US010789218B2

(12) **United States Patent**
Adelman

(10) **Patent No.: US 10,789,218 B2**
(45) **Date of Patent: Sep. 29, 2020**

(54) **NESTED MEDIA CONTAINER, PANEL AND ORGANIZER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 216 days.

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(65) **Prior Publication Data**

US 2018/0157684 A1 Jun. 7, 2018

Related U.S. Application Data

(63) Continuation of application No. 14/259,623, filed on Apr. 23, 2014, now Pat. No. 9,842,125.
(Continued)

(51) **Int. Cl.**
G06F 16/21 (2019.01)
G06Q 30/02 (2012.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G06F 16/21*** (2019.01); ***G06F 16/174*** (2019.01); ***G06F 16/211*** (2019.01); ***G06F 16/22*** (2019.01);
(Continued)

(58) **Field of Classification Search**
CPC G16H 10/60; G16H 40/20; G16H 50/20; G16H 40/63; G16H 15/00; G16H 80/00;
(Continued)

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(Continued)

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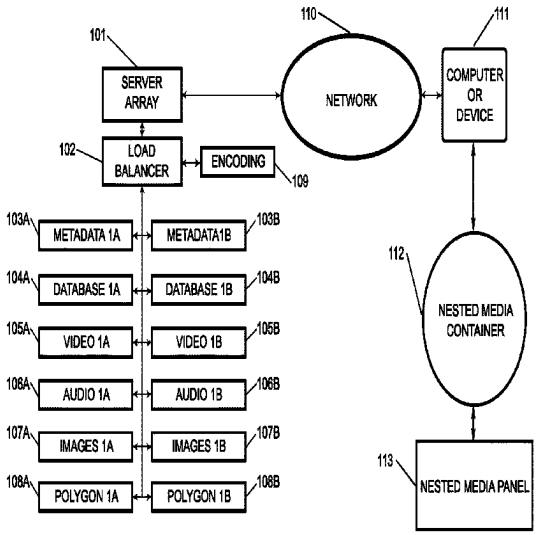
(74) *Attorney, Agent, or Firm* — K2T3 PLLC

(57) **ABSTRACT**

A method for the organizing, managing, mapping, distributing, transportation and displaying of multi-layered content and/or data in a tactile volumetric (three-dimensional), flat (two-dimensional) and/or multi-dimensional container and/or panel which functions as a macro controller through tactile, sensatory, audible and/or other forms of user control. This includes the means to manipulate content and/or data through a visual and/or multi-sensatory interface that stores content and media in a nested and sub-nested hierarchical container and sub-container array which can give real-time feedback to any involved party. These containers and/or panels provide a means to permanently move and validate content between servers, devices and/or users, while giving a real-time visual and/or multi-sensatory response and representation to that user. This system also provides a means to ingest and convert legacy media formats.

20 Claims, 21 Drawing Sheets



Related U.S. Application Data

(60) Provisional application No. 61/815,331, filed on Apr. 24, 2013.

(51) **Int. Cl.**

H04L 29/06	(2006.01)
G06F 16/22	(2019.01)
G06F 16/174	(2019.01)

(52) **U.S. Cl.**

CPC ***G06Q 30/0242*** (2013.01); ***G06Q 30/0264*** (2013.01); ***H04L 63/0428*** (2013.01); ***H04L 63/0861*** (2013.01); *H04L 2463/082* (2013.01)

(58) **Field of Classification Search**

CPC G16H 10/20; G16H 50/30; G16H 70/00; G16H 40/40; G16H 70/60; G16H 10/65; G16H 20/10; G16H 20/13; G16H 20/30; G16H 10/40; G16H 20/40; G16H 20/60; G16H 30/20; G16H 30/40; G16H 50/50; G16H 50/70; G16H 70/40; G06Q 50/22; G06Q 50/24; G06Q 10/02; G06Q 40/08; G06Q 10/087; G06Q 30/0623; G06Q 50/14; G06Q 10/0875; G06Q 10/109; G06Q 10/1095; G06Q 10/063; G06Q 10/06395; G06Q 10/10; G06Q 30/018; G06Q 30/0283; G06Q 30/04; G06Q 40/04; G06Q 50/01; G06Q 10/025; G06Q 10/06; G06Q 10/063118; G06Q 10/0633; G06Q 10/0639; G06Q 10/06398; G06Q 10/083; G06Q 10/0833; G06Q 10/103; G06Q 20/023; G06Q 20/027; G06Q 20/10; G06Q 20/322; G06Q 20/3221; G06Q 20/3255; G06Q 20/34; G06Q 20/385; G06Q 20/40; G06Q 20/4014; G06Q 2240/00; G06Q 30/016; G06Q 30/02; G06Q 30/0204; G06Q 30/0267; G06Q 30/0601; G06Q 30/0609; G06Q 30/0611; G06Q 30/0627; G06Q 40/12; G06Q 50/12; G06Q 50/18; G06F 19/00; G06F 19/328; G06F 19/321; G06F 19/3418; G06F 19/3456; G06F 19/324; G06F 19/3462; G06F 19/3481; G06F 19/325; G06F 3/04842; G06F 19/3475; G06F 11/302; G06F 11/3409; G06F 16/13; G06F 16/22; G06F 16/2219; G06F 16/254; G06F 16/313; G06F 16/335; G06F 16/532; G06F 16/954; G06F 16/986; G06F 17/2785; G06F 19/322; G06F 19/326; G06F 19/3406; G06F 19/3468; G06F 19/36; G06F 21/41; G06F 21/602; G06F 21/6227; G06F 21/6245; G06F 21/6254; G06F 3/0481; G06F 3/0484; G06F 3/04845; G06F 3/04847; G06F 3/0488; G06F 3/04883; G06F 3/04886; G06F 3/147; G06F 9/542; G06F 40/30

USPC 705/14.41

See application file for complete search history.

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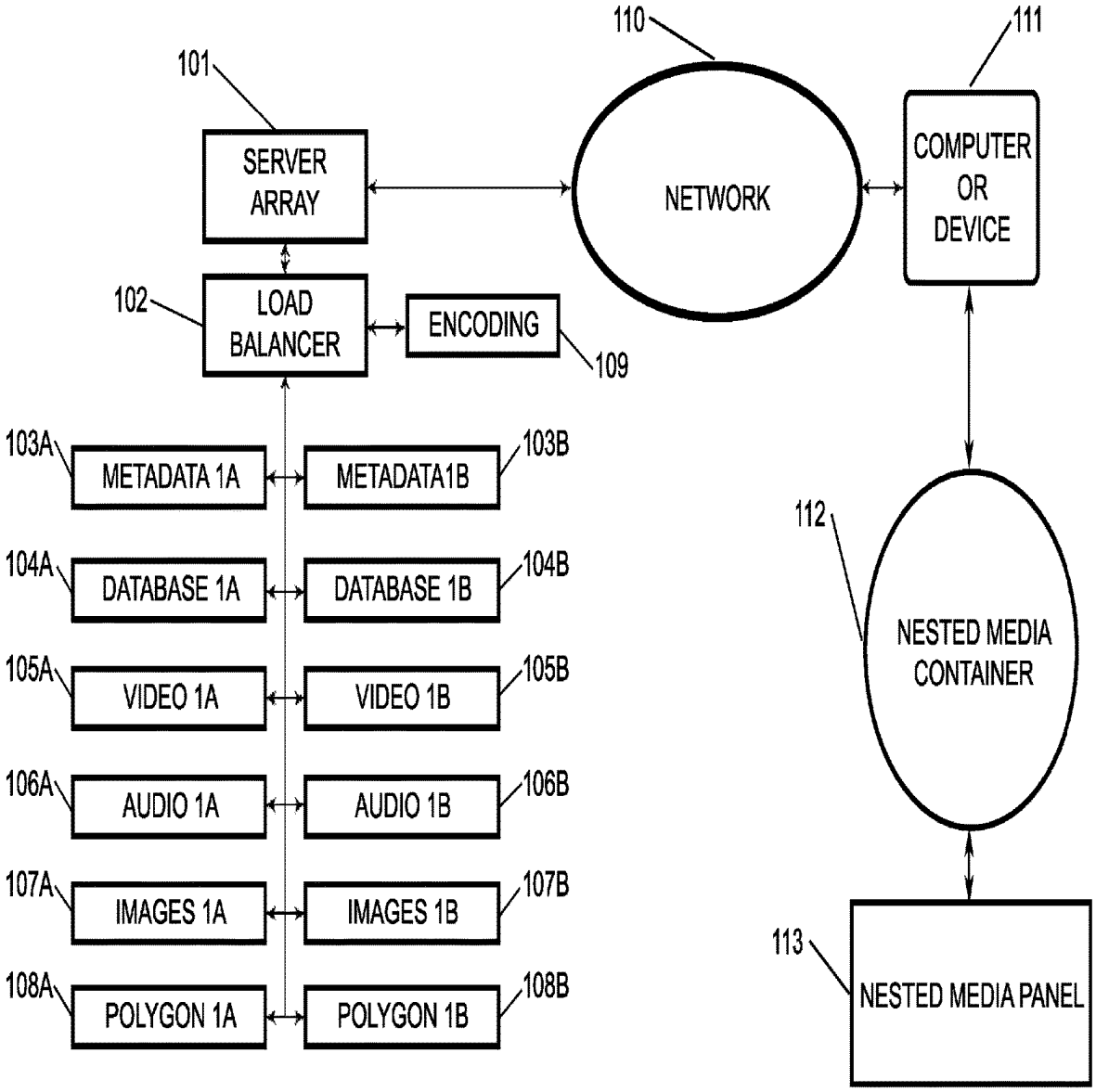
110
111
101
SERVER ARRAY
NETWORK
COMPUTER OR DEVICE
102
LOAD BALANCER
ENCODING
109
103A
METADATA 1A
METADATA1B
103B
104A
DATABASE 1A
DATABASE 1B
104B
105A
VIDEO 1A
VIDEO 1B
105B
106A
AUDIO 1A
AUDIO 1B
106B
107A
IMAGES 1A
IMAGES 1B
107B
108A
POLYGON 1A
POLYGON 1B
108B
112
NESTED MEDIA CONTAINER
113
NESTED MEDIA PANEL

FIG. 1

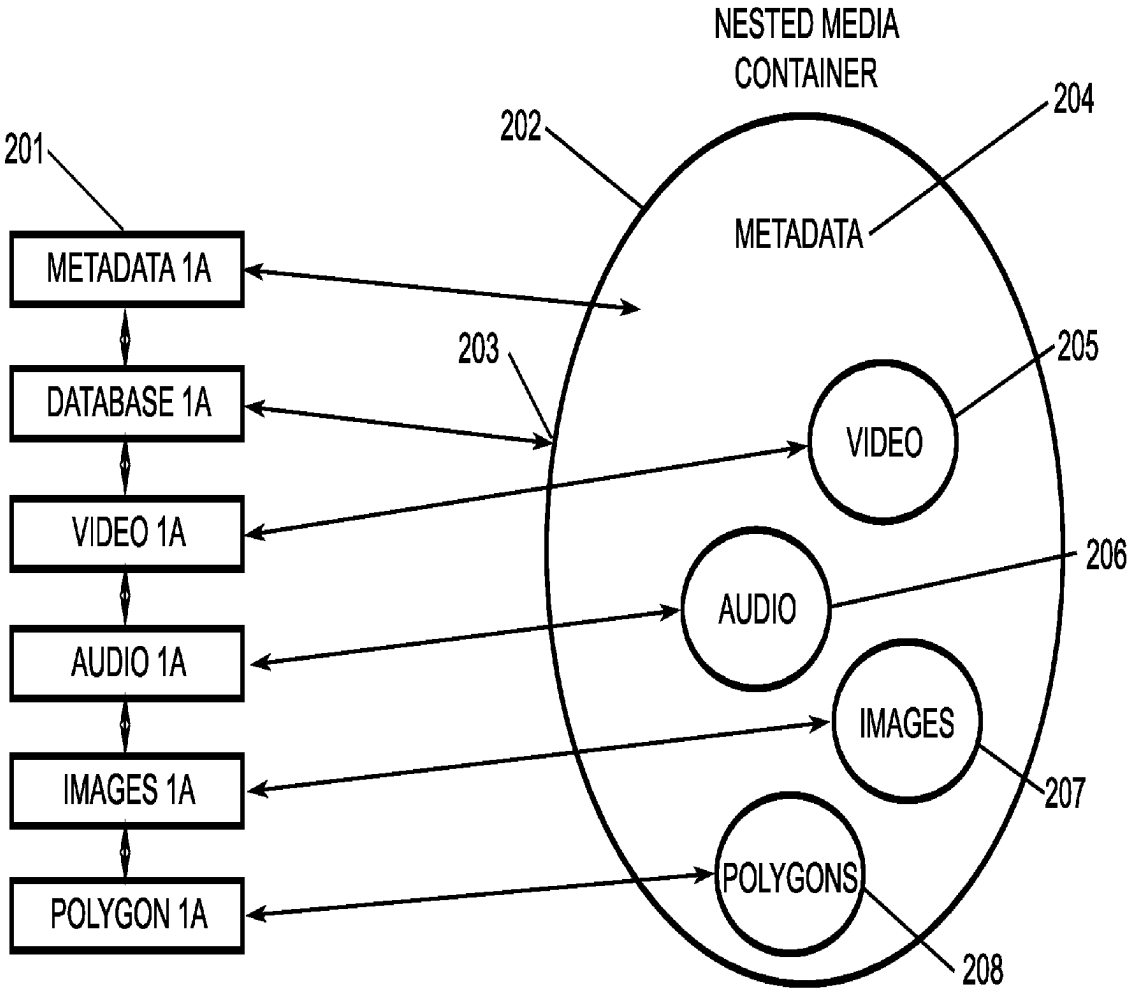
NESTED MEDIA CONTAINER
201
202
204
METADATA
METADATA 1A
203
205
DATABASE 1A
VIDEO
VIDEO 1A
206
AUDIO
AUDIO 1A
IMAGES
IMAGES 1A
207
POLYGONS
POLYGON 1A
208

