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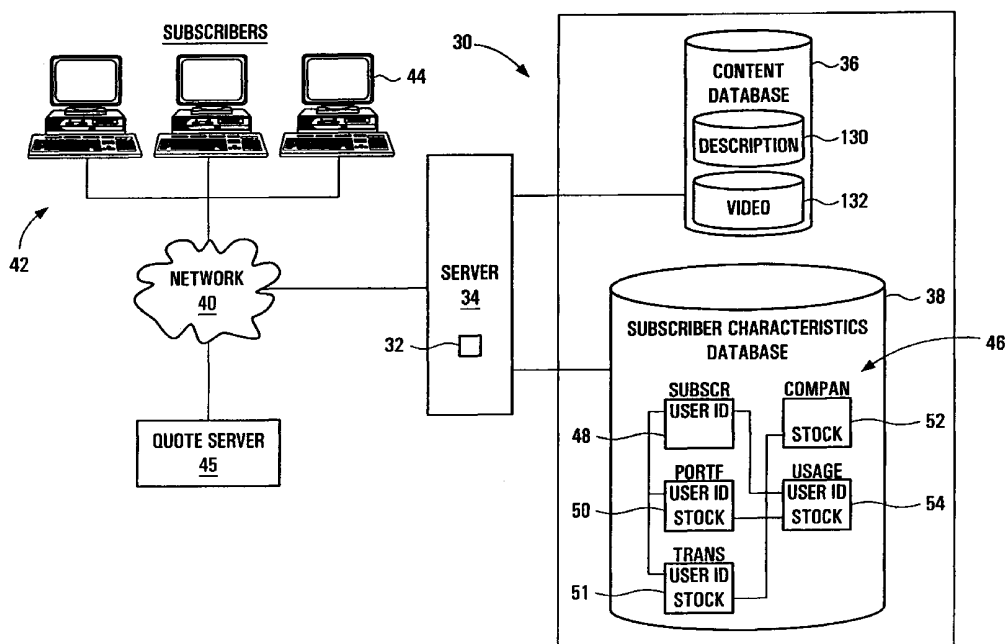
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(54) Title: CUSTOMIZED MULTIMEDIA CONTENT METHOD, APPARATUS, MEDIA AND SIGNALS



(57) Abstract: A method, apparatus, media and signals for presenting customized multimedia content are disclosed. The method involves causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments.



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CUSTOMIZED MULTIMEDIA CONTENT METHOD, APPARATUS, MEDIA AND SIGNALS

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FIELD OF THE INVENTION

The present invention relates to multimedia, and more particularly to methods, apparatus, media and signals for presenting customized multimedia content.

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BACKGROUND OF THE INVENTION

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A variety of ways of obtaining text and/or multimedia information over a network such as the Internet presently exist. For example, one existing method involves a user downloading and installing specialized software on the user's computer, and using the specialized software to specify topics of interest, such as business news, travel features, or individual stocks, for example. The user may then configure the software to download text and still images relating to the specified topics of interest, either periodically or spontaneously in response to a user command. The user must then use the specialized software to manually navigate between individual documents relating to the topics of interest, viewing one such document at a time. If the user wishes to view a significant number of documents, such manual navigation may be inconvenient. In addition, the user may be presented with an unrealistically high number of documents to view, with the result that the user may have to waste time sifting through titles of news stories that are not actually of any interest to the user.

Alternatively, search engines may be employed, however, the manual entry of search criteria and manual navigation among search results may also be inconvenient. Also, depending on the search criteria employed by the user, the user may be either inundated with irrelevant information, or alternatively, might find no relevant information even though relevant information exists in the searched resources and could have been located if different search criteria had been used.

Another existing method involves a user navigating to a central web server using a web browser. The user may manually select up to three video clips, identified by broad, static titles such as "top story" or "sports" for example. The web server then presents the video clips sequentially in a newscast. However, the necessity of manually selecting the video clips of interest may be inconvenient for a user. In addition, the video clips available on the server are intended to be of general interest, and the selection of clip identified by a broad title such as "movies" may result in a user being presented with superfluous information in which the user is not actually interested.

In addition, when two video segments are played sequentially, this may result in a "jump cut", which is a visual discontinuity which occurs when two similar scenes corresponding to different moments in time are spliced together. For example, in a typical television newscast, each story might include video of the news announcer or anchor introducing the story, followed by narrated video footage of the subject of the story, followed by further video of the news anchor's closing remarks relating to the story. If the first such story and the third such story were spliced together, removing the second story, for example, the position of the news anchor on the television screen at the end of the first story would not precisely correspond to the anchor's position on the screen at the beginning of the third story, and as a result a viewer would observe a disconcerting instantaneous movement of the anchor from one position to another position.

Thus, there is a need for a way to conveniently provide relevant multimedia content to a user, while reducing the likelihood that jump cuts will occur.

SUMMARY OF THE INVENTION

5 The present invention addresses the above need by providing, in accordance with one aspect of the invention, a method and apparatus for presenting customized multimedia content. The method involves causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a
10 continuous video program including the segments. The apparatus includes a processor circuit configured to cause the video segments to be successively played.

Causing video segments having information content associated with the particular subscriber to be successively played may reduce the likelihood that
15 the subscriber will be presented with irrelevant information in which he or she is not interested, and may instead result in the subscriber being presented with more relevant information, in less time and with less effort. In addition, as the segments have smooth transition features and are successively played to produce a continuous video program, this eliminates the need for the user
20 to constantly provide manual instructions to play each individual segment in succession. Thus, a user may sit back and relax while the video segments are played. The smooth transition features serve to reduce or eliminate the occurrence of jump cuts, thereby improving the quality of the user's viewing experience. For example, the user may view the continuous video program
25 as a smooth seamless newscast, and may not even realize that the newscast has been assembled from individual segments.

