as one or more media items 550, compositions 560, and/or stories. The system users likewise can view an associated log, view the different timecode sources, view the associated bookings, and/or view the associated bins 520 via the media search results screen.

5 [0130] Similarly, the search results related to a selected prior story search can be viewed by selecting at least one associated tab such that a story search results screen is presented via the interface system 800. From the story search results screen, the system users can view and/or edit one or more stories 570, locate one or more rundown positions, view one or more of the associated media items 550 and/or compositions 560, and/or view the associated bins 520. The
10 system users likewise can view and/or edit one or more compositions 560, and/or view one or more of the associated media items 550 and/or associated bins 520 via a composition search results screen. A bin search results screen permits the system users to view associated media items 550, compositions 560, and/or bookings.

[0131] The production management system 100C likewise can include a media viewer (not
15 shown). Comprising any suitable type of media viewer, the media viewer is configured to permit the system users to view content, to view different timecode sources, and/or to mark in and out points as desired.

[0132] The invention is susceptible to various modifications and alternative forms, and specific examples thereof have been shown by way of example in the drawings and are herein
20 described in detail. It should be understood, however, that the invention is not to be limited to the particular forms or methods disclosed, but to the contrary, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the claims.

[0133] The foregoing description includes description of a number of features of a system for processing media data and/or metadata and performing other tasks in a production
25 environment. Unless otherwise expressly stated, each feature disclosed herein may be provided independently of other features and in alternative embodiments or combinations or contexts. By way of example only and without prejudice to the generality of this explanation, features which may be independently provided include those associated with the logging of data, the production of edit decision lists, the distribution of tasks or control in a distributed
30 environment, the use of bins to store data, the methods of managing workflow, the methods of pre-defining metadata, the structuring of data objects and instances. Features may be combined with features mentioned in the cross-referenced applications, in particular in the applicant's co-pending patent applications "A Method and Apparatus for Dynamically Controlling a Broadcast Media Production System," Attorney Docket No. IK/26271WO, filed

April 5, 2004, and “System and Method for Media Management,” Attorney Docket No. IK/26521WO, filed April 5, 2004, the disclosures of which are hereby incorporated by reference.

CLAIMS

What is claimed is:

1. A production system for processing multimedia content, comprising:
 - a first media routing system for receiving media items;
 - a first content editing system for annotating and indexing the media items to provide processed media items;
 - a data management system for storing the processed media items;
 - a second content editing system for editing and combining the processed media items to form a story; and
 - a second media routing system for providing the story.
2. A production management system for processing multimedia content, comprising:
 - an ingestion system for converting incoming information into media items;
 - a production system for processing the media items and having:
 - a first media routing system for receiving the media items;
 - a first content editing system for annotating and indexing the media items to provide processed media items;
 - a data management system for storing the processed media items;
 - a second content editing system for editing and combining the processed media items to form a story; and
 - a second media routing system for providing the story; and
 - a transmission system for receiving the story from the second media routing system and for transmitting the story.
3. The production management system of claim 2, further comprising an archiving system for storing archived media items, said archiving system being configured to provide the archived media items to said data management system and to receive dated media items from said data management system.

4. A method for processing multimedia content, comprising:
 - converting incoming information into media items;
 - annotating the media items;
 - indexing the media items;
 - storing the media items, as annotated and indexed, as processed media items;
 - forming a story by editing and combining the processed media items; and
 - transmitting the story.
5. A media processing apparatus for processing media data associated with metadata, wherein the media data comprises a sequence of frames and wherein elements of metadata are associated with individual frames, the apparatus comprising:
 - means for receiving external data relating to the media data;
 - means for associating the received external data with one or more selected frames of the media data;
 - means for merging the received external data with the metadata for the selected one or more frames to provide modified metadata associated with the selected one or more frames and incorporating the received external data.
6. A media processing apparatus for processing media data with associated metadata, the apparatus comprising:
 - means for receiving metadata associated with a media data item;
 - means for deriving editing operations to be performed on the media data item from the metadata; and
 - means for compiling an edit decision list based on the derived editing operations.
7. The media processing apparatus of claim 6, further comprising means for prioritizing editing operations.
8. A media processing apparatus for processing media data, comprising:
 - means for receiving and storing media data;
 - means for making the received media available to a plurality of concurrent users;
 - means for storing for each of the plurality of concurrent users respective user content logging information; and

means for comparing received media to the user content logging information for each user and making available to each user information indicating content received based on the user content logging information.

9. The media processing apparatus of claim 8, including means for processing metadata associated with the media data and wherein the means for comparing is arranged to perform comparison based on the metadata.

10. A media processing apparatus for processing media data, comprising:

a store of media data;

at least one designated media control station;

a plurality of distributed user workstations whereat a plurality of users can concurrently access media data stored in the media data store; and

means for designating by any one of the plurality of users an item of media data in the store for priority viewing or playback at the at least one media control station, preferably means for designating the media item as intended for immediate playback.

11. A media editing apparatus for editing a media item, comprising:

means for storing media data for the media item and associated metadata for the media item;

means for editing the associated metadata for the media item;

characterised by means for defining a template for the metadata for the media item and/or for editing the metadata for a media item prior to receipt of media data for the media item.

12. The media editing apparatus of claim 11, including means for scheduling a future editing operation for a media item based on the metadata prior to receipt of the media data.

13. The media editing apparatus of claim 12, arranged to store an estimated or expected time of receipt for the media data and arranged to schedule one or more editing operations after the time of receipt, preferably including means for checking that media data has been received prior to a scheduled editing operation.

14. A media editing or processing apparatus or method or computer program or computer program product comprising means for processing media data or metadata associated with media data according to any feature as herein defined.