FIG. 2

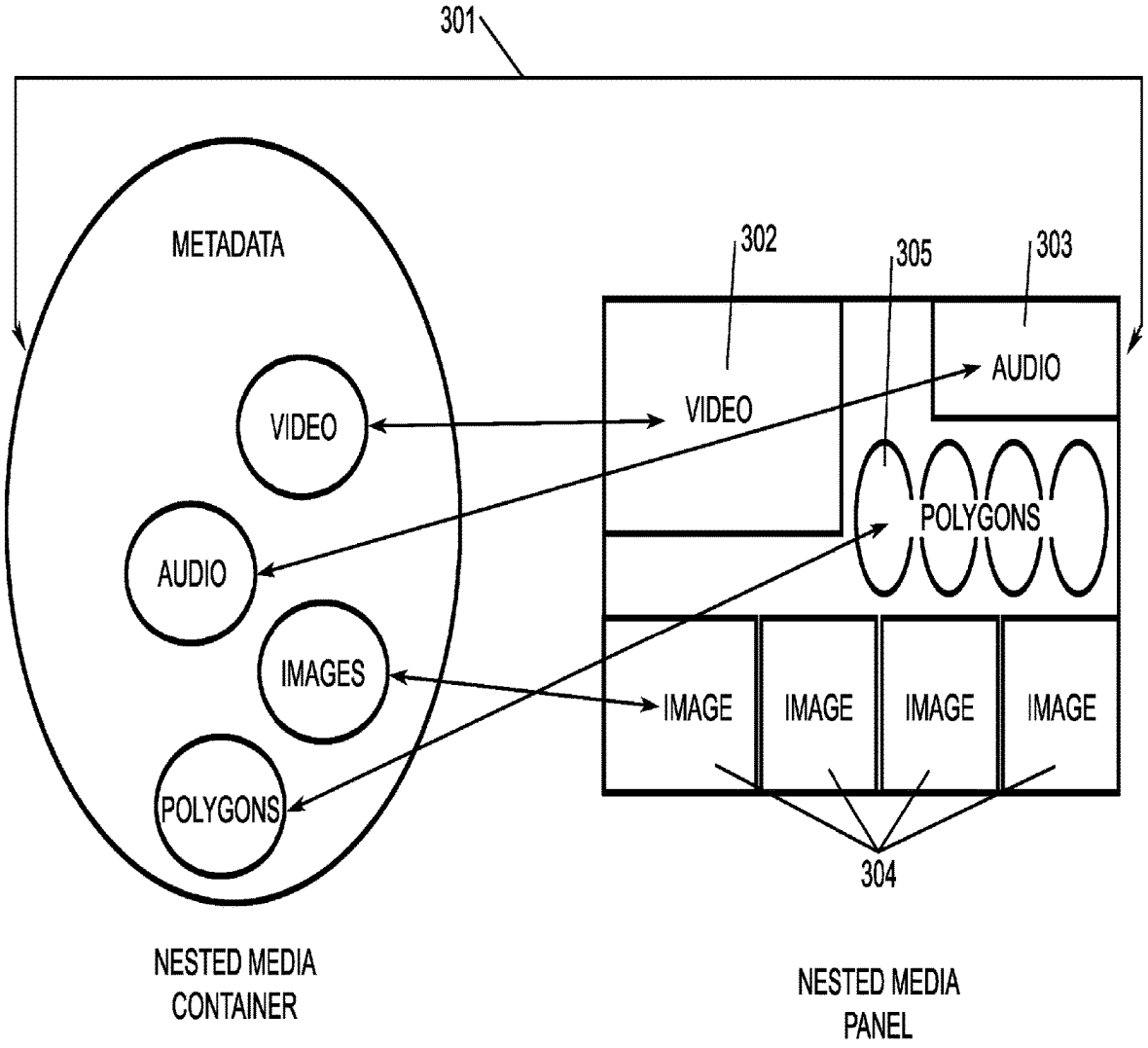
301
METADATA
VIDEO
AUDIO
IMAGES
POLYGONS
302
305
303
VIDEO
AUDIO
POLYGONS
IMAGE
IMAGE
IMAGE
IMAGE
304
NESTED MEDIA CONTAINER
NESTED MEDIA PANEL

FIG. 3

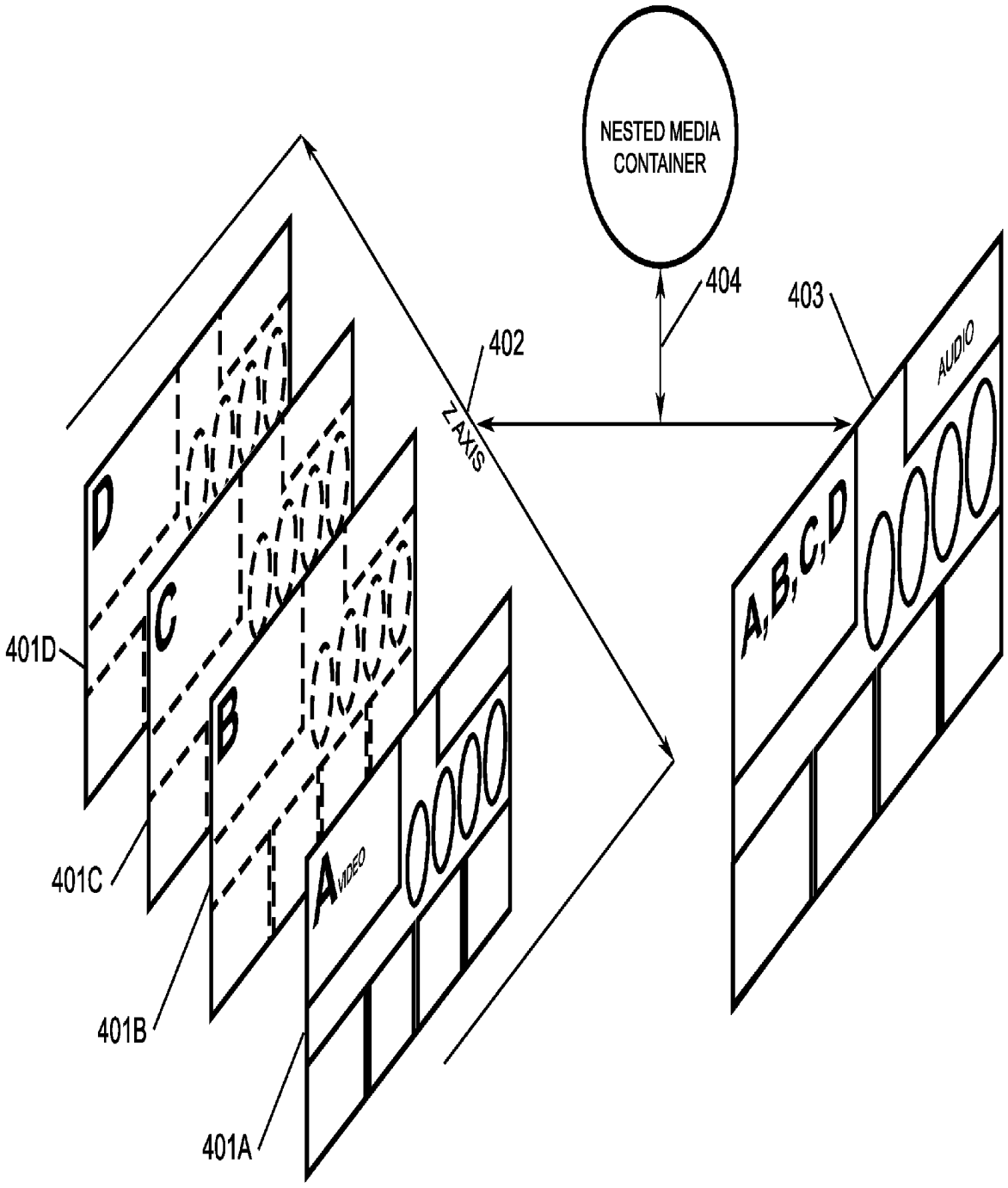
NESTED MEDIA CONTAINER
404
403
402
Z AXIS
AUDIO
A,B,C,D
D
C
B
A VIDEO
401D
401C
401B
401A

FIG. 4

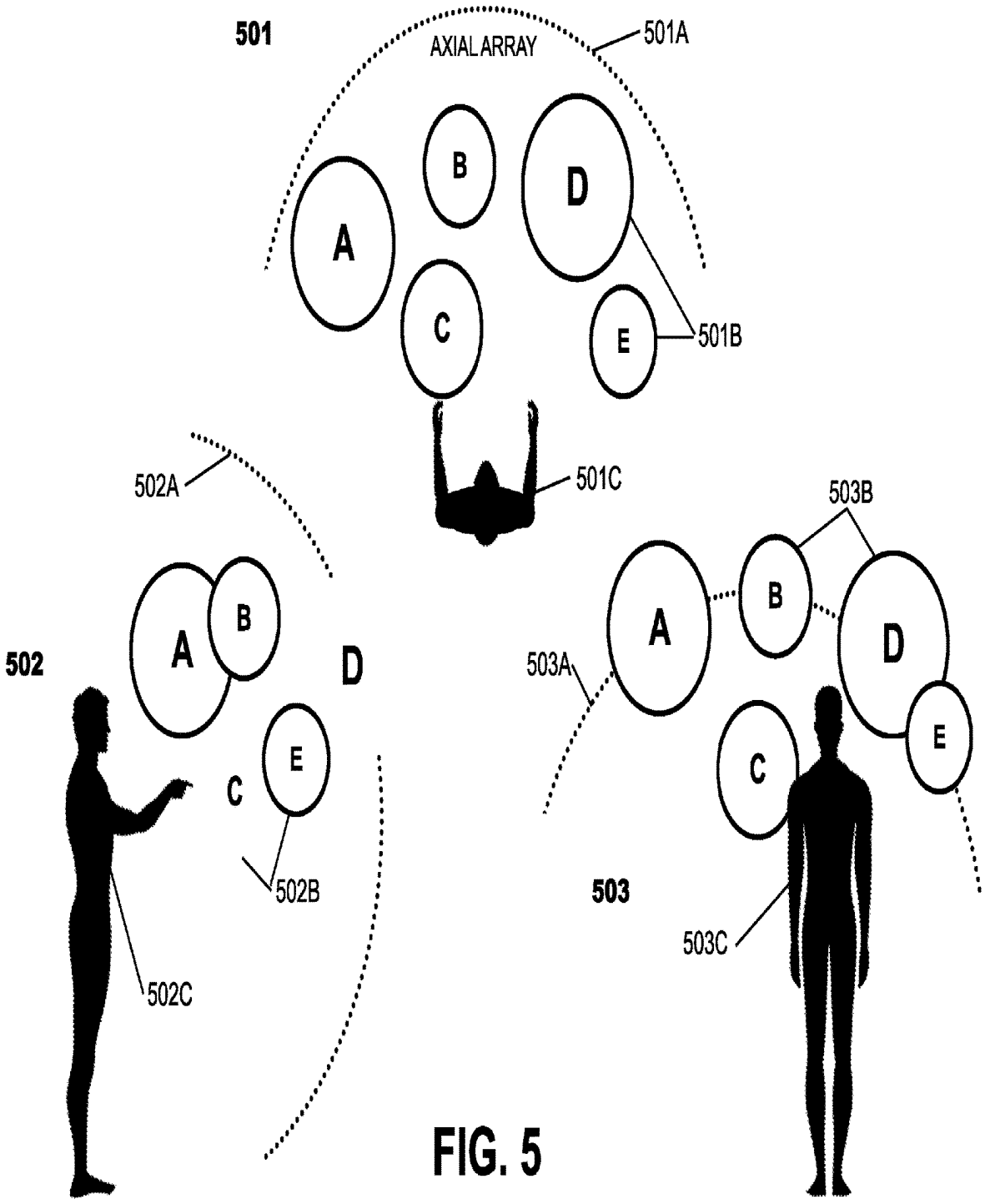
501
AXIAL ARRAY
501A
A
B
C
D
E
501B
501C
502A
502
A
B
D
E
C
502B
502C
503B
503A
A
B
D
E
C
503
503C

FIG. 5

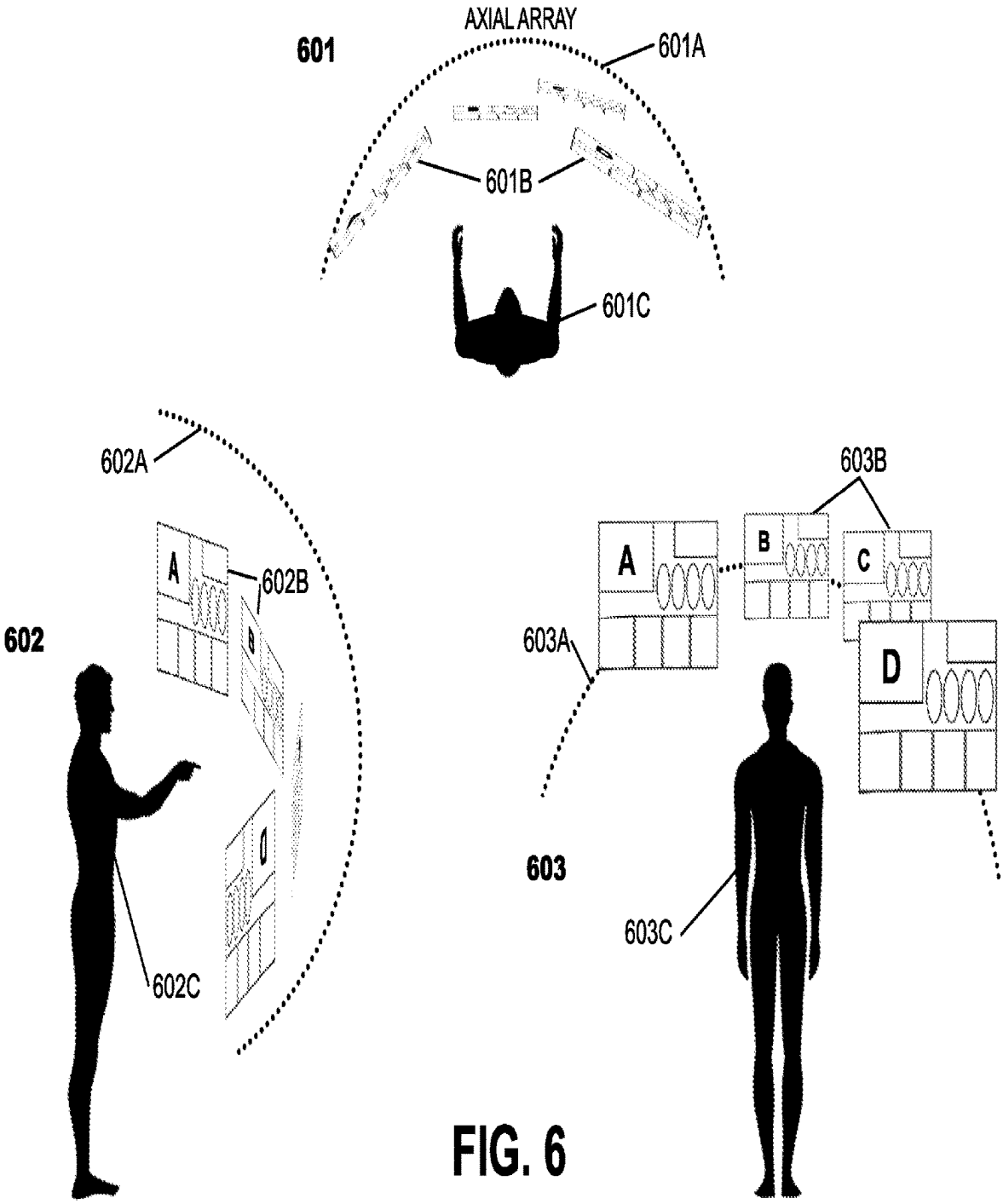
AXIAL ARRAY
601
601A
601B
601C
602A
602B
602
A
602C
603B
A
B
C
D
603A
603
603C