The method preferably further involves identifying the video segments having information content associated with the particular subscriber. The processor circuit may be configured to perform this identification. For example, in one

embodiment of the invention, a subscriber may simply log onto a server, which then automatically identifies video segments of interest to the particular subscriber. In addition to reducing the likelihood that the subscriber will be presented with superfluous information, this may further reduce the amount of manual interaction required on the part of the user.

Identifying the video segments preferably involves accessing a content database for content associated with at least one subscriber characteristic of the particular subscriber. The apparatus may include the content database in communication with the processor circuit, which may be configured to access the content database.

The method may further involve storing, in a subscriber database, at least one subscriber characteristic associated with each particular subscriber of a plurality of subscribers. The apparatus may therefore include a subscriber database in communication with the processor circuit, which may be configured to store the subscriber characteristic in the subscriber database.

The method may involve acquiring at least some of the subscriber characteristics from the subscribers. The processor circuit may be configured to achieve this.

Storing the at least one subscriber characteristic preferably includes storing an identification of an investment holding of the particular subscriber, and may also include storing an identification of at least one transaction made by the particular subscriber relating to the investment holding. The processor circuit may be configured to store such characteristics. Thus, some embodiments of the invention are particularly beneficial to investors, as a particular investor may be presented with a customized newscast including successively played video segments having information content associated with that particular investor's investment holdings.

The method also preferably involves monitoring communications between the particular subscriber and a service, and storing the at least one subscriber

characteristic preferably involves producing a usage log of usage of the service by the particular subscriber. The processor circuit may be configured to monitor the communications, and to produce and store the usage log. Thus, in embodiments where the service is an informational website, for example, the apparatus may automatically identify video segments of interest to the user based on the user's navigation among web pages at the web site, even if the user has not manually entered subscriber characteristics indicative of the user's interest.

Producing the usage log may involve recording a uniform resource locator specified by the particular subscriber. Alternatively, or in addition, producing the usage log may involve recording an Internet Protocol (IP) address associated with the particular subscriber. The processor circuit may be configured to record the URL or the IP address, as the case may be. Thus, by way of illustration, the processor circuit may automatically record an indication of the title of a web page, of a particular stock described in the web page, or of meta data describing the content of the web page, for example. This may allow for greater specificity of subscriber characteristics derived from monitoring the user's communications with the service, which in turn may allow for the system to identify video segments more closely associated with the particular subscriber.

The method preferably involves optimizing the continuous video program, which the processor circuit may be configured to achieve. For example, a playback duration of the video program, or a proportion of content of the video program, may be optimized.

Where playback duration is to be optimized, optimizing preferably involves comparing a playback duration of the continuous video program to a desired playback duration. Optimizing may then involve identifying an additional video segment in the content database having information content associated with the particular subscriber, when the playback duration of the continuous video program is less than the desired playback duration. The processor circuit

may be configured to compare the durations and to identify the additional video segment.

5 Identifying an additional video segment may involve identifying a characteristic category associated with the at least one subscriber characteristic, and identifying other video segments associated with the characteristic category. For example, if the subscriber has a technology sector stock, an additional video segment associated with the technology sector may be identified. Alternatively, or in addition, identifying an additional video segment may involve identifying another video segment associated with
10 a particular characteristic category, when the category is underrepresented in the continuous video program. Likewise, identifying an additional video segment may involve identifying another video segment in response to a video segment characteristic of a video segment already identified as having information content associated with the particular subscriber. The processor
15 circuit may be configured to carry out such identifications.

Optimizing preferably also involves eliminating a video segment identified as having information content associated with the particular subscriber, when the playback duration of the continuous video program exceeds the desired playback duration. Eliminating a video segment may involve eliminating from
20 the program a video segment associated with a particular characteristic category, when the category is overrepresented in the continuous video program. Alternatively, or in addition, eliminating may involve eliminating from the program a video segment associated with a particular subscriber characteristic, in response to a transaction history associated with the particular subscriber and with the particular subscriber characteristic. In this
25 regard, eliminating may involve eliminating the video segment when a change in a dynamic value associated with the particular subscriber characteristic is less than a threshold value derived from the transaction history. For example, if a particular subscriber's transaction history for a particular investment
30 holding indicates that the subscriber is not likely to either buy or sell when a change in the value of the investment holding is less than a certain threshold

change, the apparatus may intelligently decide to eliminate from the program a video segment corresponding to that investment holding, when the change in value of the investment holding is less than the threshold change. The processor circuit may be configured to eliminate the video segments in the above manners.

Optimizing the continuous video program may involve adjusting a proportion of content of the continuous video program in response to subscriber characteristics associated with the particular subscriber. Adjusting may involve adding to the continuous video program a video segment associated with a particular characteristic category, when the category is underrepresented in the continuous video program. Conversely, adjusting may involve eliminating from the continuous video program a video segment associated with a particular characteristic category, when the category is overrepresented in the continuous video program. The processor circuit may be configured to carry out such adjusting, adding and eliminating.

The method preferably also involves ordering the video segments into a playback sequence. Ordering may involve ordering the video segments according to relevance of each of the segments to the particular subscriber. The relevance of each of the segments to the particular subscriber may be determined in response to subscriber characteristics associated with the particular subscriber. Determining relevance may involve determining relevance in response to quantities of respective investment holdings associated with the particular subscriber. Ordering may also involve scheduling a first video segment of high relevance to the particular subscriber at a commencement of the playback sequence, and scheduling a second video segment of high relevance to the particular subscriber at an end of the playback sequence. The processor circuit may be configured to carry out such ordering, determining of relevance and scheduling.