Production Management
System 100A

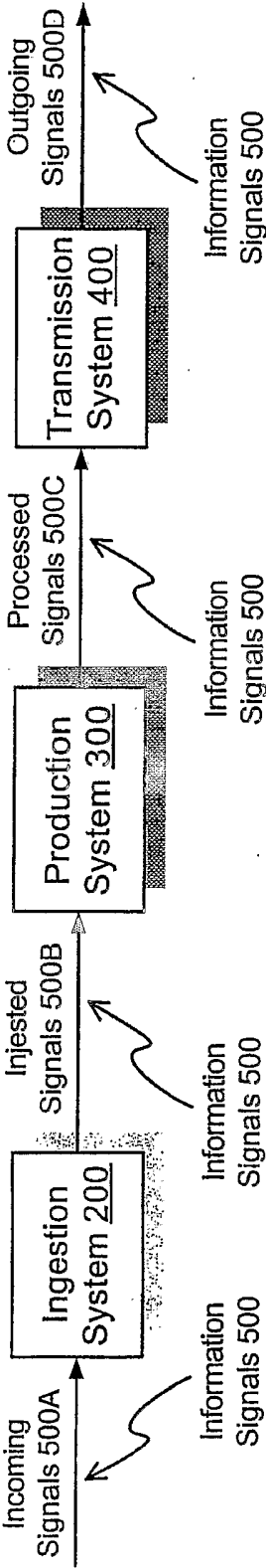


Figure 1A

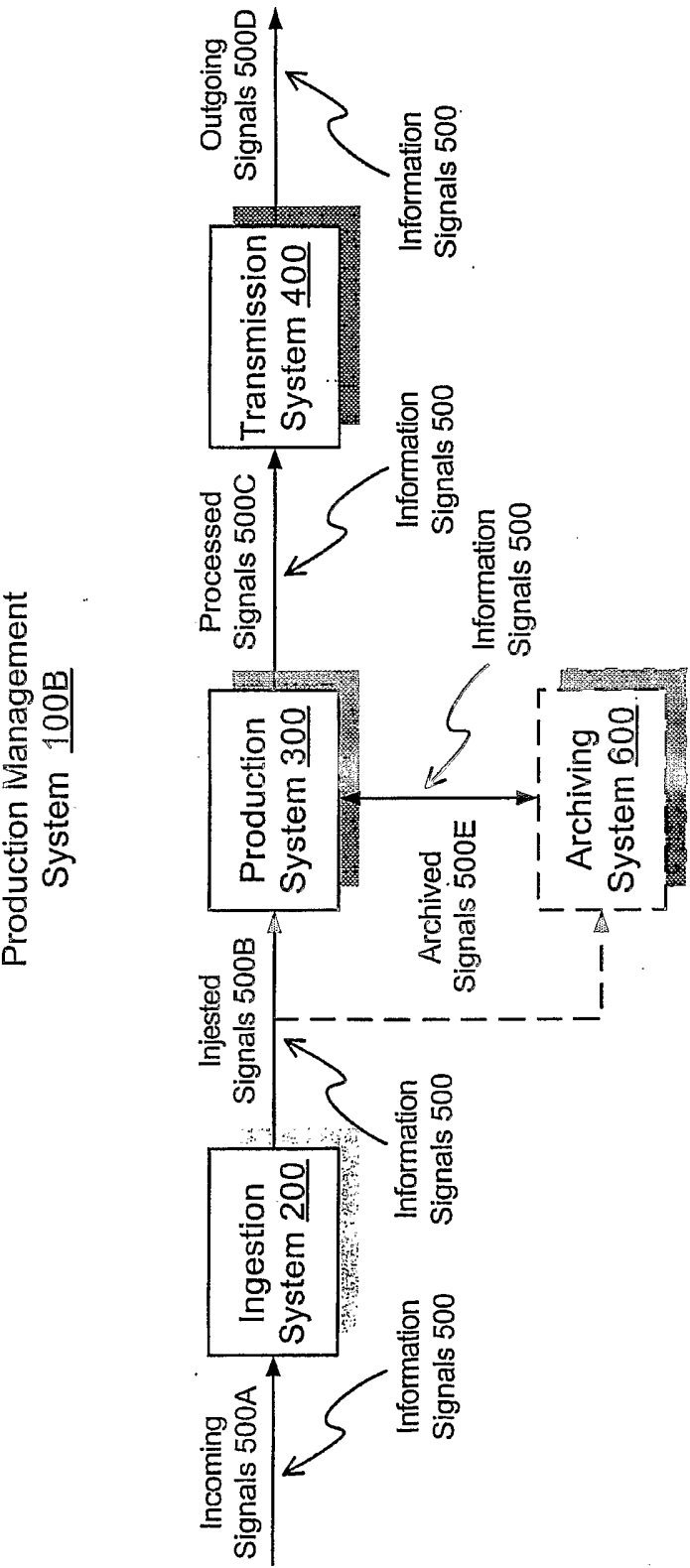
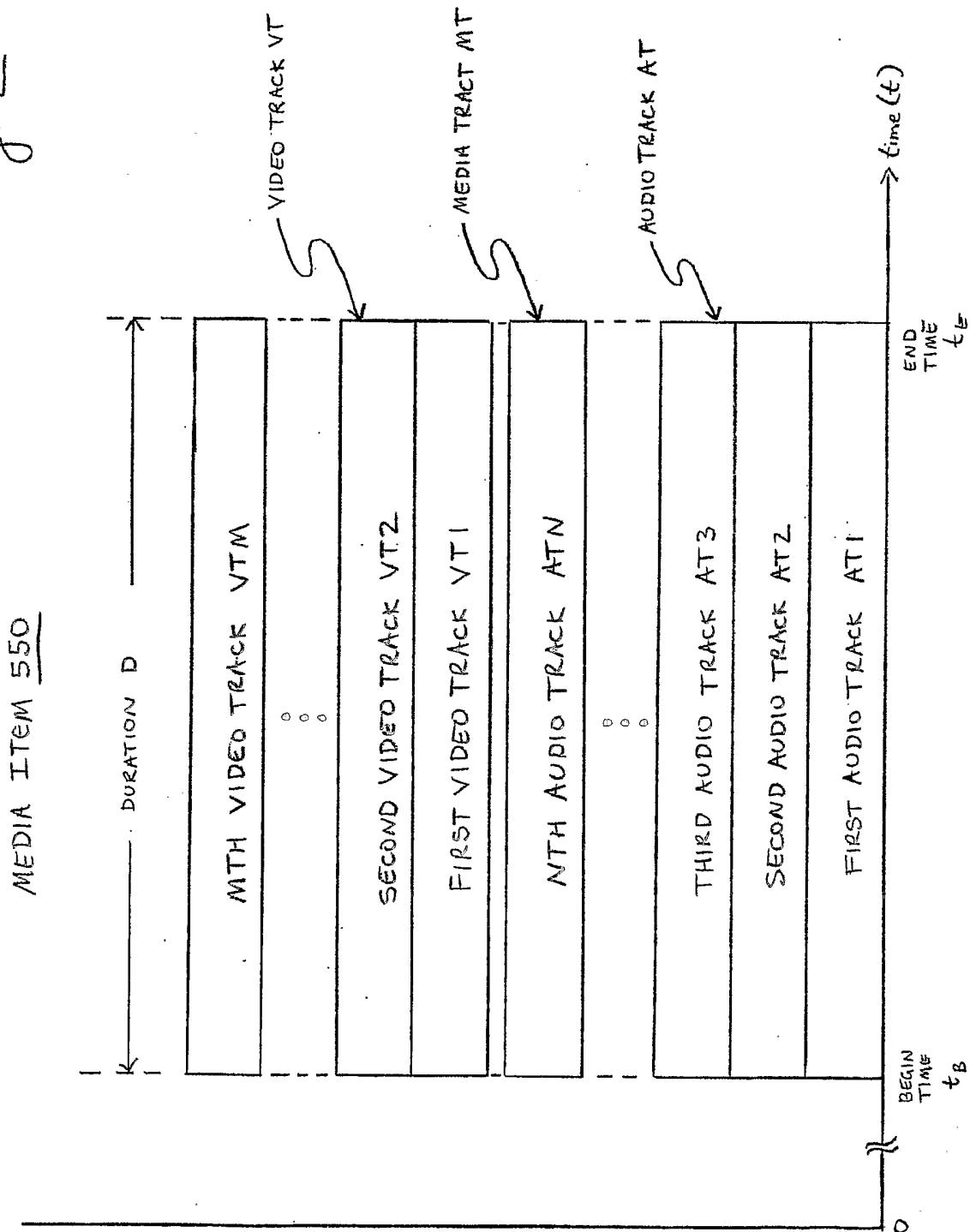