FIG. 6

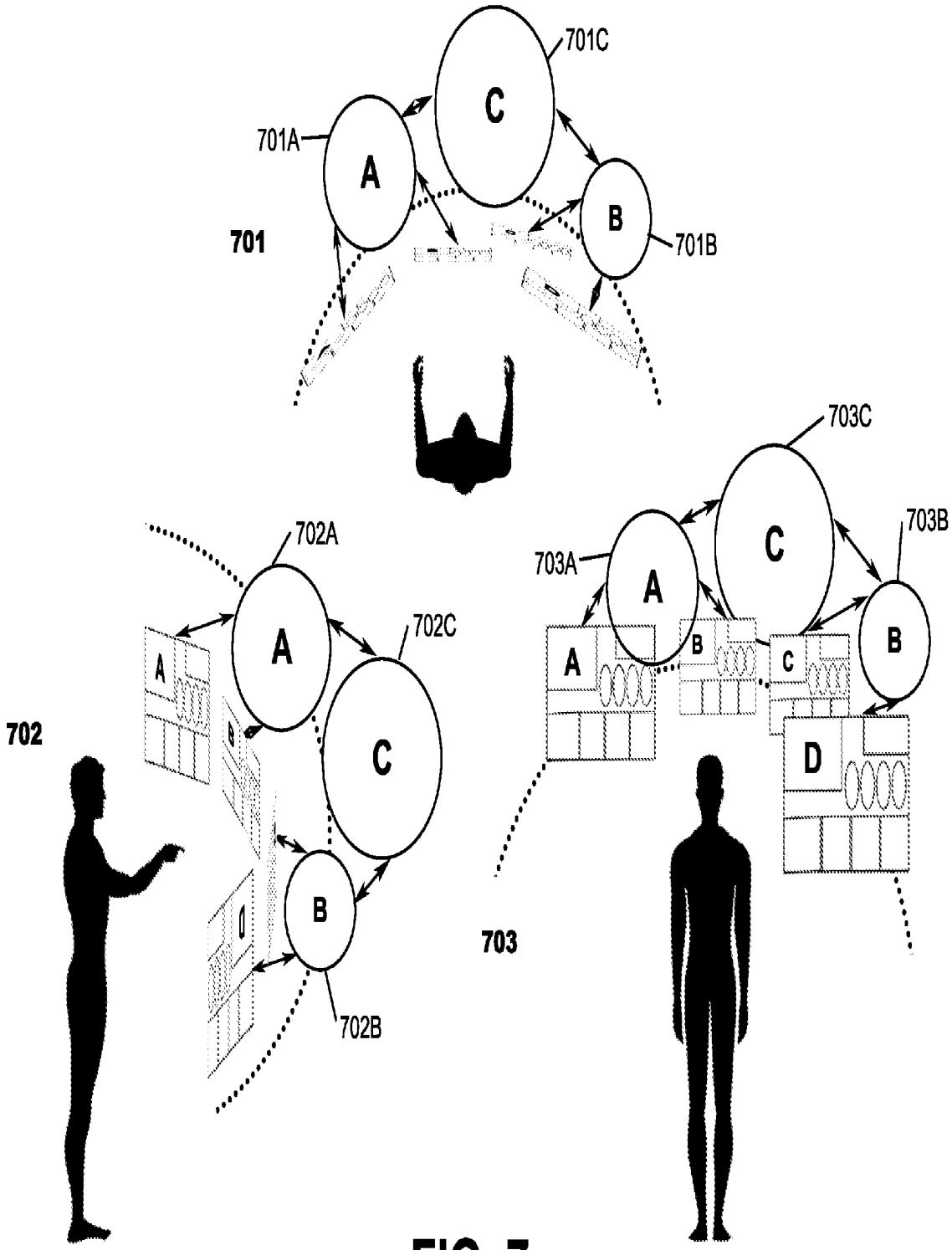
701C
C
701A
A
B
701B
701
703C
C
703B
703A
A
B
A
B
C
D
702A
A
702C
C
A
702
B
702B
703

FIG. 7

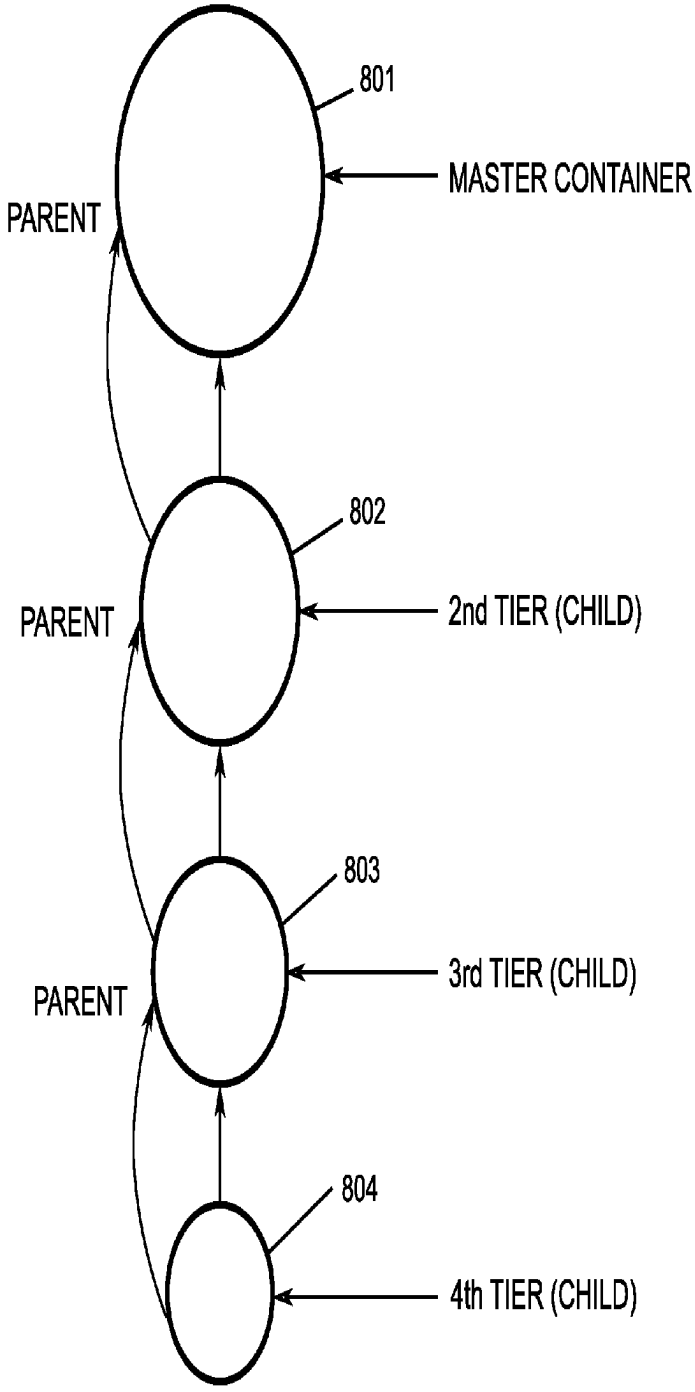
801
MASTER CONTAINER
PARENT
802
2nd TIER (CHILD)
PARENT
803
3rd TIER (CHILD)
PARENT
804
4th TIER (CHILD)

FIG. 8

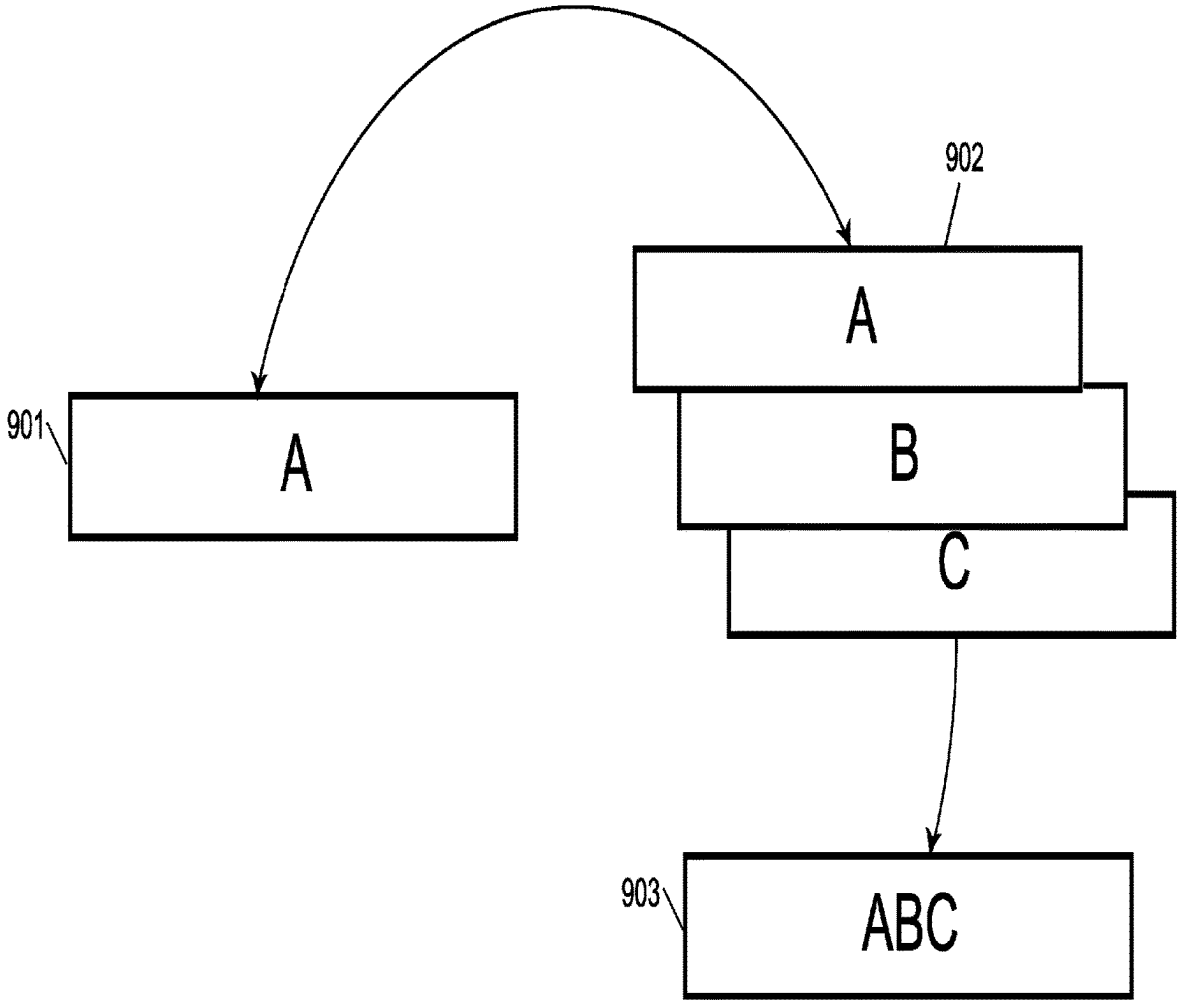

FIG. 9

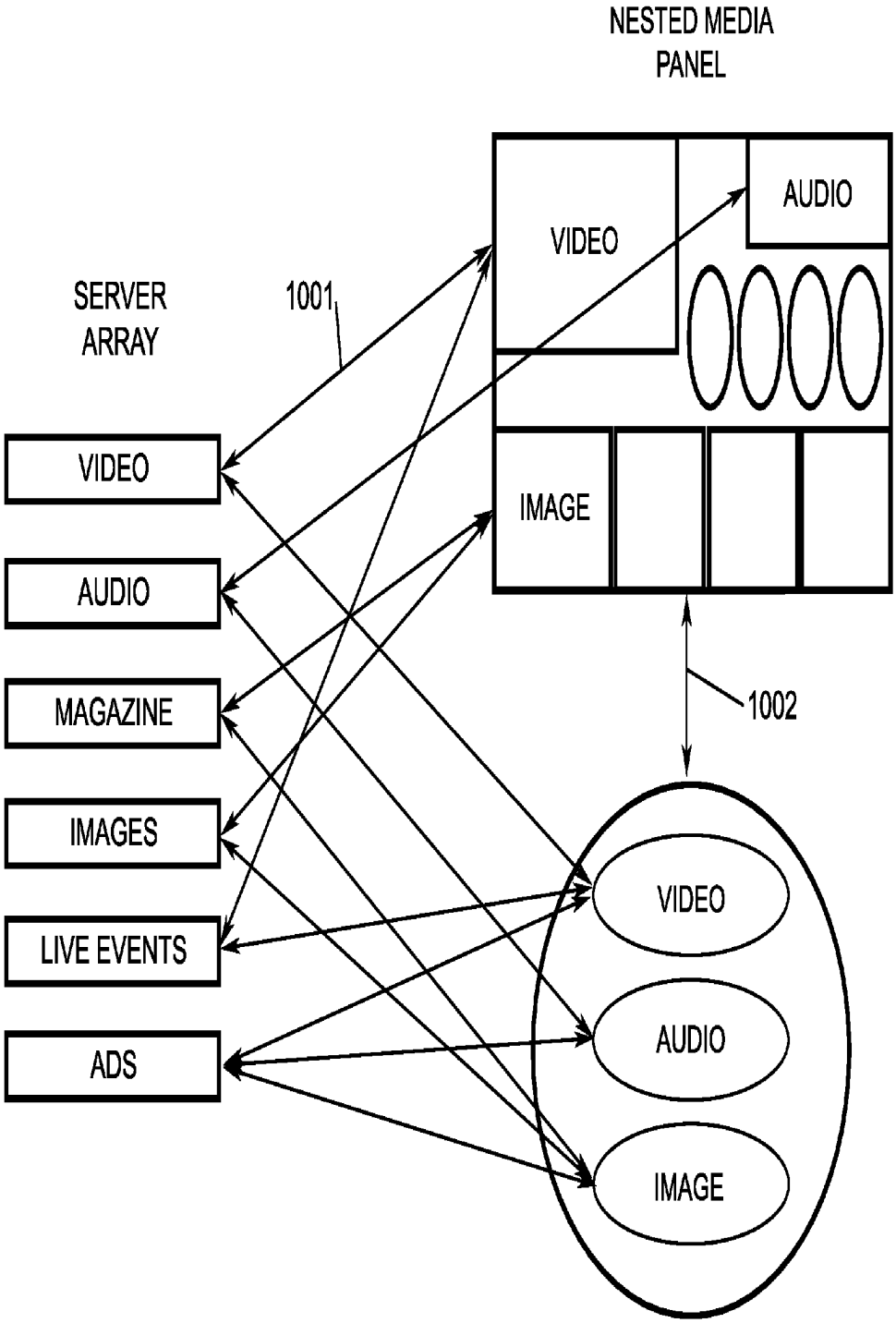
NESTED MEDIA
PANEL
VIDEO
AUDIO
IMAGE
SERVER
ARRAY
1001
VIDEO
AUDIO
MAGAZINE
IMAGES
LIVE EVENTS
ADS
1002
VIDEO
AUDIO
IMAGE
NESTED MEDIA
CONTAINER