Causing may involve causing at least one general interest video segment having information content of general interest to subscribers to be played in

the continuous video program. The processor circuit may be configured to achieve this.

5 The method preferably also involves causing at least one advertisement video segment to be played in the continuous video program, which the processor circuit may be configured to achieve.

10 Identifying video segments may involve identifying at least one advertisement video segment having information content associated with the particular subscriber. The processor circuit may be configured to perform this identification. Thus, in such an embodiment, even the advertisements in the video program may be intelligently selected so as to be of greater interest to a user than randomly selected ads.

15 The method preferably involves storing the video segments having the smooth transition features in a content database. Similarly, the apparatus preferably includes the content database in communication with the processor circuit, the content database storing the video segments having the smooth transition features.

20 Storing the video segments may involve storing video segments having, as the smooth transition features, opening and closing scenes of the video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment. Causing preferably involves causing to be successively played, video segments having opening and closing scenes of this type. The processor circuit may be configured to carry out such storing and causing.

25 In accordance with another aspect of the invention, there is provided an apparatus for presenting customized multimedia content. The apparatus includes means for causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments. The apparatus may further include means for identifying the

video segments having information content associated with the particular subscriber.

5 In accordance with another aspect of the invention, there is provided a computer readable medium for providing instructions for directing a processor circuit to present customized multimedia content, by causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments.

10 In accordance with another aspect of the invention, there is provided a signal embodied in a carrier wave, the signal including a code segment for directing a processor circuit to cause video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments.

15 Other aspects and features of the present invention will become apparent to those ordinarily skilled in the art upon review of the following description of specific embodiments of the invention in conjunction with the accompanying figures.

20 **BRIEF DESCRIPTION OF THE DRAWINGS**

In drawings which illustrate embodiments of the invention,

Figure 1 is a schematic representation of a system for presenting customized multimedia content, according to a first embodiment of the invention;

25 Figure 2 is a tabular representation of a subscriber information table stored in a subscriber database shown in Figure 1;

- Figure 3 is a tabular representation of a portfolio table stored in the subscriber database shown in Figure 1;
- Figure 4 is a tabular representation of a transactions table stored in the subscriber database shown in Figure 1;
- 5 Figure 5 is a tabular representation of a companies table stored in the subscriber database shown in Figure 1;
- Figure 6 is a tabular representation of a usage log stored in the subscriber database shown in Figure 1;
- Figure 7 is a block diagram of the content database shown in Figure 1;
- 10 Figure 8 is a tabular representation of a content description table stored in the content database shown in Figure 1;
- Figure 9 is a schematic representation of a video segment stored in the content database shown in Figure 1;
- 15 Figure 10 is a schematic representation of successive video segments of the type shown in Figure 8 arranged to produce a continuous video program;
- Figure 11 is a block diagram of a processor circuit of a server shown in Figure 1;
- 20 Figure 12 is a flowchart of a content acquisition interface thread executed by the processor circuit shown in Figure 10;
- Figure 13 is a flowchart of a subscriber characteristics acquisition thread executed by the processor circuit shown in Figure 10;
- Figure 14 is a flowchart of a communications monitoring thread executed by the processor circuit shown in Figure 10;

- Figure 15 is a screenshot of a first graphical user interface produced by the processor circuit shown in Figure 10 under the direction of the subscriber characteristics acquisition thread shown in Figure 11;
- 5 Figure 16 is a screenshot of a second graphical user interface produced by the processor circuit shown in Figure 10 under the direction of the subscriber characteristics acquisition thread shown in Figure 11;
- Figure 17 is a screenshot of a third graphical user interface produced by the processor circuit shown in Figure 10 under the direction of the subscriber characteristics acquisition thread shown in Figure 11;
- 10 Figure 18 is a screenshot of an exemplary resource identified by a URL selected by a subscriber and recorded in a usage log by the processor circuit shown in Figure 10 under the direction of the subscriber characteristics acquisition thread shown in Figure 11;
- Figure 19 is a flowchart of a custom newscast routine executed by the processor circuit shown in Figure 10;
- 15 Figure 20 is a flowchart of a data mining subroutine executed by the processor circuit shown in Figure 10; and
- Figure 21 is a flowchart of a data weeding subroutine executed by the processor circuit shown in Figure 10.

20

DETAILED DESCRIPTION

Referring to Figure 1, an apparatus for presenting customized multimedia content according to a first embodiment of the invention is shown generally at

25 30. The apparatus includes a processor circuit shown generally at 32, configured to cause video segments having information content associated

with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments.

5 More particularly, in this embodiment the processor circuit **32** is provided in a server shown generally at **34**. The processor circuit **32** is in communication with a content database **36** and a subscriber database **38**.

10 Although the databases **36** and **38** are illustrated as separate from the server **34**, it will be appreciated that alternatively, the content and subscriber databases may be integral with the server or may otherwise be provided in a single database, or may be remote from the server and in communication therewith via any suitable means, such as a network or a wireless communication link, for example.

15 The processor circuit **32** is also in communication, via a network **40**, with a plurality of subscribers shown generally at **42**, one particular subscriber being shown at **44** for illustrative purposes. In this embodiment, the network **40** is the public Internet, however, other networks may be substituted. The processor circuit is also in communication, via the network, with a remote quote server **45** for providing financial information including real-time stock prices and other real-time trading data. In this embodiment the remote quote server is provided by the Reuters service, however, alternatively, other remote quote servers, such as that provided by Comstock for example, may be substituted.

20

Subscriber Database

25 In this embodiment, the subscriber database **38** includes a relational database, in which a plurality of subscriber characteristics tables shown generally at **46** are stored. More particularly, in this embodiment the relational database is an ORACLE (™) Structured Query Language (SQL) database.