Figure 1B

Fig. 2



22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



Title: System and Method for Processing Multimedia Content

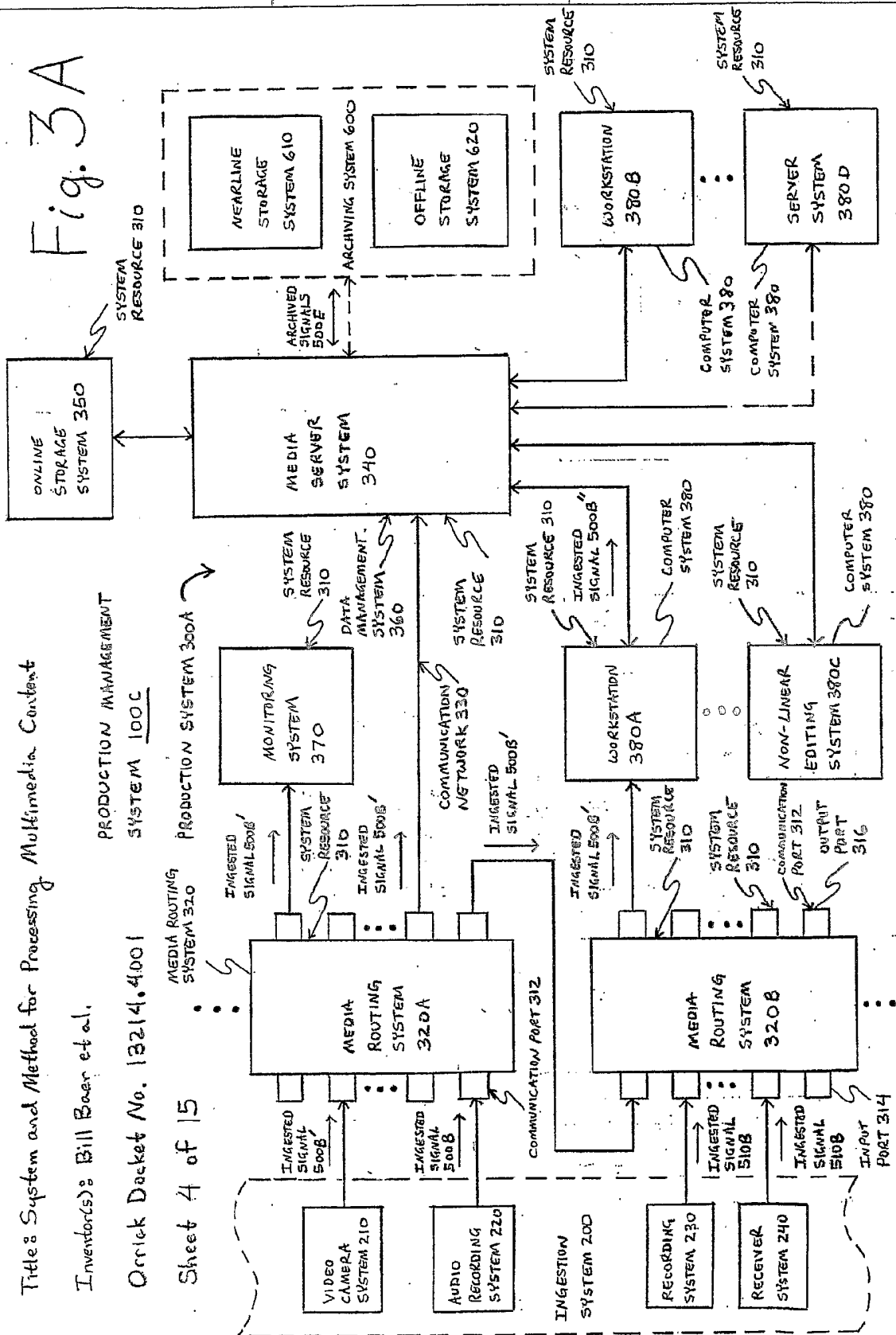
Inventor(s): Bill Baer et al.