FIG. 10

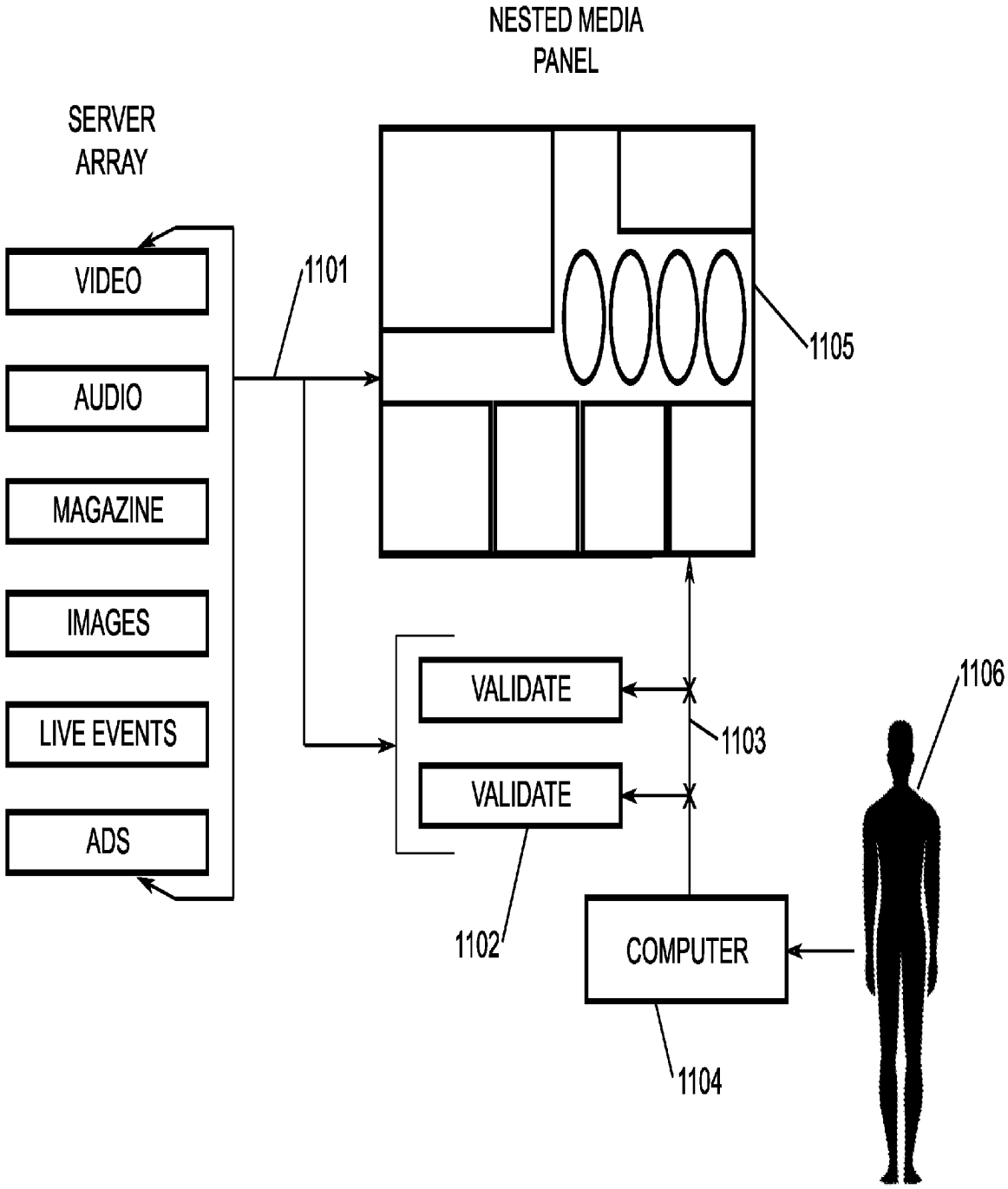
NESTED MEDIA PANEL
SERVER ARRAY
VIDEO
AUDIO
MAGAZINE
IMAGES
LIVE EVENTS
ADS
1101
1105
VALIDATE
VALIDATE
1103
1106
1102
COMPUTER
1104

FIG. 11

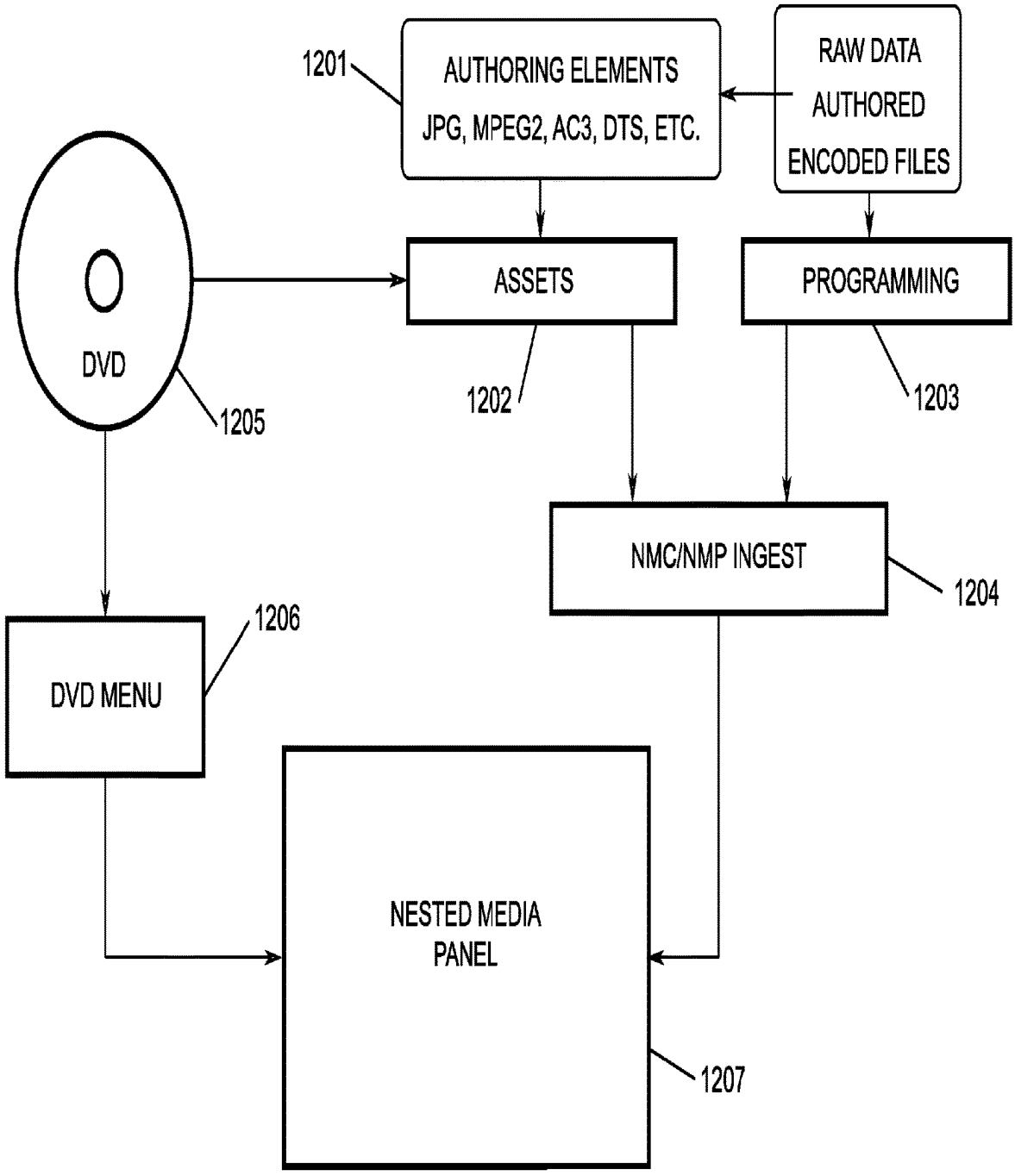
1201
AUTHORING ELEMENTS
JPG, MPEG2, AC3, DTS, ETC.
RAW DATA
AUTHORED
ENCODED FILES
DVD
1205
ASSETS
PROGRAMMING
1202
1203
NMC/NMP INGEST
1204
1206
DVD MENU
NESTED MEDIA
PANEL
1207

FIG. 12

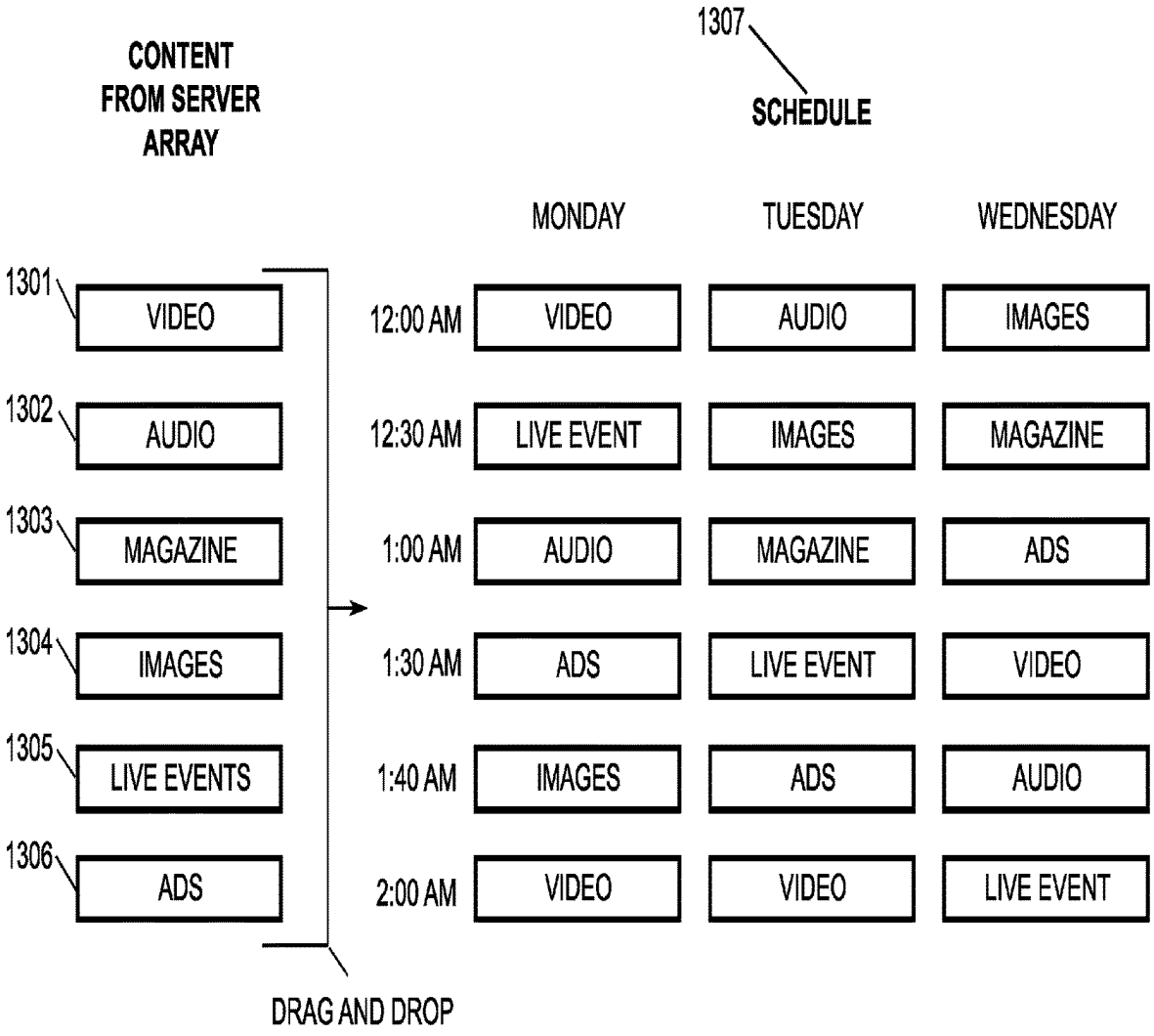
1307
SCHEDULE
CONTENT FROM SERVER ARRAY
MONDAY
TUESDAY
WEDNESDAY
1301
VIDEO
1302
AUDIO
1303
MAGAZINE
1304
IMAGES
1305
LIVE EVENTS
1306
ADS
12:00 AM
12:30 AM
1:00 AM
1:30 AM
1:40 AM
2:00 AM
VIDEO
AUDIO
IMAGES
LIVE EVENT
IMAGES
MAGAZINE
AUDIO
MAGAZINE
ADS
ADS
LIVE EVENT
VIDEO
IMAGES
ADS
AUDIO
VIDEO
VIDEO
LIVE EVENT
DRAG AND DROP