Alternatively, other SQL or non-SQL databases, such as a MICROSOFT (™) SQL database for example, may be substituted.

5 In this embodiment the subscriber characteristics tables **46** include a subscriber information table **48**, a portfolio table **50**, a transactions table **51**, a companies table **52** and a usage log **54**. However, other ways of storing and organizing subscriber characteristics may be apparent to one of ordinary skill in the art upon reading this specification. Such differences are not considered to depart from the scope of the invention as construed in accordance with the accompanying claims. Similarly, if desired, the subscriber database **38** may
10 also include various other tables.

Referring to Figure **2**, the subscriber information table is shown generally at **48**. The subscriber information table includes a plurality of subscriber information records, one of which is shown at **55**. In this embodiment, each subscriber information record **55** includes a username field **56**, a password
15 field **57**, a user ID field **58**, a full name field **60**, an address field **62**, a phone field **64**, an e-mail field **66** and a general alerts field **68**. Alternatively, fields for storing any other types of subscriber identification or information may be substituted for or added to such fields.

The username field **56** is used to store an alphanumeric string entered by the subscriber to log on and to identify the subscriber on-line, and the password
20 field **57** stores an alphanumeric password that the subscriber must enter to access certain on-line services, such as portfolio tracking of the subscriber's personal stock portfolio, for example.

The user ID field **58** stores a unique number generated and stored by the subscriber database **38**, via a built-in autoincrement function for example, to
25 uniquely identify each of the subscribers **42**.

Each of the full name field **60**, the address field **62**, the phone field **64** and the e-mail field **66** stores alphanumeric data representing the name, address, telephone number and e-mail address of the subscriber, respectively.

The general alerts field **68** stores a bit set active or inactive to indicate whether the subscriber does or does not wish to receive general news alerts which are not necessarily related to any subscriber characteristic of the particular subscriber.

5 Referring to Figure **3**, the portfolio table is shown generally at **50**. The portfolio table stores a plurality of portfolio records, one of which is shown at **69**. Each portfolio record **69** includes a user ID field **70**, a stock ID field **72**, , and an alerts field **73**.

10 The user ID field **70** contains the unique number that uniquely identifies each subscriber. Referring to Figures **2** and **3**, the user ID field **58** in the subscriber information table **48** and the user ID field **70** in the portfolio table **50** are relationally linked within the subscriber database **38**.

15 The stock ID field **72** stores a unique number to uniquely identify each stock. Referring to Figures **3** and **5**, this unique stock ID number is assigned by the subscriber database **38**, via its built-in autoincrement function, each time a new company record **95** in the companies table **52** shown in Figure **5** is generated, and is stored in a stock ID field **96** of the company record, as described below. This unique stock ID number may be used to cross-index various tables described herein to identify records relating to a given stock.

20 Referring back to Figure **3**, the alerts field **73** is used to store an indication of whether the subscriber identified by the user ID field **70** wishes to receive news relating to the stock identified by the stock ID field **72**. In this embodiment, the alerts field **73** is subdivided into a news alert field **74** for storing an indication of whether the subscriber wishes to receive press releases issued by the company that issued the stock, and a media alert field
25 **75** for storing an indication of whether the subscriber wishes to receive articles written by the news media relating to the stock. Such releases may be automatically forwarded to the subscriber by e-mail, for example.

Referring to Figures 3 and 4, the transactions table is shown generally at 51 in Figure 4. The transactions table 51 contains a number of individual transaction records, one of which is shown generally at 77. Each individual transaction record 77 includes a user ID field 78 and a stock ID field 80, which are relationally linked to the user ID field 70 and the stock ID field 72 respectively of the portfolio table 50 within the subscriber database 38, and which store corresponding unique user ID and stock ID numbers.. Each individual transaction record 77 corresponds to a separate individual transaction by the subscriber identified by the user ID field 78, in relation to the stock identified by the stock ID field 80. Each individual transaction record 77 further includes a datestamp field 82 for storing an indication of the date of the transaction, a buy/sell field 84 for storing an indication of whether the transaction was a purchase or a sale, a quantity field 86 for storing a quantity of the stock that was bought or sold, and a price field 88 for storing a price per share at which the stock was bought or sold. If desired, each individual transaction record may further include additional fields, such as a commission field (not shown) for storing an indication of a commission paid by the particular subscriber in relation to the transaction, for example.

Referring to Figure 5, the companies table is shown generally at 52. The companies table 52 stores a plurality of company records, one of which is shown at 95. Each company record 95 corresponds to an individual publicly traded stock, and is subdivided into a stock ID field 96, a stock name field 98, a stock symbol field 100, an exchange field 102, and a category/sector field 104.

The stock ID field 96 stores the unique number assigned by the subscriber database 38 via its built-in autoincrement function at the time the company record 95 is created, to uniquely identify each stock. The stock name field 98 stores a string indicating the full name of the stock identified by the stock ID field 96, and the stock symbol field 100 stores a string identifying an investment holding, which in this embodiment is a company stock, owned or specified by the subscriber. For example, the stock name field may store the

string "Broadcom Corporation", and the stock symbol field may store a corresponding string "BRCM". Referring to Figures 3 and 5, the stock ID field **96** is relationally linked to the stock ID field **72** of the portfolio table **50**, within the subscriber database **38**.

- 5 Referring again to Figure 5, the exchange field **102** stores a string identifying the exchange on which the stock is traded, such as "NASDAQ" for example.

The category/sector field **104** stores an indication of a category, which in this embodiment is an industry sector, to which the stock corresponds, such as "technology" or "mining", for example.