Orick Docket No. 13214.4001

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PRODUCTION MANAGEMENT
SYSTEM 100C

Fig. 3A



Title: System and Method for Processing Multimedia Content

Inventor(s): Bill Baer et al.

Ornick Docket No. 13214.4001

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PRODUCTION MANAGEMENT
SYSTEM 100C

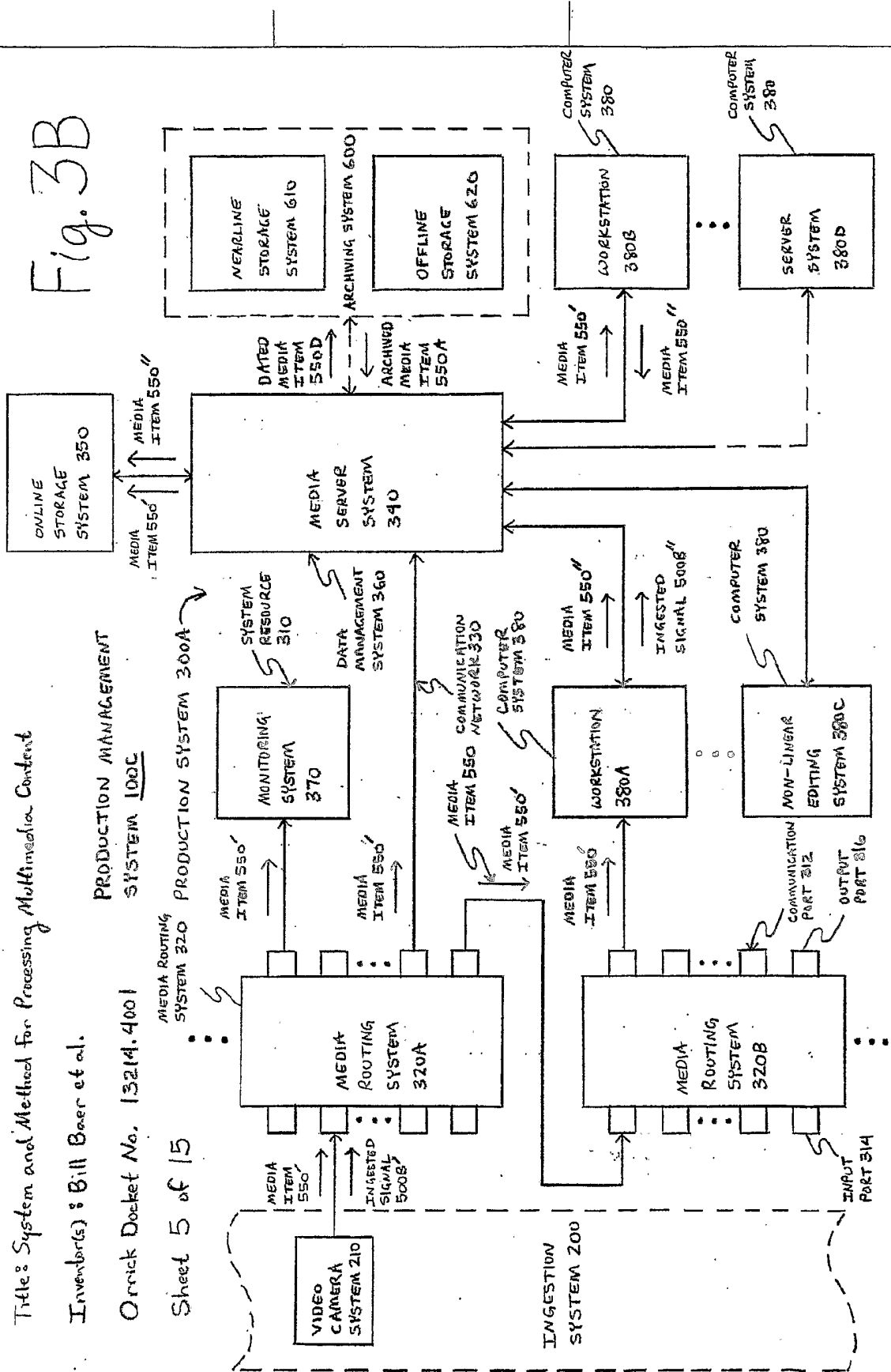


Fig. 4A

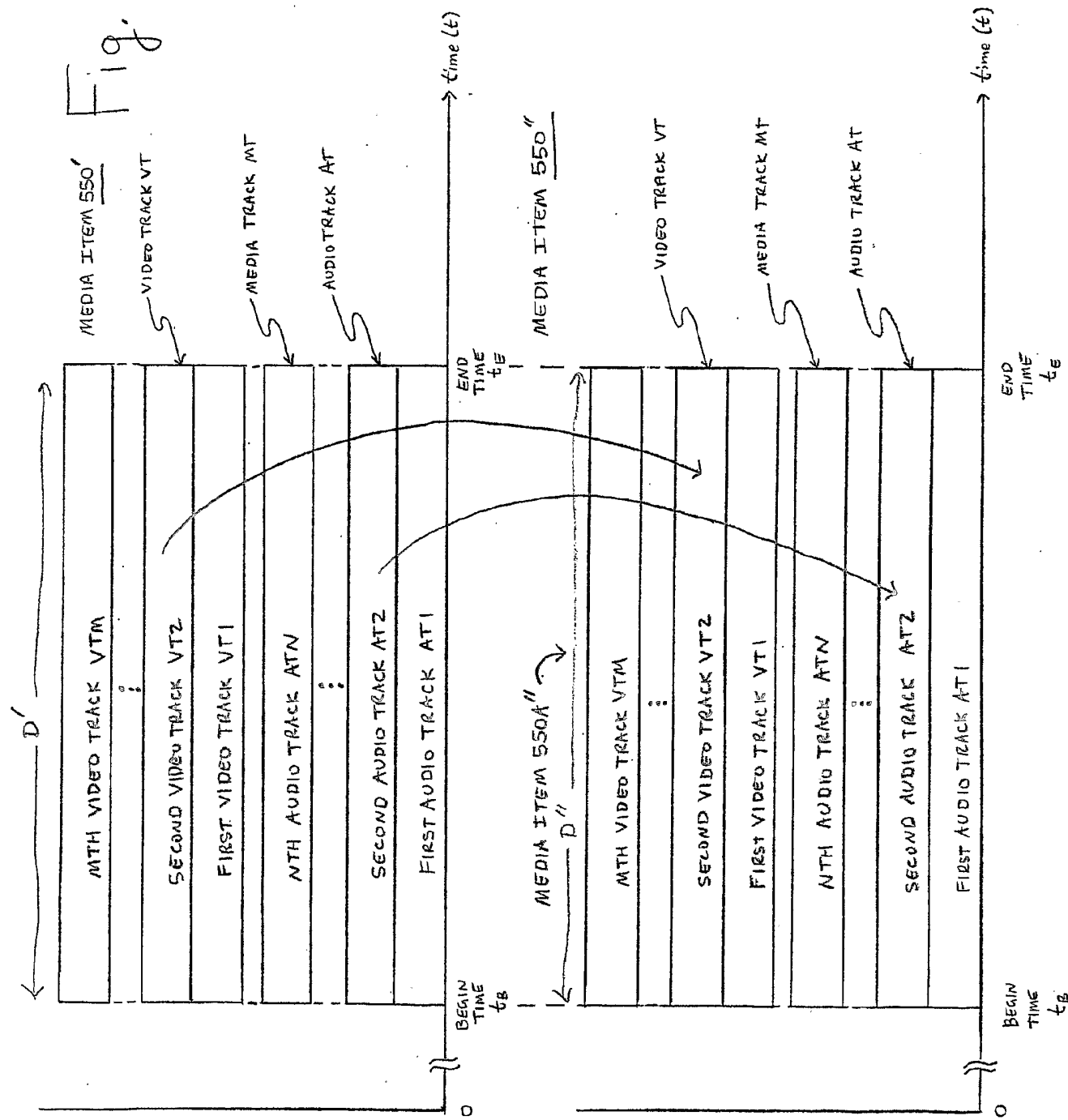
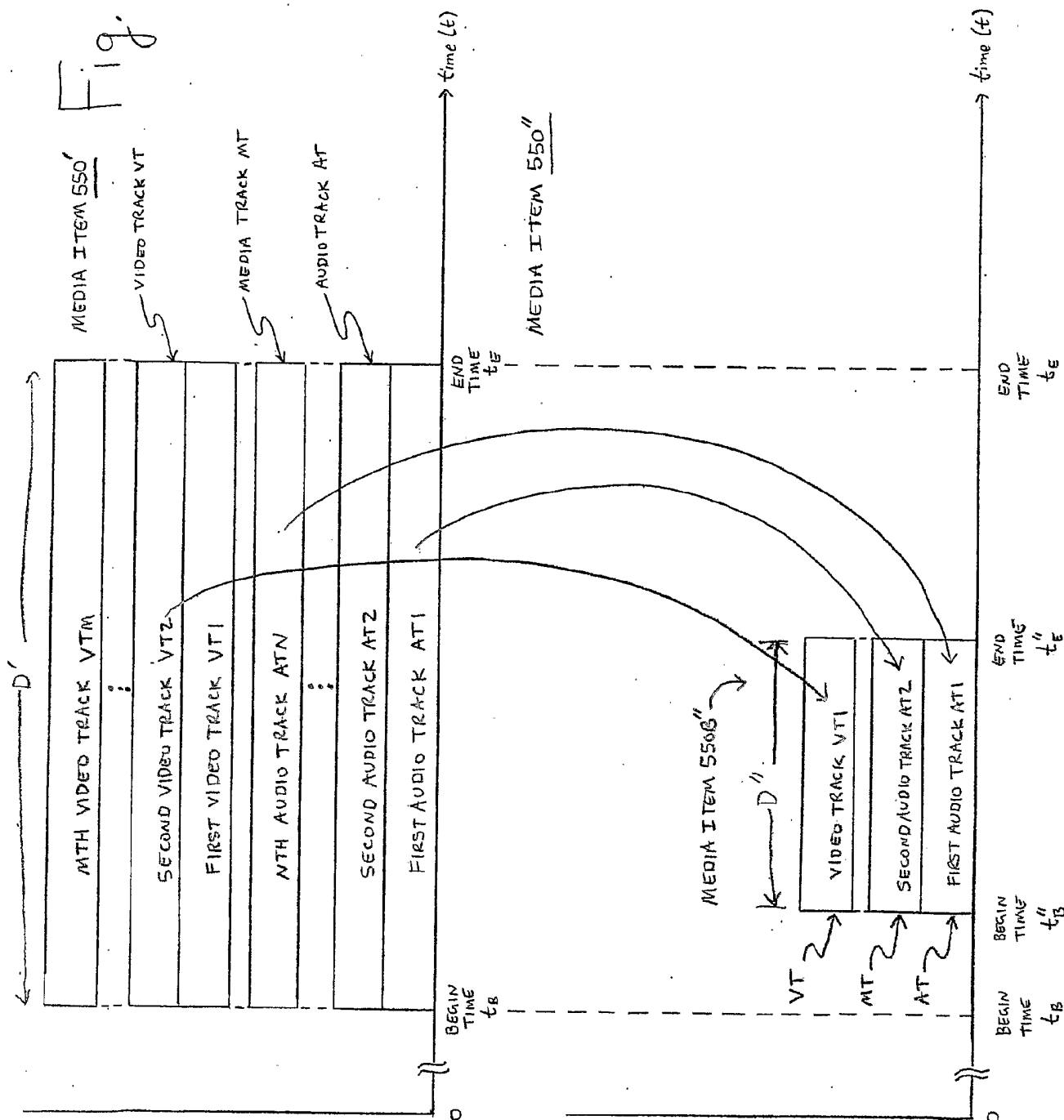