FIG. 13

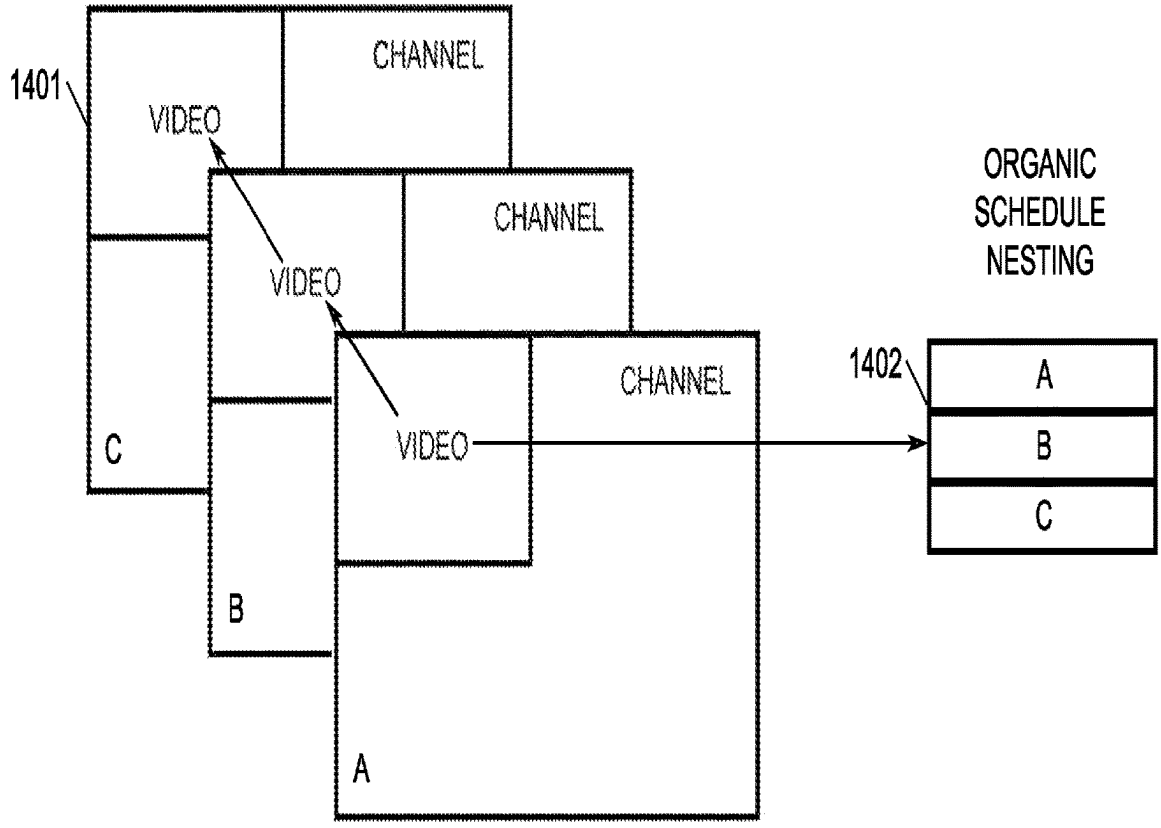
1401
CHANNEL
VIDEO
CHANNEL
VIDEO
CHANNEL
VIDEO
C
B
A
ORGANIC
SCHEDULE
NESTING
1402
A
B
C

FIG. 14

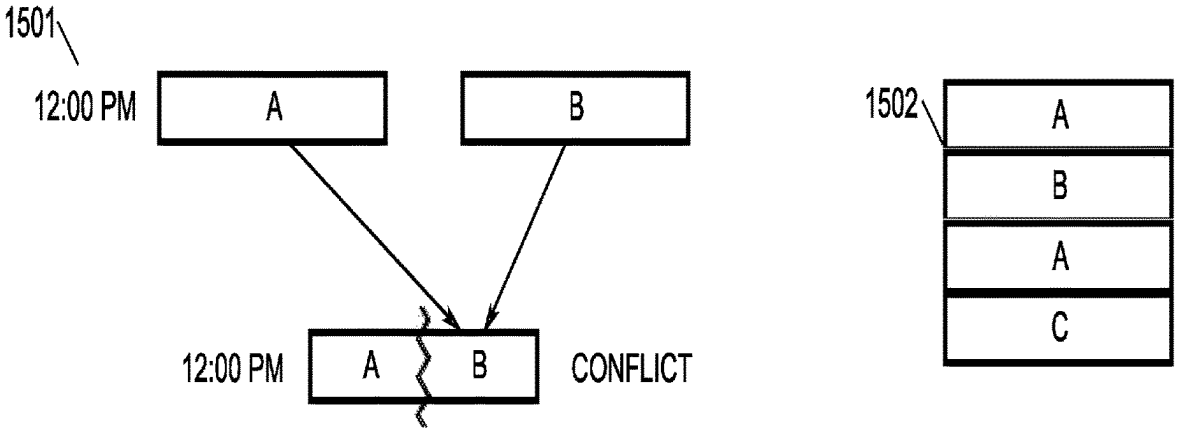
1501
12:00 PM
A
B
12:00 PM
A
B
CONFLICT
1502
A
B
A
C

FIG. 15

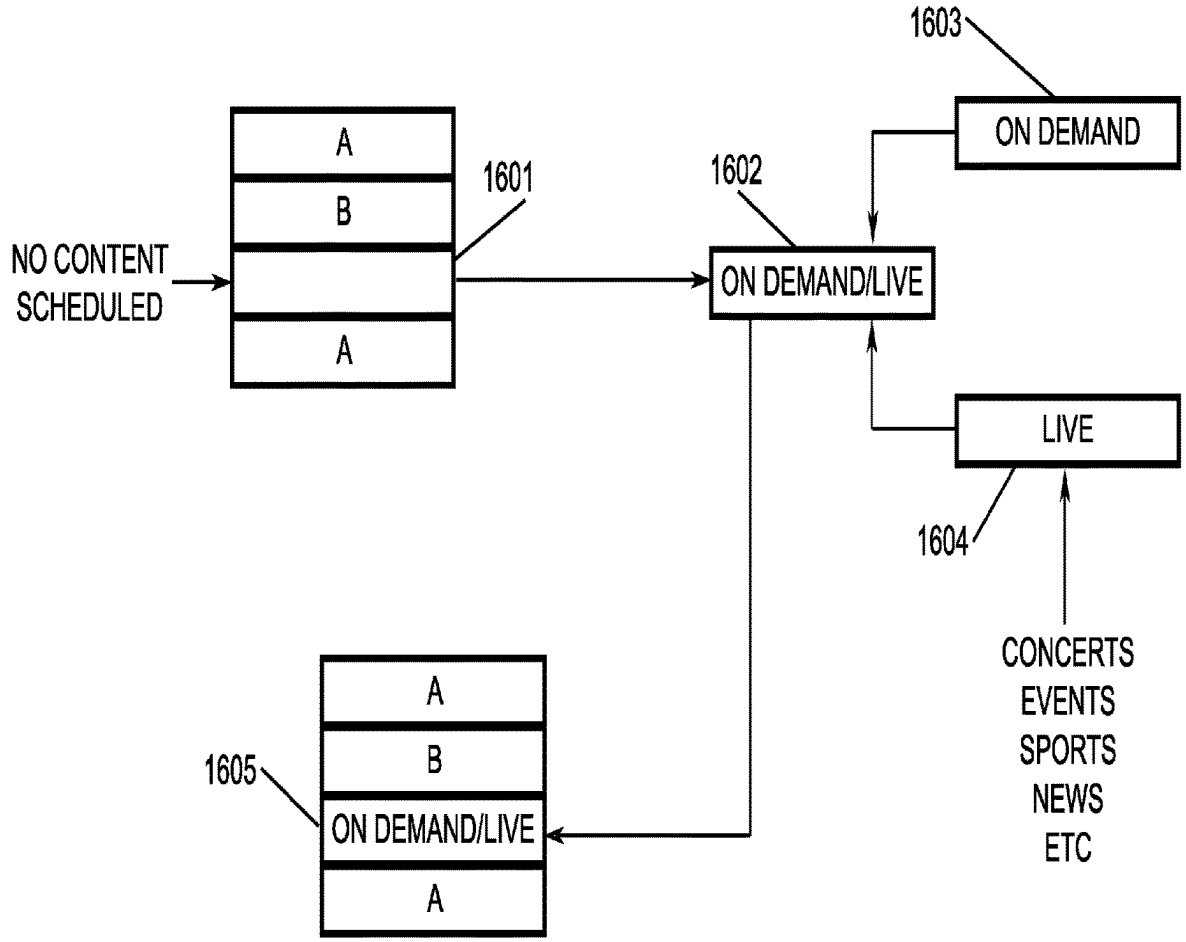
1603
ON DEMAND
A
B
1601
1602
NO CONTENT
SCHEDULED
ON DEMAND/LIVE
A
LIVE
1604
CONCERTS
EVENTS
SPORTS
NEWS
ETC
A
B
1605
ON DEMAND/LIVE
A

FIG. 16

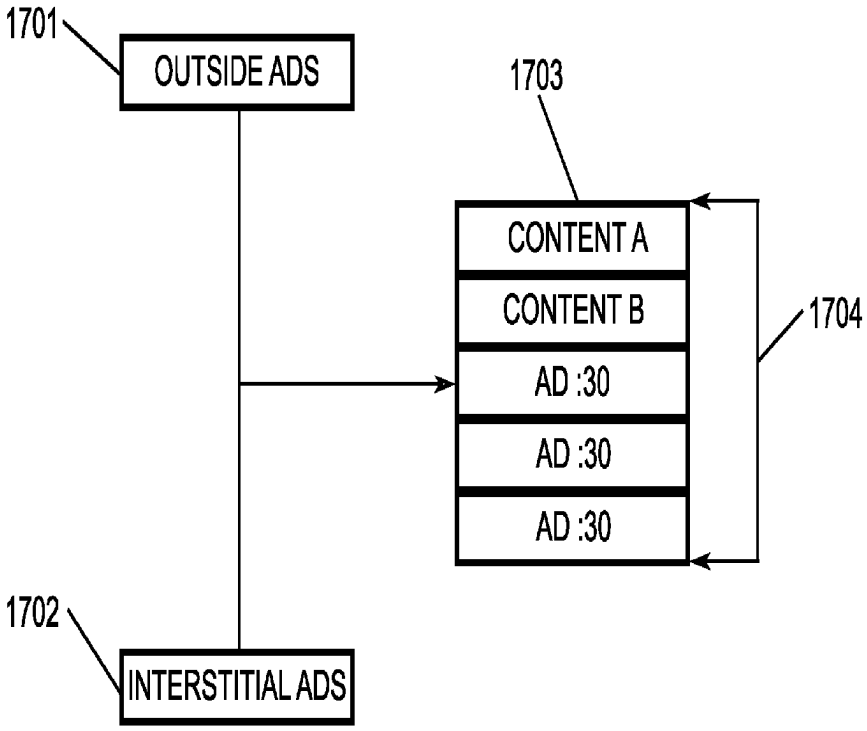
1701
OUTSIDE ADS
1703
CONTENT A
CONTENT B
AD :30
AD :30
AD :30
1704
1702
INTERSTITIAL ADS

FIG. 17

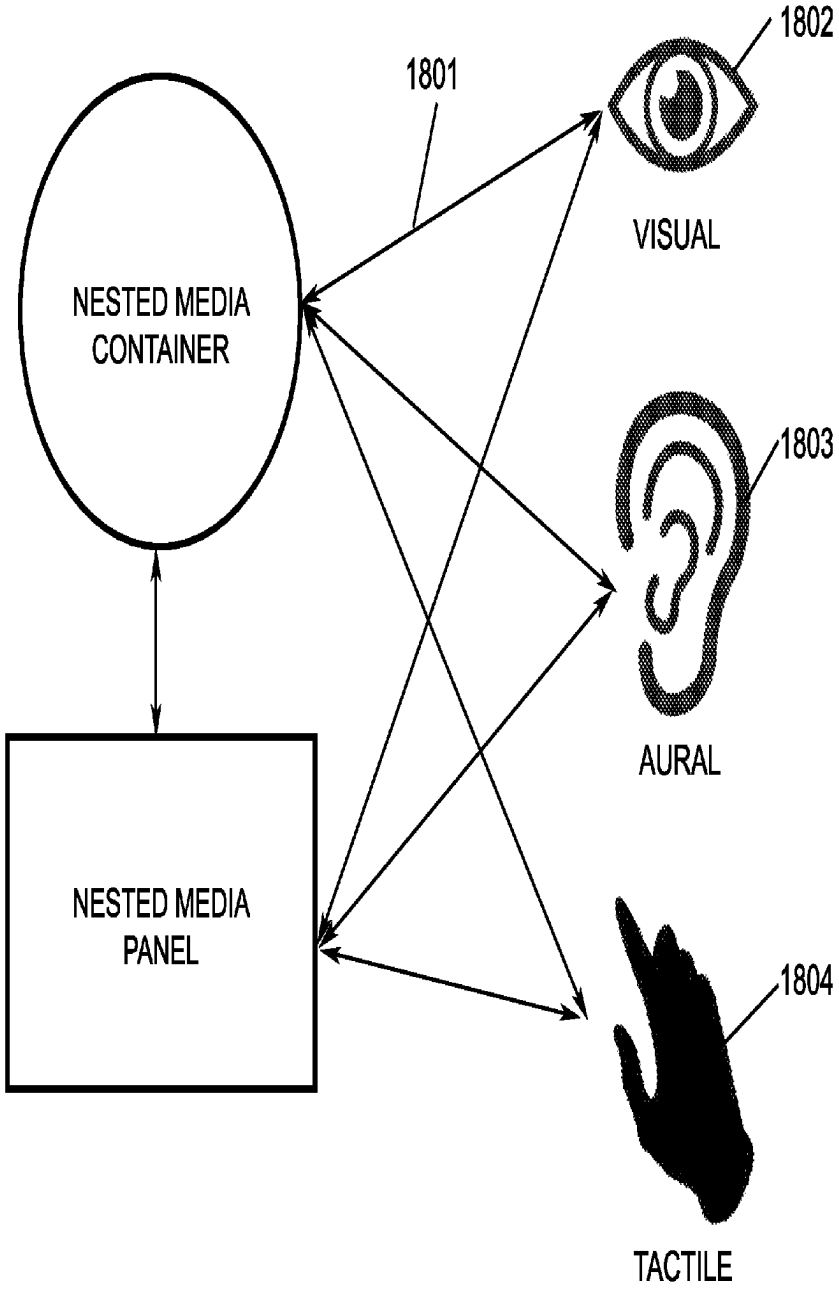
1802
1801
VISUAL
NESTED MEDIA CONTAINER
1803
AURAL
NESTED MEDIA PANEL
1804
TACTILE