- 10 Referring to Figures 1 and 6, the usage log is shown generally at **54**. The usage log **54** stores a plurality of usage records, such as those shown generally at **113** in Figure 6. Each usage record **113** corresponds to a monitored communication between a subscriber and a service, which in this embodiment is an informational web-site hosted by the server **34** shown in
- 15 Figure 1. The production of such usage records may be achieved using conventional web server software and need not be described in further detail. Each usage record **113** includes an originating Internet Protocol (IP) address field **114**, a uniform resource locator (URL) field **116**, a datestamp field **118**, and a requested resource field **120**. If desired, additional fields may be
- 20 substituted or added for storing other usage information.

- Referring to Figures 2 and 6, the originating IP address field **114** stores an IP address, shown in dotted decimal format in Figure 6 for ease of illustration, from which a request received at the server **34** originated. This may include a permanent or temporarily-assigned IP address of the particular subscriber **44**,
- 25 depending on the type of internet connection used by the subscriber.

Referring to Figure 6, the URL field **116** stores a string identifying a uniform resource locator (sometimes referred to as a universal resource locator) selected by the subscriber to select a web page, and the datestamp field **118** stores numerical data representing the date and time at which the subscriber

- selected the URL. Depending on the particular URL selected, the contents of the URL field **116** may include stock symbol data **122** identifying a stock symbol to which the web page identified by the URL pertains. Similarly, the contents of the URL field **116** may include user ID data **124** identifying the unique user ID of the particular subscriber who requested the web page identified by the URL. For example, when a particular subscriber logs onto a service to check his or her personal portfolio status, the unique user ID of the subscriber would appear in the URL of the web page providing the subscriber's current portfolio information.
- The requested resource field **120** stores data representing the particular resource, or alternatively the general type of resource, requested by the subscriber. Alternatively, this field may be omitted.

Content Database

- Referring to Figures **1** and **7**, the content database **36** is in communication with the processor circuit **32**, and stores the video segments having the smooth transition features. More particularly, in this embodiment the content database **36** includes a description database **130** and a video segment database **132**. The description database **130** stores a content description table **140** containing information describing the content of a plurality of news and/or advertisement video segments. The video segment database **132** stores the video segments.

- In this embodiment, the description database **130** and the video segment database **132** are provided in separate storage media in communication with each other. The video segment database is organized as a single logical database including a current video segment area **134** for storing current video segments, a recent video segment area **135** for storing recent video segments, a video segment archive area **136** for storing video segments automatically archived by the content database, and an advertisements area

137 for storing advertisement video segments. It will be appreciated that such “areas” are not essential, however, and the various types of video segments may be stored together throughout the video segment database if desired. Similarly, the description database **130** and the video segment database **132** may alternatively be provided in a single storage medium, or may be provided in any combination of two or more storage media, any of which may be located either locally at or integral with the server **34** or remote from the server and in communication with the processor circuit **32** by any suitable communication method.

The video segment database **132** stores the various video segments in respective video segment stores, such as those shown at **138** in Figure 7.

Referring to Figure 8, the content description table is shown generally at **140**. In this embodiment, the content description table includes a plurality of content description records, one of which is shown at **142**. Each content description record **142** corresponds to a respective video segment, and includes a video ID field **144**, a description field **146**, a datestamp field **148**, a script field **150**, a link field **152**, a stock symbol field **154**, a category/sector field **156**, a time duration field **157**, and a meta data field **158** and a type field **159**.

The video ID field **144** stores a number uniquely identifying each video segment.

The description field **146** stores string data representing a description of the video segment. In this embodiment the description includes a title of the video segment and one or more delimited keywords, however, other types of descriptions may be substituted.

The datestamp field **148** contains numerical data representing the date and time of production of the video segment.

The script field **150** stores string data representing a script of the video segment, as read by a narrator.

The link field **152** stores a link to the location at which the video segment is stored. In this embodiment the link field contains a link to a storage location of a particular video segment store **138** in the video segment database **132**, however, alternatively the video segments may be stored elsewhere.

5 The stock symbol field **154** contains data representing one or more stock symbols of company stocks to which the video segment pertains. Such data may be numerical, alphanumeric or string data, for example, and may therefore be linked to either the stock symbols fields or the stock ID fields of various tables in the subscriber database, as described above. Similarly, the
10 category/sector field **156** contains data representing a category, or more particularly an industry sector, to which the video segment pertains. It will be appreciated that some video segments may refer to an industry sector without referring to any specific company or stock, and thus the category/sector field **156** is not necessarily redundant. Referring to Figures **5** and **8**, the stock
15 symbol field **154** and the category/sector field **156** correspond to the stock symbol field **100** and the category/sector field **104** of the companies table **52** in the subscriber database.

Referring to Figure **8**, the time duration field **157** stores numerical data representing a playback duration of the video segment.

20 The meta data field **158** stores meta data associated with the video segment, as discussed in further detail below.

The type field **159** stores data identifying a type of the video segment. For example, the video segment may be identified as a regular news video segment, an advertisement video segment, a general interest video segment,
25 etc. Such an identification may be stored in the type field as numeric data, or as a string, for example, or as any other suitable form of identification. In this embodiment, content description records **142** having an indication of an "advertisement" type stored in their type fields **159** have empty datestamp fields **148**, but may otherwise be similar to content description records for
30 other types of video segments.

Referring to Figures **7** and **9**, in this embodiment, each video segment stored in each respective video segment store **138** in the video segment database comprises a segment content portion **162**.

5 In this embodiment, the segment content portion **162** includes a video file **164** containing both video and audio data. More particularly, in this embodiment the video file is a RealVideo G2 file, however, other file types may be substituted.