Fig. 4B



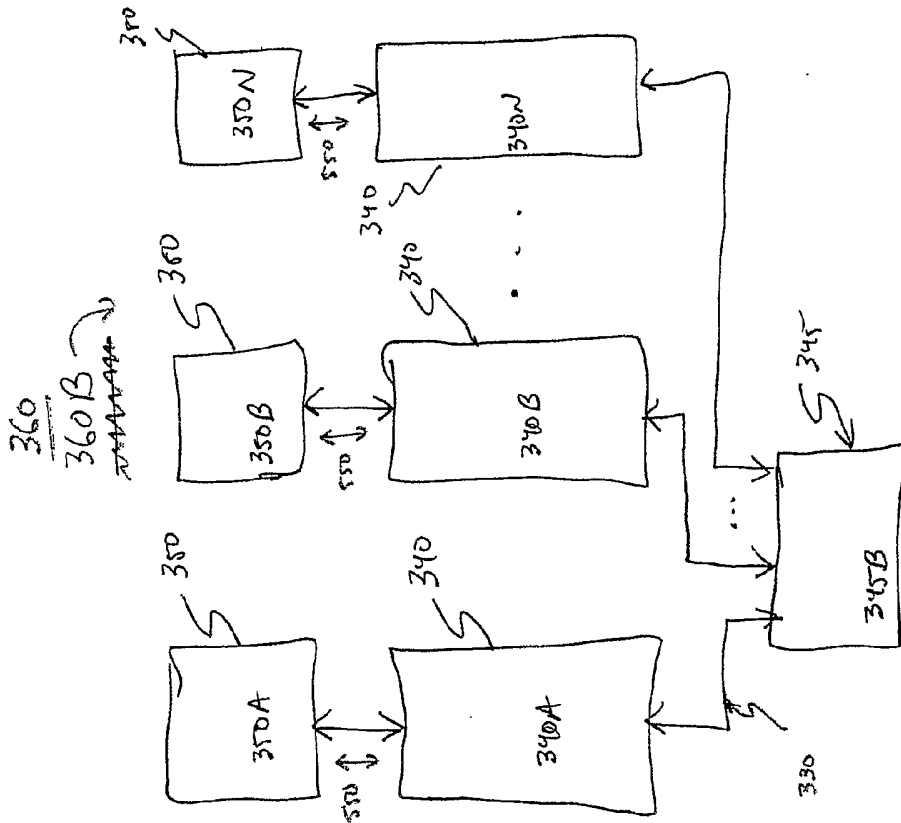
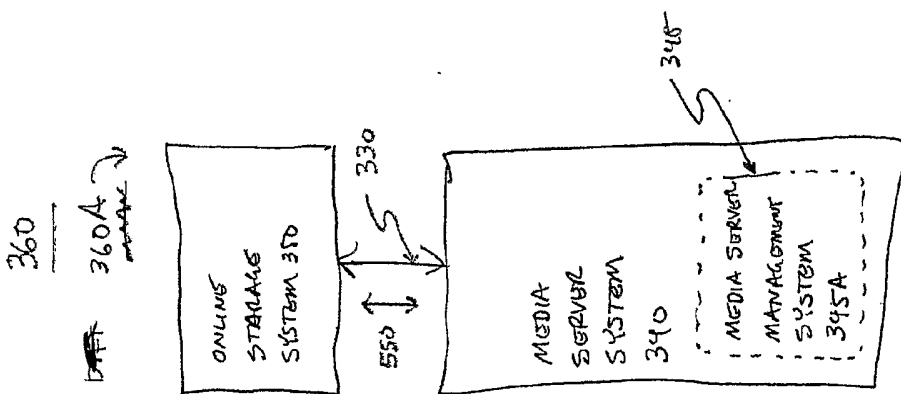


Fig. 5B



5A

Fig.