FIG. 18

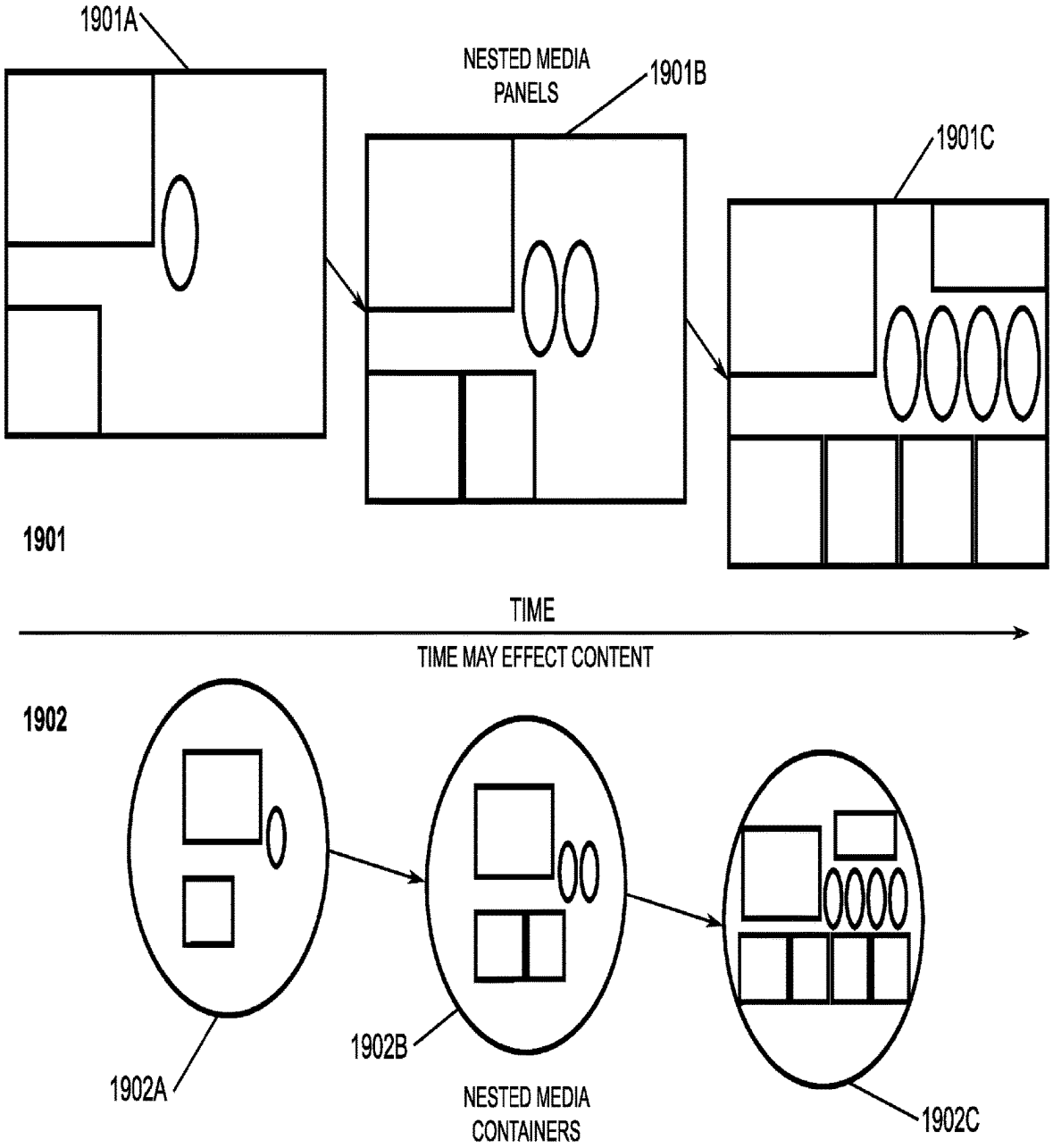
1901A
NESTED MEDIA PANELS
1901B
1901C
1901
TIME
TIME MAY EFFECT CONTENT
1902
1902A
1902B
NESTED MEDIA CONTAINERS
1902C

FIG. 19

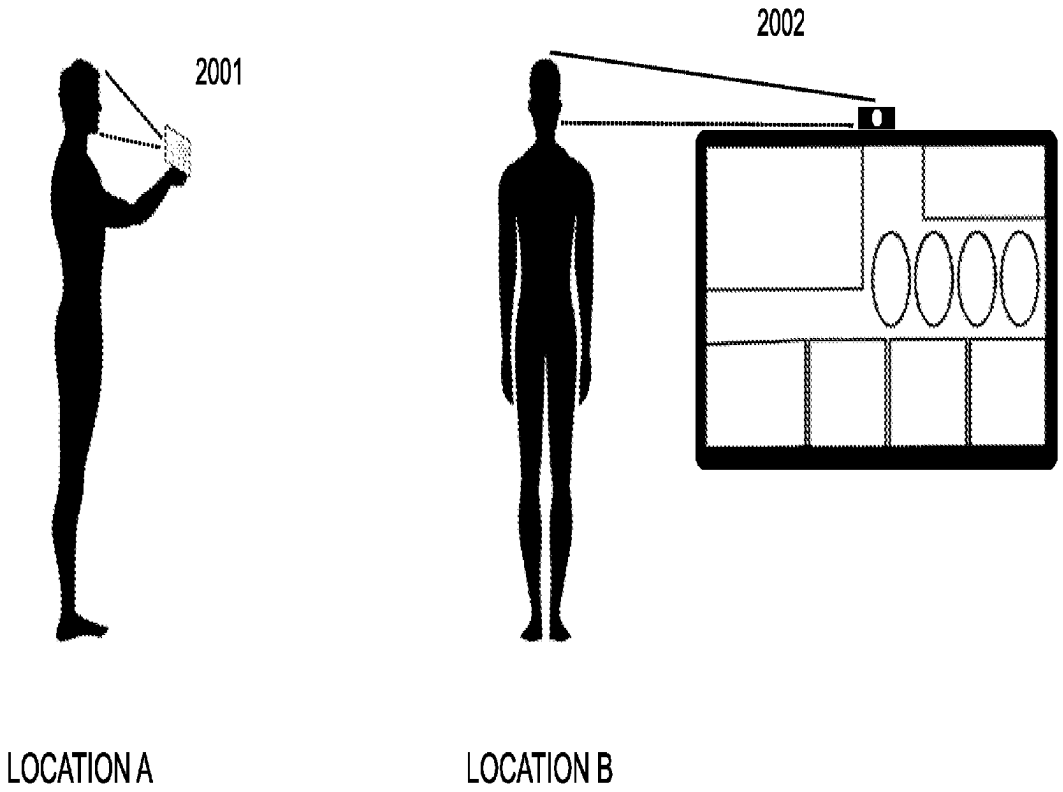

FIG. 20

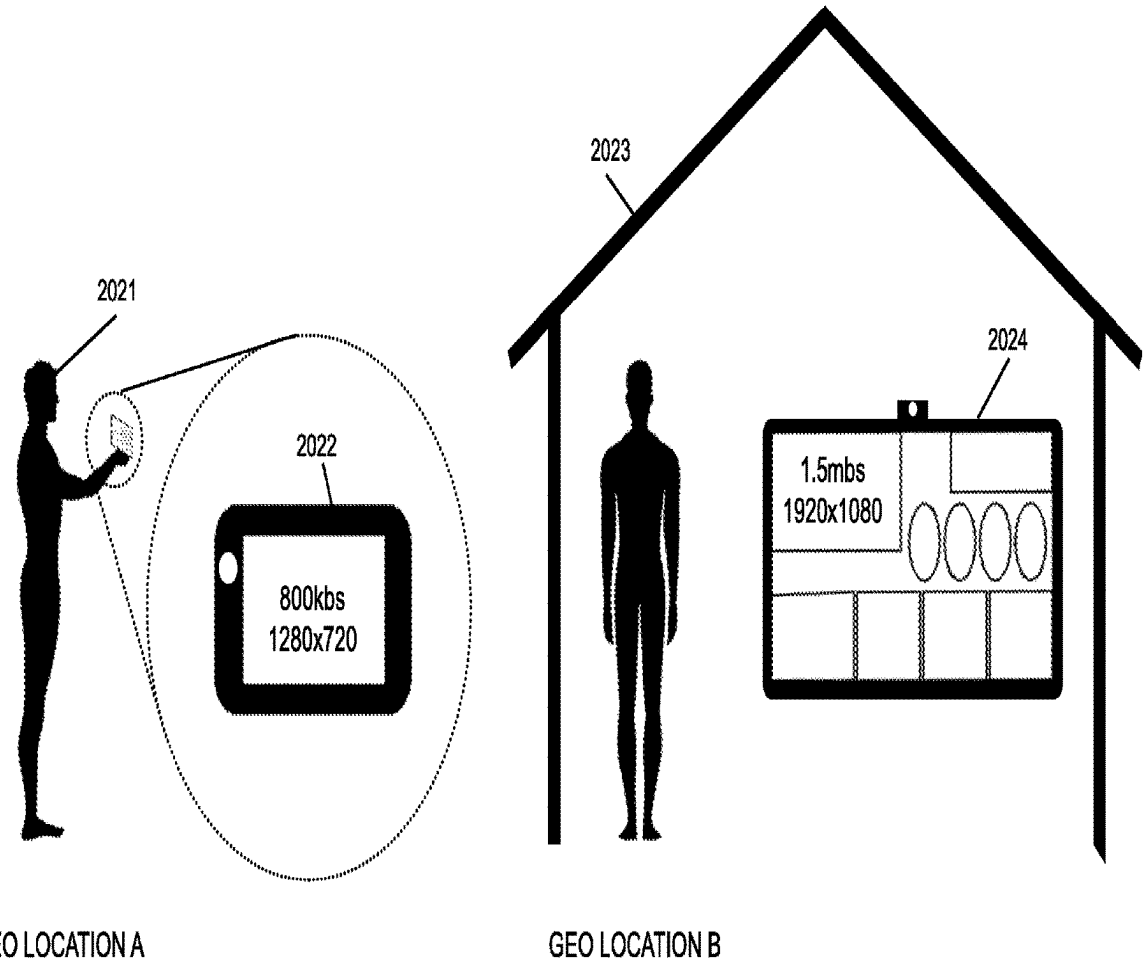
2021
2022
800kbs
1280x720
2023
2024
1.5mbs
1920x1080
GEO LOCATION A
GEO LOCATION B

FIG. 21

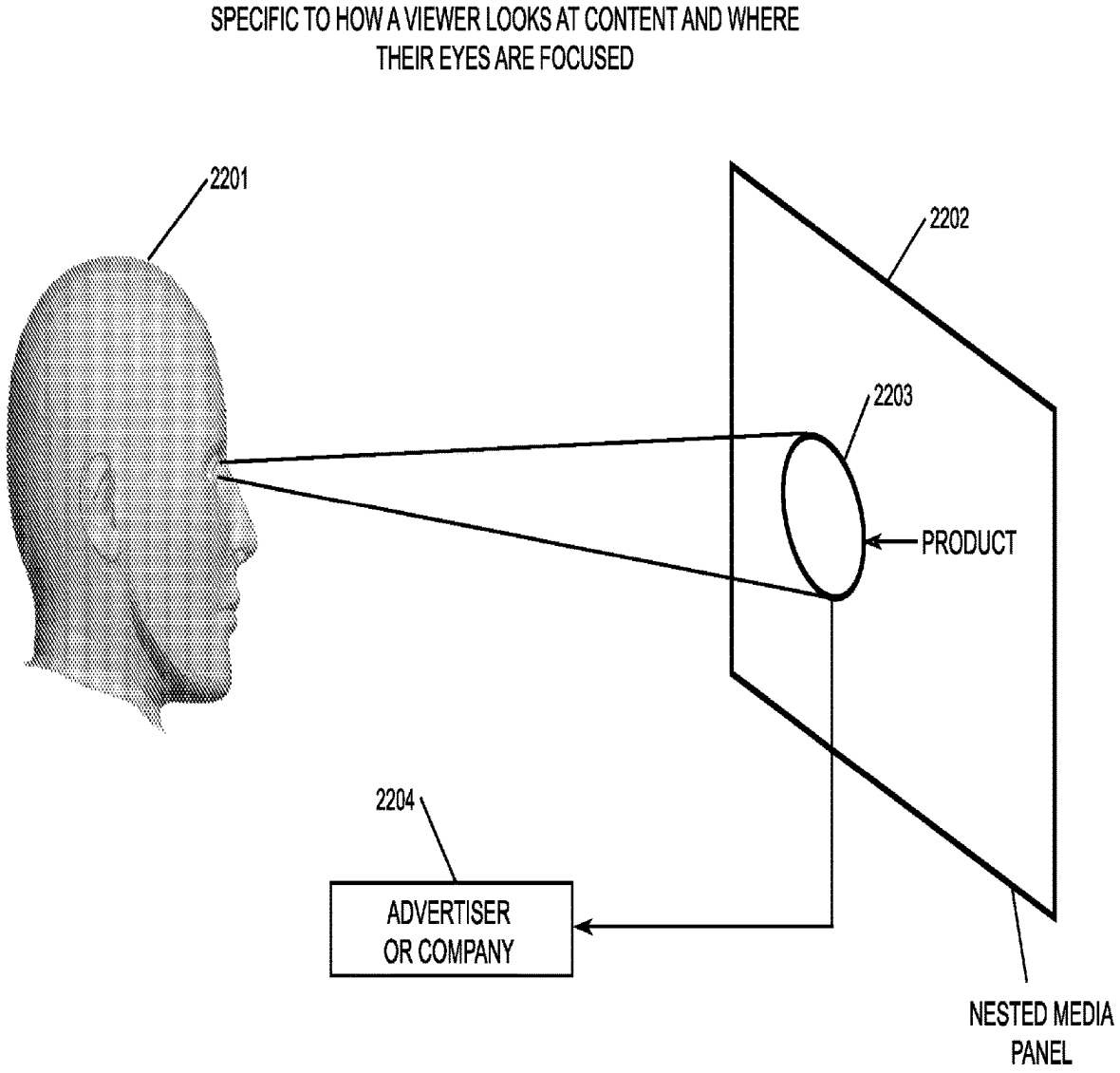
SPECIFIC TO HOW A VIEWER LOOKS AT CONTENT AND WHERE THEIR EYES ARE FOCUSED
2201
2202
2203
PRODUCT
2204
ADVERTISER OR COMPANY
NESTED MEDIA PANEL

FIG. 22

NESTED MEDIA CONTAINER, PANEL AND ORGANIZER

PRIOR APPLICATIONS

This application claims priority from Provisional Application Ser. No. 61/815,331, filed Apr. 24, 2013.