10 Referring to Figures **9** and **10**, in this embodiment the video segments have smooth transition features, to prevent or reduce the occurrence of "jump cuts" when the video segments are played in succession. More particularly, the smooth transition features of the video segments include opening and closing scenes of the video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment. For example, the video file **164** shown in
15 Figure **9** has an opening scene **168**, scenes associated with the story shown generally at **170**, and a closing scene **172** dissimilar from the opening scene **168**.

20 In this embodiment, the opening scene **168** of the video segment typically includes a close-up view of a news anchor narrating an introduction to the video file **164**. In conventional television newscasts, the closing scene is often also a close-up view of the news anchor making his or her closing comments in relation to the story. However, if the first and fourth news stories from such a conventional newscast were spliced together, removing the second and third stories, then the position of the anchor in the close-up view at the end of the first
25 story would not precisely correspond to the anchor's position in the close-up view at the beginning of the fourth story, and therefore, a viewer viewing these two stories spliced together would view a disconcerting instantaneous movement of the news anchor on the screen, referred to herein as a "jump cut". Similarly, if two such news stories presented by two different respective news
30 anchors who had recorded the stories with the same background setting, sitting

at the same news desk for example, were spliced together, a viewer of these spliced segments would see the first anchor instantaneously disappear and the second anchor instantaneously appear in the same place, which would also be disconcerting to the viewer.

5 Thus, in order to provide a smooth transition feature to prevent such a "jump cut" from occurring, the closing scene **172** may include any scene not similar to that presented in the opening scene **168**. For example, the closing scene **172** may include a wide shot such as a wide angle view of the newsroom, a graphic such as a logo, a fade to black, a continuation of the story scenes **170**, or a suitable
10 "off camera" shot signifying the end of the video segment, or any other scene dissimilar from the opening scene **168**. Thus, as shown in Figure **10**, when two such video files are presented in sequence, the closing scene **172** of the first video file, which may be a wide angle shot of the newsroom, for example, is dissimilar from the opening scene **168** of the next video file, which may be a
15 close-up of the narrator, for example, and a jump cut will not be observed.

Alternatively, it will be appreciated that the opening scene **168** need not commence with a view of a narrator or anchor. For example, the opening scene **168** might include a title screen showing the title of the story, in which case the closing scene **172** could include a view of the narrator without resulting in a jump
20 cut.

In addition, although it is preferable to include the smooth transition features of the video segment in the video file **164** itself, this is not strictly necessary. Alternatively, for example, a Synchronized Multimedia Integration Language (SMIL) file or an Advanced Streaming Format (ASF) file may be used to
25 schedule playback of two or more video segments in succession and to schedule playback of a suitable separate still or motion "bumper" image dissimilar to either the opening or closing scenes, such as a graphic or logo for example, between each closing scene **172** and each successive opening scene **168**, for example. In such a case, the "video segment" may be viewed as
30 including both the video file and the separate image scheduled for playback

immediately before or after playback of the video file. This and other equivalent ways of causing video segments having smooth transition features to be successively played to produce a continuous video program are not considered to depart from the scope of the invention as construed in accordance with the accompanying claims.

Referring to Figures 7 and 9, with respect to advertisement video segments stored in the video segment stores 138 shown in Figure 9, it will be appreciated that an advertisement video file is not likely to have either a starting or ending scene similar to a preceding or succeeding scene respectively of another video segment, and therefore in this embodiment the advertisement video segments will usually automatically have smooth transition features, without the necessity of taking any particular steps to ensure such smooth transition features.

Processor Circuit

Referring to Figures 1 and 11, the processor circuit is shown generally at 32 in Figure 11. The processor circuit 32 includes a programmable device, which in this embodiment is a microprocessor 180 in communication with a random access memory (RAM) 182, a storage medium 184 and an input/output (I/O) unit 186, via a data bus 188.

Alternatively, the processor circuit 32 may include any programmable device or any circuit or combination of circuits capable of performing the functions described herein. Alternatively, therefore, the processor circuit 32 need not be implemented in the server 34, and may include a combination of one or more microprocessors, microcontrollers, other integrated circuits, or logic gate arrays, either at the same location or remote from each other, for example. Other such variations will be appreciated by one of ordinary skill in the art upon reading this specification and are not considered to depart from the

scope of the present invention as construed in accordance with the accompanying claims.

The storage medium **184** is used to store program codes for directing the processor circuit **32** to execute a plurality of routines, including a subscriber characteristics acquisition thread **190**, a custom newscast routine **192**, a data mining subroutine **194**, a data weeding subroutine **195**, a content acquisition interface thread **196**, an artificial intelligence routine **197**, and web server software **198** including a communications monitoring thread **199**. In this embodiment, the storage medium **184** is a hard disk drive. However, the hard disk drive is merely one example of a computer readable medium for providing instructions for directing a programmable device to perform the above routines. Alternatively, such routines may be implemented entirely through execution of software stored on other computer readable media such as a compact disc or on a floppy diskette, or a separate permanent memory (not shown), for example. Generally, any alternative methods or structures for generating a signal embodied in a carrier wave comprising code segments for directing a processor circuit to perform equivalent functions to those described herein are not considered to depart from the scope of the present invention as construed in accordance with the accompanying claims.

The subscriber characteristics acquisition thread **190** configures the processor circuit **32** to acquire subscriber characteristics relating to the various subscribers **42** shown in Figure **1**, and to store such subscriber characteristics in the subscriber database **38**.

The custom newscast routine **192** configures the processor circuit **32** to present customized multimedia to any particular one of the subscribers **42**, by causing video segments having information content associated with the particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments.

The data mining subroutine **194** and the data weeding subroutine **195** configure the processor circuit **32** to optimize the continuous video program.