BIN 520

MEDIA EVENT 530

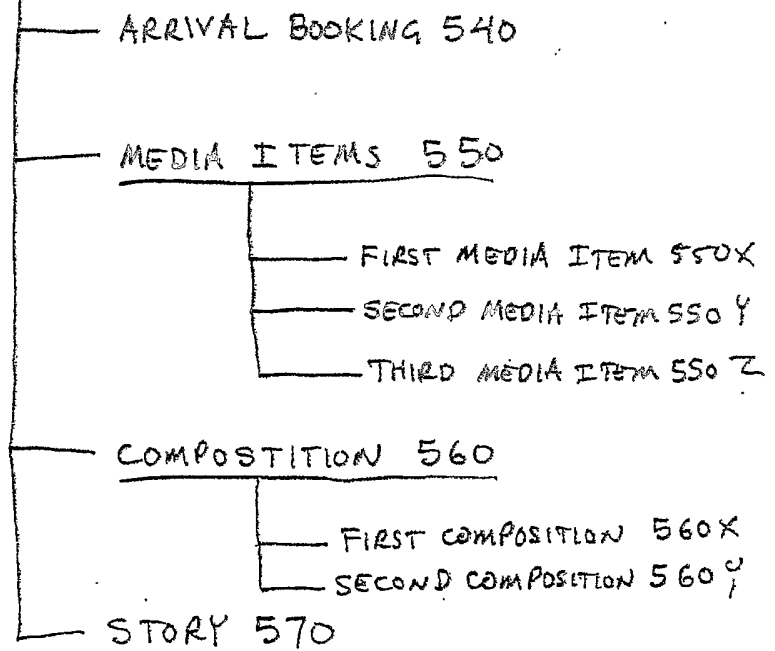
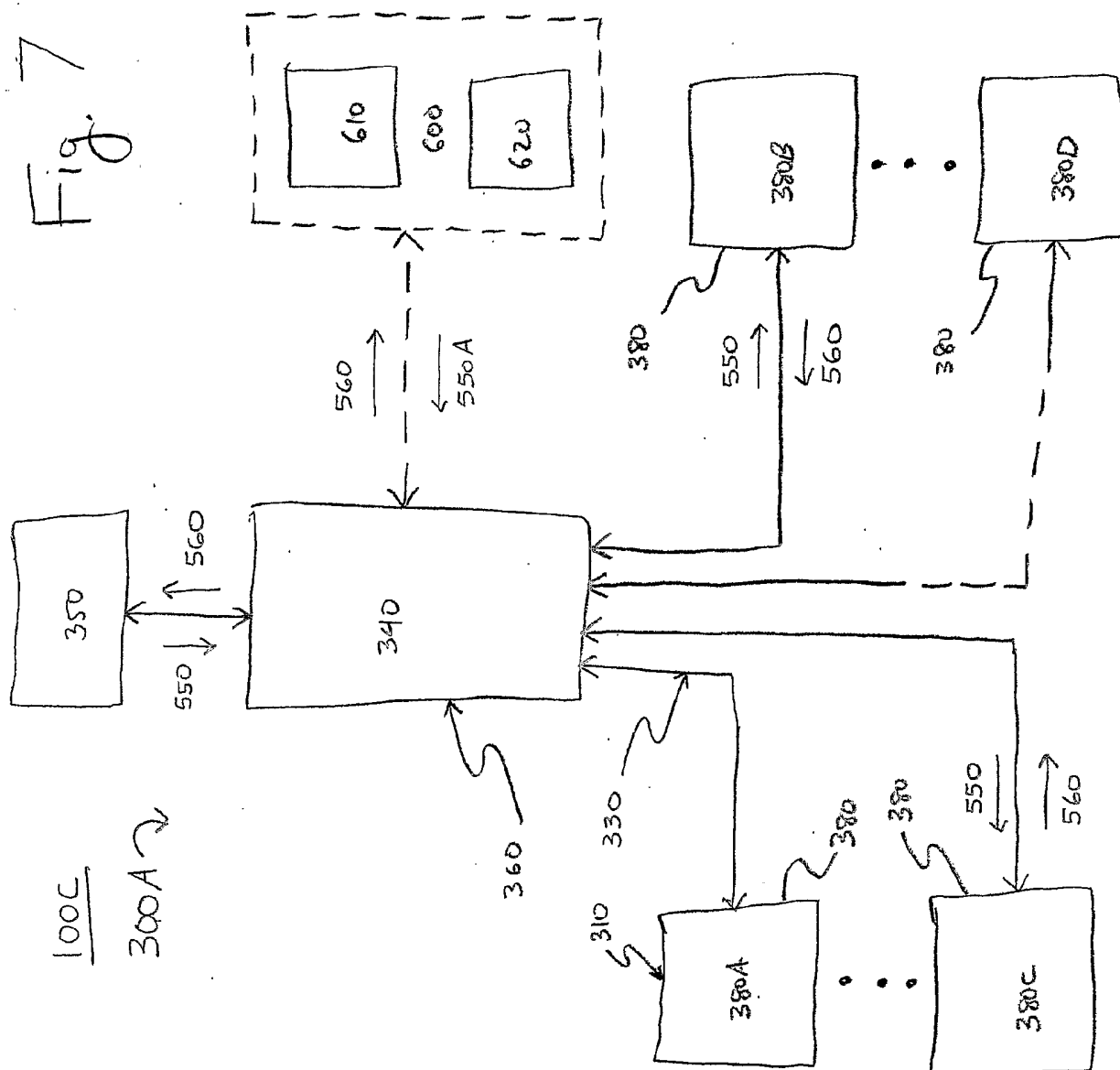