BACKGROUND OF THE INVENTION

Content, in its currently popular formats, including, but not limited to, streaming video, audio, images, articles, newspapers, magazines, periodicals, text books and blogs comprises a majority of the content that fills the world-wide-web and other user enabled networks. The concept of a portable media format, much like the VHS or DVD, has changed as different technologies and developers have created different ways to transport and distribute content and data. The contextuality of content is carried through search engines and social communities, but there is not a single multi-format container/panel and interface, that can be nested and brings these assets together into one organized multi-content deployable format.

BRIEF SUMMARY OF THE INVENTION

The inventive subject matter includes methods, processes and/or procedures to interconnect media through a content and/or data aggregation, delivery and search platform that unites the online magazine, social community, web radio, television formats, polygons and any other media format into a single portable package. These can be represented as channels and/or environments within panels or containers, which can then be pushed, pulled or broadcast into any current or future distribution platform, including, but not limited to, gaming consoles, web enabled televisions (smart TV), mobile devices, set-top boxes, wearable devices and computers.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. **1** is a network diagram of the content server array(s) and data fetch method and/or process to populate a media panel and/or container. This method uses a distinct server array in which data, metadata, content, video, audio, images, polygons and any other related data is segmented and decentralized onto specific server slices. This allows for a unique content archetype based delivery and authentication system.

FIG. **2** is an example of content/data tethering between a Nested Media Container (NMC) and the server array, as well as the nesting component of an NMP.

FIG. **3** illustrates the tethering process between a Nested Media Container (NMC) and Nested Media Panel (NMP), and how content based objects are nested within a panel interface. The container and panel share a unified data wrapper to create, manage and track relevant metadata links from source through viewer interactivity.

FIG. **4** illustrates the panel nesting process in Z axis space. A new panel is created from the nested panels, which retains the tethering relationship of those panels to a container.

FIG. **5** illustrates an example of a user's tactile interaction with nested media containers in XYZ axial space as they relate to a user as the anchor and center of pivot.

FIG. **6** illustrates an example of a user's tactile interaction with nested media panels in XYZ axial space as they relate to a user as the anchor and center of pivot.

FIG. **7** illustrates an example of panel to container tethering in XYZ axial space.

FIG. **8** illustrates the nesting of containers and how a container can be both a parent and child.

FIG. **9** Illustrates drag & drop nesting.

FIG. **10** illustrates drag & drop content validation.

FIG. **11** illustrates the methods and process in which a nested media panel has embedded anti-piracy protocols.

FIG. **12** illustrates the process of ingesting legacy digital media formats which carries over content, data, menus and functionality into a nested media panel.

FIG. **13** illustrates an example of the drag & drop scheduling system.

FIG. **14** illustrates hierarchical data and content management based on nesting.

FIG. **15** illustrates schedule validation and content schedule conflict resolution.

FIG. **16** illustrates how on-demand and live content can be embedded into an active schedule.

FIG. **17** illustrates automatic adjustment of available time, within a schedule, when embedding advertising.

FIG. **18** illustrates various methods of user control and sensatory feedback from nested media panels and containers.

FIG. **19** illustrates the effects of time on content that is nested in a panels and/or container.

FIG. **20** illustrates accessing content through a panel or container from multiple locations using biometric authentication.

FIG. **21** illustrates location based resolution and bandwidth changes based on the different devices in the same or different locations.

FIG. **22** illustrates ocular responsive advertising where real-time data feedback is sent to advertisers on what a viewer is focused on and for how long.

DETAILED DESCRIPTION OF THE INVENTION

The following is a detailed description of the methods and apparatus for managing, manipulating and distributing content through a hierarchical nesting method and process. The system currently manages two forms of a wrapper format, and may be expanded to facilitate multi forms of wrapper format, which is a metafile format whose specification describes how different data elements and metadata coexist in a computer file. These initial wrappers, the Nested Media Container (NMC) and Nested Media Panel (NMP), work in conjunction with each other wherein the container (NMC) is the content and data management apparatus, and the panel (NMP) is the front-end user interface (UI) for viewing, manipulation and control of the content and data. Within this system, users can create customized brands as a specific channel type which will have a distinct digital thumbprint based on the contextual information of the data and meta-data that form the content of that container or panel. This contextual meta-data is relayed back to online social communities, search engines and/or applications, so that each channel container's content is indexed and searchable.

The server side content delivery method, as illustrated in FIG. **1**, involves an internally decentralized Content Delivery Network in which server hard drives, slices, partitions or segments are stored on clusters that hold that content archetype. **101** shows an example of an overall server array (both

physical and virtual) in which a load balancer **102** (both physical and virtual) manages the content and data traffic as it passes through an internal network, through a public or private network to the end user. Directly attached to the load balancer is an encoding server **109** which handles the ingest, encoding and/or trans-coding of content into the server array. Content and data is then segmented into its designated server cluster and/or drive. **103**A shows a metadata server, with a redundant clone of that server **103**B, in which any metadata that is tethered to data and/or content extracted from outside sources (e.g., but not limited to, web, databases, metadata, content) is stored, managed and manipulated within this cluster. **104**A and **104**B house the databases for the server array. The content slices hold specific content archetypes on separate sections so that the server's resources are used efficiently, in essence holding and processing data at different system resource levels based on the needs of a specific content and data archetypes. The initial content and/or data types, including but not limited to, video **105**A/**105**B, audio **106**A/**106**B, images **107**A/**107**B and polygons **108**A/**108**B. This server array, and/or content distribution system, can be pushed, pulled or broadcast to any internal or external distribution point that will accept it, including, but not limited to, containers, panels, digital billboards, near-field and wi-fi transmissions to localized receivers, web/internet, print-on-demand, satellite, cable head-end or ISP, outside storage environment, physical or virtual distribution and ingest environment. This creates a unified distribution platform that is simple, lightweight on code, and nimble enough to work on a majority of current content distribution hardware solutions. This system can also be implemented on current set-top boxes that have an internet connection as a firm-ware and operating system update, replacing the channel itself with the Nested Media Container (NMC) or Nested Media Panel (NMP) user interface.

FIG. **2** is an example of content/data tethering between a Nested Media Container (NMC) and the server array, as well as the nesting component of an NMP. **201** shows the server array as it pertains to the slices, drives and/or clusters that store, manage, manipulate, process, transport and/or deliver the content. **202** represents the entire NMC, where the container's shell is the outmost point at which data held within the container cannot move beyond, unless triggered to do so from an external and/or internal force, which can include, but is not limited to, merging with another container, data extracted from that container into another medium, ingest and/or organic functions triggering physical changes. **203** represents a tether link between the database(s) and the container's outer layer. This forms a bonded control mechanism that can include, but limited to, adjusting, changing, manipulating, deleting and/or migration of information within the database(s) whereas the outer layer becomes the master control mechanism to effect such variants. **204** shows how metadata becomes the "ether", or environment, in which any nested content and/or data archetypes sits within. This allows the metadata threads, from the server(s), array(s) or other sources, to effect the volume and size of a container based on the amount of information and content the metadata relates to. **205**, **206**, **207** and **208** represent, but not limited to, nested content and/or data containers in which data is managed, manipulated, controlled and relayed back to the server. This also allows nesting within nesting.

The process of tethering between a NMC and NMP is illustrated in FIG. **3**. **301** shows the tethered link between the two or more container types, creating a management, manipulation and data exchange where any adjustment of, but is not limited to, information, metadata and/or content will affect any tethered container(s). **302** shows example of a link between a video container, held within the NMC, and the front-end user interface which populates the video content within the NMP. **303** shows an example of a link between an audio container, held within the NMC, and the front-end user interface which populates and plays the audio content within the NMP. **304** shows an example of a link between an image container, held within the NMC, and the front-end user interface which populates the images, both still and animated, within the NMP. **305** shows an example of the link between a polygon container, held within the NMC, and the front-end user interface(s) which populates the polygons within the NMP. Polygons can also represent content and/or data at the container level, bypassing the NMP as a user interface, and creating a direct container based polygon which can be skinned as almost any conceivable object that can be replicated as a polygon based model. When nesting panels and/or containers, the system initially looks for congruencies, similarities in metadata, content, audio, video, text, images and any other matching methods, procedures and/or processes to create inter-panel or inter-container threads that dictate how the new panel or container will show the content and/or data.

FIG. **4** illustrates an example of the panel nesting process in Z axis space, where a new panel is created from the nested panels, which retains the tethering relationship of those panels to a container. **401**A shows a front-facing panel and how the hierarchical stack, or nesting, of additional panels, **401**B-**401**D, on the Z axis **402**, creates a new combined panel state **403** in which content is nested based on several factors, including its hierarchical information. The method, process and/or procedure by which content and data/metadata is combined includes, but is not limited to, mathematical boolean expressions, parent/child relationships, value of data based on space between panels, adjustments of a panel in either X, Y or Z space, relationship of data within a container or panel and data adjustments based on time sequences. **404** shows the continual tethering of both the stack/nested panels and the combined content panel.

Data and content interaction between a user (users) and the method, process and/or procedure of distribution and/or transportation have evolved to include, but is not limited to, heads-up displays, computer screens, augmented reality devices, mobile devices and holography. FIG. **5** illustrates an example of a user's interaction including, but not limited to, tactile, retinal and/or aural with virtual and/or physical Nested Media Containers (NMC) in XYZ axial space as they relate to a user as the anchor and center of pivot through any of the described methods. **501** illustrates a top view of a user's interaction with NMCs, wherein **501**A shows an axial array as it relates to the user **501**C, and how NMCs **501**B can be controlled through, but not limited to, tactile interaction, gesture control, motion control, human input devices, audible control and/or any other method in which visual data can be manipulated and/or controlled. **502** shows the right side view of a user **502**C interacting with the NMCs **502**B and a prospective axial array path **502**A. **503** shows a front view of a user **503**C interacting with the NMCs **503**B and a prospective axial array path **503**A.

FIG. **6** illustrates an example of a user's interaction including, but not limited to, tactile, retinal and/or aural with virtual and/or physical with Nested Media Panel (NMP) in XYZ axial space as they relate to a user as the anchor and center of pivot through any of the described methods. **601** illustrates a top view of a user's interaction with NMPs, where **601**A shows an axial array, as it relates to the user

601C, and how NMPs 601B can be controlled through, but not limited to, tactile interaction, gesture control, motion control, human input devices, audible control and/or any other method in which visual data can be manipulated and/or controlled. 602 shows the right side view of a user 602C interacting with the NMPs 602B and a prospective axial array path 602A. 603 shows a front view of a user 603C interacting with the NMPs 603B and a prospective axial array path 603A.

FIG. 7 illustrates the combined view of both NMCs and NMPs and their spatial relationship to each other and the user(s). From the top view 701, the tethering between the parent containers and panels, 701A and 701B, shows an example of a direct nesting relationship, as well as an initial parent/child hierarchy. 701A and 701B are examples of nested children within 701C, which is an example of the overarching parental container. FIGS. 702 and 703 reflect this same hierarchical relationship from the right and front perspectives, whereas 702A, 702B, 703A and 703B are examples of the initial parent containers with respect to their nested NMPs, and 702C and 703C represent examples of the overarching parental container.

This system and its processes methods and/or procedures tracks, manages, manipulates and/or stores the hierarchical relationship of content that is embedded within a NMC or NMP. FIG. 8 illustrates an example of the nesting methods, processes and/or protocols for both containers and/or panels, and how each generation and/or level of nesting can inherit the parental and/or child role. 801 shows the top most container, or Master Container, which has the highest level in the hierarchical stack. 802 shows the 2nd tier child which nests within the parent container 801. 803 shows a 3rd tier child where 802 has now become the parent to that container. 804 shows a 4th tier child where 803 has now become the parent to that container. This nesting process can waterfall down to indefinite levels.

Content, within the embodiment of this invention, held either in a NMC or NMP, can be dragged and dropped into a hierarchical stack. FIG. 9 illustrates an example of a piece of content and/or data 901 being dragged into a content array and/or stack 902 in which multiple pieces of content and/or data are then combined 903 into a new content snapshot. Any content and/or data, when originated from the server array FIG. 1, can also be dragged and dropped into a NMC or NMP as described in FIG. 10. This process includes a protocol, process and/or method for data validation which creates a constant metadata tether 1001 between the nested content and the server. This validation, both direct and indirect 1002, virtual and physical, allows for real-time and/or pre authentication of each piece of content and/or data as it is being shown. The implementations of this protocol create a distinct, virtual and/or organic anti-piracy method as illustrated in FIG. 11, in which the segmented tethered content 1101 is stitched together with a container or panel 1105. This is the only point at which all the elements of the content are in a single viewable location. As a user 1106 accesses the viewable content, a multistep validation process 1102 constantly checks the outgoing data/meta-data 1103, as it relates to the content and/or data, and takes an IP snapshot of the computer or device, virtual or physical, being used to access the content and/or data 1104. This method, process, procedure and/or protocol allows for a combined content and/or data view, but as soon as a prospective content pirate tries to extract, or rip, the content data, they would only be accessing snippets of content from the server array. Since the tethering process is handled dynamically, the pirate would have a hard time trying to re-stitch together the content into an outside format or container that held the same, or similar, dynamic content and metadata. This method, process, procedure and/or protocol includes the ability to track the pirate's movements and/or attempts to illegally secure the content and/or data, in essence, leaving a distinct digital fingerprint which can be tracked throughout its movement and lifetime.