5 More particularly, in this embodiment the data mining subroutine **194** configures the processor circuit **32** to identify additional video segments in the content database **36** having information content associated with the particular subscriber, when the playback duration of the continuous video program is less than the desired playback duration.

10 Similarly, in this embodiment the data weeding subroutine **195** configures the processor circuit **32** to eliminate a video segment identified as having information content associated with the particular subscriber, when the playback duration of the continuous video program exceeds the desired playback duration.

15 The content acquisition interface thread **196** configures the processor circuit **32** to communicate with a journalist or other content worker to acquire and store a video segment and its description in the video segment database **132** and the description database **130** respectively.

20 The above routines configure the processor circuit **32** to define in the RAM **182** a plurality of registers, including a user ID register **200**, a characteristics list register **202**, a last usage time/date register **204**, a video program list register **206**, a total program duration register **208**, a current stock values register **210**, a subscriber category percentage (SUB-CAT %) register **212**, a video segment category percentage (VID-CAT %) register **214**, a relevance thresholds register **216**, and a program synchronization file register **219**.

25 The user ID register **200** temporarily stores the unique user ID of a particular subscriber **44**, for use by the processor circuit **32** in identifying customized multimedia content associated with the particular subscriber.

The characteristics list register **202** temporarily stores a list of subscriber characteristics associated with the particular subscriber **44** identified by the user ID register **200**. In this embodiment, the subscriber characteristics

stored in the characteristics list register **202** include identifications of stocks owned by or otherwise associated with the subscriber.

The last usage time/date register **204** stores an indication of a time and date of a most recent communication between the particular subscriber **44** and the processor circuit **32**.

The video program list register **206** stores identifications of video segments selected by the processor circuit **32** to be included in the customized continuous video program of video segments associated with the particular subscriber **44**.

The total program duration register **208** stores a number representing the total time duration of the continuous video program comprising the video segments identified in the video program list register **206**.

The current stock values register **210** stores indications of current dynamic values associated with subscriber characteristics, or more particularly, current dollar values associated with stocks listed in the characteristics list register **202**. Such dynamic values are obtained as needed from the quote server **45** shown in Figure 1.

The SUB-CAT % register **212** stores a plurality of values representing the percentage of subscriber characteristics of a particular subscriber that are associated with each of a plurality of characteristic categories.

Similarly, the VID-CAT % register **214** stores a plurality of values, each value representing the percentage of video segments identified in the video program list register **206** that correspond to a particular characteristic category. In the present embodiment, each such value represents a percentage of the duration of the video program that corresponds to the particular characteristic category.

The relevance thresholds register **216** stores a number of relevance threshold values used by the processor circuit **32** in determining a degree of relevance of a video segment to a particular subscriber.

5 The program synchronization file register **219** stores a synchronization file for use by the processor circuit in causing the video segments to be played in the continuous video program.

OPERATION

Content Acquisition Interface Thread

10 Referring back to Figures **1**, **7**, **8**, **9** and **11**, the content acquisition interface thread **196** shown in Figure **11** configures the processor circuit **32** to communicate with a news journalist or other news content worker (not shown) to load a video segment and its description into the video segment database **132** and the description database **130** respectively of the content database **36**.
15 The journalist may be located at the location of the server **34**, or alternatively, may be located anywhere in the world and in communication with the processor circuit **32** via the network **40**.

20 The journalist first researches and writes the script for the story. The journalist then orders and obtains any existing multimedia content, such as graphics or video footage for example, required to complement the story. A recording technician then records additional multimedia content, such as video of a news anchor narrating the story, for example. Alternatively, if motion video footage is available, the additional recorded content might include only audio narration, if desired. In any event, the combination of the
25 above multimedia content is produced so as to include smooth transition features, as described above. The recorded multimedia content is temporarily stored on an editing server (not shown). In the present embodiment, the multimedia content stored on the editing server is compressed and encoded

into a suitable format, such as a Windows Media format or a RealVideo G2 format for example, prior to its storage in the content database **36**.

The journalist or other content worker then communicates with the server **34** over the network **40** using a browser (not shown) for example.

5 Referring to Figures **7**, **8**, **9**, **11** and **12**, the content acquisition interface thread is shown in greater detail at **196** in Figure **12**. The content acquisition interface thread begins with a first block of codes **220** that directs the processor circuit **32** to await receipt of a communication from a journalist indicating that a new video segment is to be added to the content database
10 **36**.

Upon receiving such a communication at block **220**, block **222** directs the processor circuit **32** to prompt the journalist to communicate an identification of the segment content portion **162** of the video segment that is to be added. More particularly, block **222** directs the processor circuit to transmit a
15 hypertext markup language (HTML) page to the journalist to provide a graphical user interface prompting the journalist to use a menu (not shown) to browse for and identify the local file location on the journalist's editing server (not shown) of the segment content portion **162**.

Upon receiving the file location in response to the prompt produced at block
20 **222**, block **224** directs the processor circuit **32** to retrieve and store the segment content portion **162** in a new video segment store **138** in the video segment database **132**. Block **224** further directs the processor circuit **32** to generate a new content description record **142** in the content description database **130** shown in Figures **7** and **8**. Block **224** then directs the processor
25 circuit to generate a link to the location in the video segment database **132** of the new video segment store **138**, and to store the link in the location link field **152** of the new content description record **142**.

The content database **38** assigns a unique number via its autoincrement function to uniquely identify the new video segment, and stores this number in the video ID field **144** of the new content description record **142**.