Fig. 6



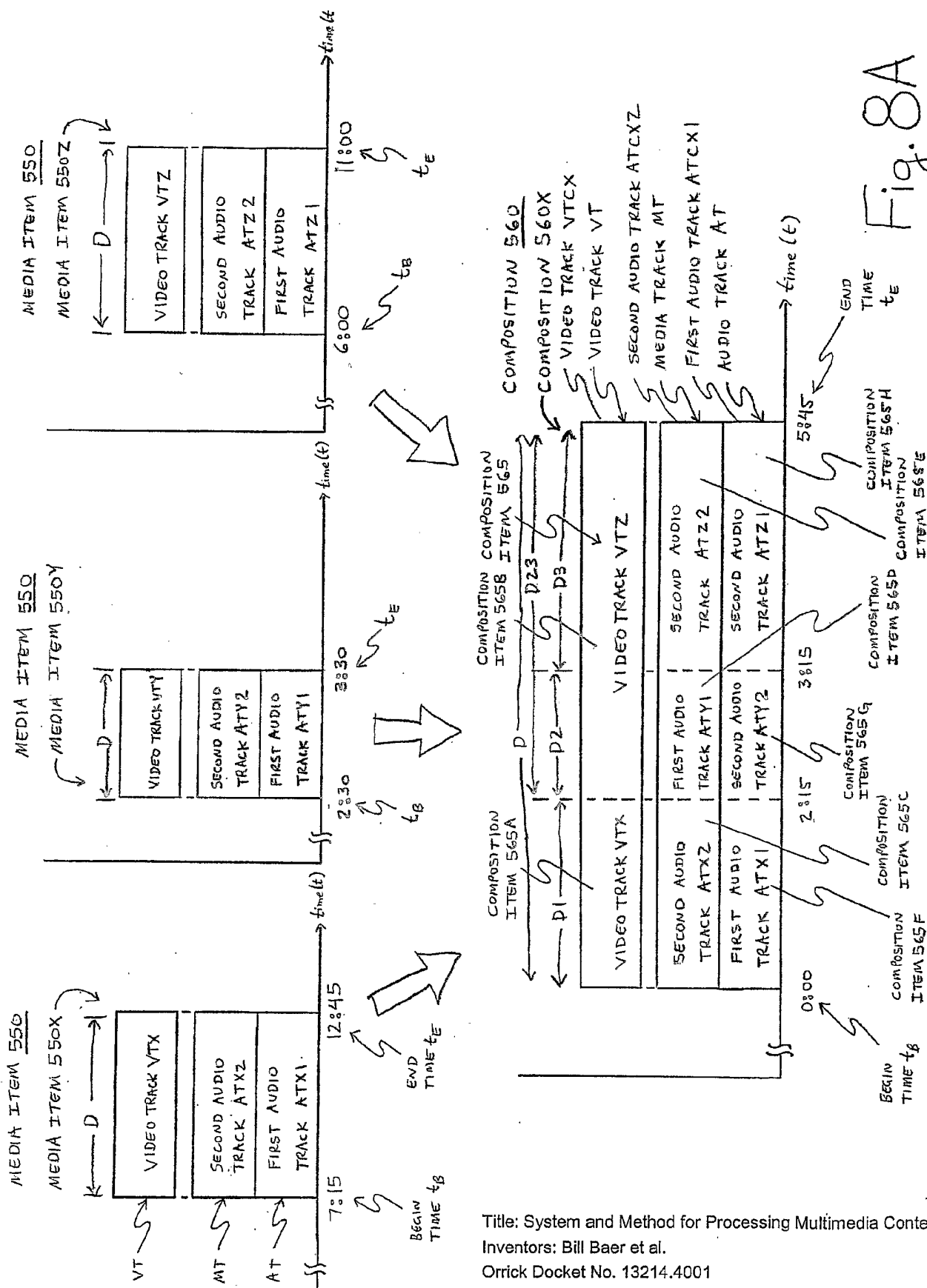


Fig. 8A

Title: System and Method for Processing Multimedia Content

Inventors: Bill Baer et al.

Orrick Docket No. 13214.4001

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Fig. 8B

COMPOSITION CHART FOR
COMPOSITION 560X

DESTINATION				SOURCE			
COMPOSITION ITEM	MODE	START TIME	STOP TIME	MEDIA ITEM	MEDIA TRACK	START TIME	STOP TIME
565A	VIDEO	0:00	2:15	550X	VIDEO	9:45	12:00
565B	VIDEO	2:15	5:45	550Z	VIDEO	7:15	10:45
565C	AUDIO2	0:00	2:15	550X	AUDIO2	9:45	12:00
565D	AUDIO2	2:15	3:15	550Y	AUDIO1	2:30	3:30
565E	AUDIO2	3:15	5:45	550Z	AUDIO2	7:15	10:45
565F	AUDIO1	0:00	2:15	550X	AUDIO1	9:45	12:00
565G	AUDIO1	2:15	3:15	550Y	AUDIO2	2:30	3:30
565H	AUDIO1	3:15	5:45	550Z	AUDIO1	7:15	10:45

Title: System and Method for Processing Multimedia Content
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