There are many physical and virtual digital legacy formats, including, but not limited to, DVDs, Blu-Rays, HD DVD, CD-Roms and optical based mediums, in which content is authored into an interactive environment. The methods, processes procedures and/or protocols of this invention include, but are not limited to, legacy format ingest system(s) in which any content and/or data that has been authored into a unified medium can be extracted, manipulated, ingested and/or stored, whether pushed or pulled, into a NMC or NMP through the server array. FIG. 12 illustrates this process in which authoring elements 1201 including, but not limited to, JPEG, MPEG 2 (all formats), AC3, DTS and any other format wrapper is ingested along with any other authoring assets 1202 and programming elements 1203, which can include, but is not limited to, GRPMs, JavaScript, Java code, highlight and button mapping data, video chapter breaks, button functionality, user functions, digital author signatures, pre and post commands and any other program data that relates to authored content. The NMC/NMP ingest 1204 process, for example, can take a DVD 1205 and menus 1206 and reorganize that data into an NMC or NMP 1207 so that the same, or enhanced, functionality and content from the originating DVD are carried into the container and/or panel. This process and method allows for a unified virtual portable digital content format that can be, but not limited to, moved, migrated, transferred, transported, affected, manipulated, managed and/or stored as either a container and/or panel into any virtual or physical device, between devices and/or users based upon authentication protocols described herein and/or defined by the content owner.

The programming of content is handled through a method of drag and drop scheduling as illustrated in FIG. 13. This is an example of where any content asset type, 1301-1306, can be dynamically dragged and dropped into a live, or pre-programmed, play-out schedule 1307. This scheduler can play, in succession, different content types, including, but not limited to video, audio, live events, images (as still, galleries, or galleries with audio), advertisements, magazines (with or without video and/or audio content) and any other form of content and/or data. Content and/or data can be swapped or changed up to seconds before going live.

Play-out schedules can also be organically created as illustrated in FIG. 14. This example shows how multiple containers or panels 1401, once nested or sub-nested, can created an aggregate schedule 1402 of the content and/or data that is held within each NMC or NMP. If there are any scheduling conflicts, as illustrated in FIG. 15, in which two or more content programs 1501 share the same time schedule, the system can suggest alternate times, suggest on-demand content which they can schedule when they choose to replace one or more of the conflicts, or give the user a choice of what content to omit and what to accept into their custom schedule 1501.

FIG. 16 illustrates an example of how on-demand and live content can be embedded into an active schedule.

Users can drag and drop live and/or on-demand events/content and/or data into the scheduling system as illustrated in FIG. 16. Where a schedule 1601 may be made up of content and/or data that can be stored on the server array or

content that is sourced or stored outside of the array can be inserted into the schedule. Examples like on-demand **1603** and live events/content **1604** are ported through a virtual or physical scheduling container **1602**, which can then be embedded into any schedule, panel and/or container **1605** that the user has security access to. Giving flexibility and numerous options for anyone scheduling content for their NMCs or NMPs. This is extremely useful for communities, both virtual and physical, and/or organizations that prefer to communicate, move or behave in sync with each other. This includes the scheduling system's ability to notify user, users, community, organizations and/or social groups about upcoming content schedules within a pre-defined and/or organic timeframe and/or sequence.

Much like FIG. **16**, where outside content and/or data can be embedded into a schedule, FIG. **17** illustrates automatic adjustment of available time, within a schedule, when embedding advertising or any other form of marketing. Where internal or external ads **1701**, which is example of any advertisements that are not held within a user's container or panel, as well as any interstitial ads **1702**, which includes, but is not limited to any content advertisements within a user's channel, container and/or panel, content advertisement within an outside user's channel, container and/or panel and any other source of interstitials when added to a schedule **1703** automatically adjust the time available **1704** for additional content or advertisement to be added. The managing user of that schedule will be notified of any remaining time available.

FIG. **18** illustrates various methods of user control and sensatory feedback to and/or from NMCs and NMPs. **1801** illustrates the two-way communication between an NMC and/or NMP and a user's control and feedback via sensatory responses. These can include, but are not limited to, visual **1802**, aural **1803**, tactile **1804** and any other interactive sensatory control and feedback method, solution, process and/or procedure that is known or is developed in the future.

Time can affect any content and/or data that is held within a NMC or NMP as illustrated in FIG. **19**. These effects on an NMP **1901** can include, but are not limited to visual shifts of content and/or data, addition or subtraction of content, reorganization of content and/or merger of content. **1901**A-**1901**C shows examples of content and/or data additions over time. The same time variants affect NMCs **1902** in the same fashion, where **1902**A-**1902**C illustrates content and/or data additions over time.

NMCs and NMPS, when accessed from different virtual, physical and/or altered locations, can have biometric, or other forms, of individual authentication as illustrated in FIG. **20**. In this example a user in location A **2001** is viewing an NMC or NMP via a mobile device in which they are authenticated using optical recognition technology. There are many modes and methods of biometric authentication including, but not limited to, optical recognition, thumbprint, DNA, bio-feedback, human body frequency fall-off and many other developed and as-yet to be developed methods, processes, procedures and protocols. Any or all of these methods, processes, procedures and protocols can be used to authenticate access to an NMP and/or NMC from any location that has access the server array, including, but not limited to internet, intranet, extranet, wi-fi and/or Bluetooth. **2002** shows an example of a second location, location B, in which a user is authenticated visually through a smart television.

FIG. **21** illustrates an example of location based resolution and bandwidth changes based on different devices in the same or different locations. Where a user at geo location A **2021** will see content through an NMC or NMP which automatically adjusts the resolution and bitrate to be optimized for both the device being used **2022** to view and content and the available bandwidth to that device at the time of viewing. Geo location B **2023** represents a second location, in this case a home, in which the device where the NMC and/or NMP being viewed is on a larger format smart TV **2024**.

The responsive methods FIG. **22** gives an example of ocular responsive advertising where real-time data feedback is sent to advertisers **2204** on what a viewer **2201** is focused on **2202** and for how long. This method, process, procedures and protocol of real-time responsive feedback allows a more organic process for advertisers and companies when making critical market and consumer based decisions, and allows them to adjust and effect changes back to the device **2202** in which the user is viewing the content. This can include, but is not limited to, aural, tactile, optical, audible and/or any other sensatory capture method. This also allows for multiple viewers to be identified and tied to their viewing habits, as well as track how long they are actively or inactively viewing the content.

Thus, specific embodiments and applications of the inventive subject matter have been disclosed. It should be apparent, however, to those skilled in the art that many more modifications besides those already described herein are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims.

The invention claimed is:

1. A system for displaying and scheduling media comprising:

content storage configured to store content data;

a nested media container system comprising storage configured to store one or more nested media containers, each comprising:

a content location provided by the content storage, the content location including content data; a set of metadata describing the content data, the metadata including a content type of the content data and a hierarchy on a Z-axis;

a set of links to nested media containers;

a dynamic content scheduling system for distributing content in succession, the dynamic content scheduling system configured to:

present a user interface including a scheduling container formed from a nested media container and one or more representations of nested media containers;

receive a request to nest a selected nested media container in the scheduling container, the request including scheduling timing;

nest the selected nested media container in the scheduling container, the nesting including: add the selected nested media container to the set of links in the scheduling container;

add the scheduling timing to the set of metadata in the scheduling container;

a nested media panel system configured to prepare for display the scheduling container, the nested panel system comprising a processor and configured to:

receive a request to prepare for display the scheduling container;

determine a scheduled nested media container to display within the scheduling container based at least in part on the metadata;

select a nested media panel based at least in part on a correspondence between the scheduled nested media

container and a nested media panel, the correspondence based at least in part on determining congruencies in metadata or content between the nested media containers linked within the nested media container;

for each nested media container within the set of links, create an inter-panel thread corresponding to a nested media panel for each linked nested media containers within the set of links to prepare the nested media containers that exist within the set of links for display;

receive display data based on the linked nested media containers as prepared from corresponding nested medial panels;

provide the display data and a link to the scheduled nested media container to the nested media panel to prepare for display a combination of the display data and the scheduled nested media container based at least in part on the metadata of the linked nested media containers and the hierarchy on the Z-axis of the linked nested media containers, the combination forming a combined display data; and provide the combined display data for display.

2. The system of claim **1**, wherein the scheduling container forms a linear schedule of a set of scheduled media containers.

3. The system of claim **1**, wherein the dynamic content scheduling system is further configured to:

receive a second request to nest a second selected nested media container in the scheduling container, the second request including second scheduling timing;

nest the second selected nested media container in the scheduling container, the nesting including:

add the second selected nested media container to the set of links in the scheduling container;

add the second scheduling timing to the set of metadata in the scheduling container.

4. The system of claim **3**, wherein the dynamic content scheduling system is further configured to determine a scheduling conflict between the selected nested media container and the second selected nested media container; and provide an indication of the conflict to the user interface.

5. The system of claim **1**, wherein to determine a scheduled nested media container to display within the scheduling container based at least in part on the metadata further comprises:

determine that no content is scheduled for display; and

select a default nested media container for display.

6. The system of claim **1**, wherein the user interface is configured to enable drag and drop of one or more representations of nested media containers into a visual schedule based at least in part on the scheduling container.

7. The system of claim **6**, wherein the one or more representations of nested media containers represent content comprising an image, a gallery of images, audio, an article, a live stream or advertising.

8. An apparatus of a dynamic content scheduling service, comprising:

a user interface configured to receive a selection from a user of a selected nested media container from a set of nested media containers;

a nested media container interface configured communicate with a nested media container system configured to store one or more nested media containers, each nested media container comprising:

a content location provided by the content storage, the content location including content data;

a set of metadata describing the content data, the metadata including a content type of the content data and a hierarchy on a Z-axis; and

a set of links to nested media containers;

a processor coupled to the user interface and nested media container interface, the processor configured to:

present a user interface including a scheduling container formed from a nested media container and one or more representations of nested media containers;

receive a request to nest a selected nested media container in the scheduling container, the request including scheduling timing;

nest the selected nested media container in the scheduling container, the nesting including:

add the selected nested media container to the set of links in the scheduling container;

determine a modified scheduling timing based on the selected nested media container; and

add the scheduling timing to the set of metadata in the scheduling container; and

transmit a link, linking to the scheduling container, to a nested media panel system for display.

9. The apparatus of claim **8**, wherein the processor is further configured to select a scheduled nested media container for display based on the scheduling timing in the set of metadata in the scheduling container.

10. The apparatus of claim **9**, wherein the processor is further configured to determine that no content is scheduled for display; and select a default nested media container for display.

11. The apparatus of claim **9**, wherein the processor is further configured to provide the scheduled nested media container to a nested media panel system configured to select a nested media panel based at least in part on a correspondence between the scheduled nested media container and a nested media panel, the correspondence based at least in part on determining congruencies in metadata or content between the nested media containers linked within the nested media container;

for each nested media container within the set of links, create an inter-panel thread corresponding to a nested media panel for each linked nested media containers within the set of links to prepare the nested media containers that exist within the set of links for display;

receive display data based on the linked nested media containers as prepared from corresponding nested medial panels; provide the display data and a link to the scheduled nested media container to the nested media panel to prepare for display a combination of the display data and the scheduled nested media container based at least in part on the metadata of the linked nested media containers and the hierarchy on the Z-axis of the linked nested media containers, the combination forming a combined display data; and

provide the combined display data for display.

12. The apparatus of claim **8**, wherein the processor is further configured to:

receive a second request to nest a second selected nested media container in the scheduling container, the second request including second scheduling timing;

nest the second selected nested media container in the scheduling container, the nesting including:

add the second selected nested media container to the set of links in the scheduling container;

add the second scheduling timing to the set of metadata in the scheduling container.

13. The apparatus of claim 12, wherein the processor is further configured to determine a scheduling conflict between the selected nested media container and the second selected nested media container; and provide an indication of the conflict to the user interface.

14. A computer program product comprising a non-transitory computer-readable storage medium that stores instructions for execution by a processor to perform operations of a dynamic content scheduling service, the operations, when executed by the processor, to perform a method, the method comprising:

present a user interface including a scheduling container formed from a nested media container and one or more representations of nested media containers from a nested media container system,

wherein the nested media container system is configured to store one or more nested media containers, each nested media container comprising:

a content location provided by the content storage, the content location including content data;

a set of metadata describing the content data, the metadata including a content type of the content data and a hierarchy on a Z-axis; and

a set of links to nested media containers;

receive a request to nest a selected nested media container in the scheduling container, the request including scheduling timing;

nest the selected nested media container in the scheduling container, the nesting including:

determine a modified scheduling timing based on the selected nested media container; and

transmit a request to the nested media container system to add the selected nested media container to the scheduling container with the modified scheduling timing.

15. The computer program product of claim 14, wherein the method further comprises to select a scheduled nested media container for display based on the scheduling timing in a set of metadata in the scheduling container.

16. The computer program product of claim 15, wherein to select the scheduled nested media container for display further comprises to determine that no content is scheduled for display; and select a default nested media container for display.

17. The computer program product of claim 15, wherein the method further comprises to provide the scheduled nested media container to a nested media panel system configured to select a nested media panel based at least in part on a correspondence between the scheduled nested media container and a nested media panel, the correspondence based at least in part on determining congruencies in metadata or content between the nested media containers linked within the nested media container;

for each nested media container within the set of links, create an inter-panel thread corresponding to a nested media panel for each linked nested media containers within the set of links to prepare the nested media containers that exist within the set of links for display;

receive display data based on the linked nested media containers as prepared from corresponding nested medial panels; provide the display data and a link to the scheduled nested media container to the nested media panel to prepare for display a combination of the display data and the scheduled nested media container based at least in part on the metadata of the linked nested media containers and the hierarchy on the Z-axis of the linked nested media containers, the combination forming a combined display data; and provide the combined display data for display.

18. The computer program product of claim 14, wherein the method further comprises to:

receive a second request to nest a second selected nested media container in the scheduling container, the second request including second scheduling timing;

nest the second selected nested media container in the scheduling container, the nesting including:

add the second selected nested media container to the set of links in the scheduling container;

add the second scheduling timing to the set of metadata in the scheduling container.

19. The computer program product of claim 18, wherein the method further comprises to determine a scheduling conflict between the selected nested media container and the second selected nested media container; and provide an indication of the conflict to the user interface.

20. The computer program product of claim 17, wherein the display data is configured for augmented reality or virtual reality.

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