5 Block **230** then directs the processor circuit **32** to prompt the journalist for additional data relating to the new video segment, such as a title of the video segment and keywords, a time and date of the video segment, the script
10 corresponding to the video segment, stock symbols of stocks referred to in the video segment, an industry sector to which the video segment relates (which may be useful if no particular stocks are referred to in the segment), and a time duration of the video segment. More particularly, block **230** directs the processor circuit to transmit an HTML page (not shown) to the journalist, the HTML page containing fields and text prompting the journalist to enter the information into the fields, and a "submit" button to transmit the entered
15 information back to the processor circuit. Upon receiving the above information, block **230** directs the processor circuit to store the title and keywords as delimited string data in the description field **146** of the new content description record **142**, and to store the time and date information, the script, the stock symbols, the industry sector and the time duration in the appropriate fields **148**, **150**, **154**, **156** and **157** of the new content description
20 record **142**.

Alternatively, however, a myriad of alternative ways of obtaining and storing multimedia content information such as video segments would be apparent to one of ordinary skill in the art upon reviewing this specification. Any such
25 alternatives are not considered to depart from the scope of the invention as construed in accordance with the accompanying claims.

Subscriber Characteristics Acquisition Thread

Referring to Figures **1**, **11** and **13**, the subscriber characteristics acquisition thread is shown in greater detail at **190** in Figure **13**. Generally, the

subscriber characteristics acquisition thread configures the processor circuit **32** to store in the subscriber database **38** at least one subscriber characteristic associated with each particular subscriber **44** of the plurality of subscribers **42** shown in Figure 1. More particularly, in this embodiment, the subscriber characteristics acquisition thread configures the process circuit to acquire at least some of the subscriber characteristics from the subscribers, as described below.

The subscriber characteristics acquisition thread **190** begins with a first block of codes **240** shown in Figure 13, which directs the processor circuit **32** to determine whether a signal has been received over the network **40** indicating a request for registration by a new subscriber.

Referring to Figures 13 and 15, if such a signal is detected at block **240**, block **242** directs the processor circuit **32** to prompt the new subscriber to communicate subscriber characteristics to the processor circuit. More particularly, in this embodiment, block **242** directs the processor circuit to transmit an HTML page such as that shown at **244** in Figure 15, over the network **40** to the new subscriber. The HTML page **244** provides a graphical user interface prompting the new subscriber to enter subscriber characteristics in a plurality of characteristic fields, such as a username field **246** and a password field **248** for entry of an on-line username and password, one or more name fields **250** for entry of the new subscriber's full name, an e-mail address field **252** for entry of the new subscriber's e-mail address, and a general alerts field **254** providing an option for the new subscriber to receive general news alerts, for example. Alternatively, block **242** may direct the processor circuit to prompt the new subscriber for other subscriber characteristics, either in addition to or instead of those shown in Figure 15. The new subscriber may transmit such subscriber characteristics to the processor circuit by actuating a "submit" button **256** provided in the HTML page **244**, for example.

Referring to Figures 2, 13 and 15, block 258 then directs the processor circuit 32 to await receipt of the subscriber characteristics prompted at block 242, and upon acquiring or receiving such subscriber characteristics, block 258 directs the processor circuit to generate a new subscriber information record 55 in the subscriber information table 48 shown in Figure 2, and to store the acquired subscriber characteristics in the new subscriber information record 55. More particularly, in this embodiment, upon receiving the contents of the form fields 246 to 254 of the HTML page 244 from the new subscriber, block 258 directs the processor circuit to store the received contents of the username field 246 and password field 248 in the username field 56 and the password field 57 of the new subscriber information record 55. Similarly, block 258 directs the processor circuit to store the contents of the name fields 250, the e-mail address field 252 and the general alerts field 254 in the full name field 60, the e-mail field 66 and the receive general alerts field 68 of the subscriber information record 55 respectively. In addition, as the new record is created, the subscriber database 38, via its built-in autoincrement function, generates a unique number to uniquely identify the new subscriber, and stores this number in the user ID field 58 of the new subscriber information record 55.

Referring to Figures 1, 3, 13 and 16, blocks 260 and 262 then configure the processor circuit 32 to store, as the at least one subscriber characteristic, an identification of an investment holding of the particular subscriber.

More particularly, following execution of blocks 242 and 258, or alternatively if no new registration signal is detected at block 240, the processor circuit 32 is directed at block 260 to determine whether a signal has been received from one of the plurality of subscribers 42 indicating that a new stock is to be added to the subscriber's portfolio. For example, when the particular subscriber 44 has logged onto and is browsing a web-site provided by the server 34 shown in Figure 1, the particular subscriber may be presented with an HTML page such as that shown at 264 in Figure 16, describing the particular subscriber's current portfolio, and providing an entry field such as

that shown at **266**, allowing the particular subscriber to enter a subscriber characteristic, or more particularly, an identification of a stock that is to be added to the particular subscriber's portfolio. In the present embodiment, the particular subscriber **44** may enter an identification of the stock, such as a stock symbol, into a subscriber characteristic entry field **268** of the HTML page **264**, and may then actuate an "add" button **270** to transmit the contents of the subscriber characteristic entry field to the processor circuit **32** over the network **40**.

Referring to Figures **3**, **5** and **13**, upon receiving such a transmitted stock symbol (or other subscriber characteristic) at block **260**, block **262** directs the processor circuit **32** to generate a new portfolio record **69** corresponding to the stock to be added, such as the portfolio record **69** shown in Figure **3**. Block **262** directs the processor circuit to store the unique user ID of the particular subscriber **44** who transmitted the stock symbol, in the user ID field **70** of the new portfolio record **69**. This user ID number is identical to the contents of the user ID field **58** of the subscriber information record **55** corresponding to the particular subscriber **44**. In this regard, tracking of the user ID of the particular subscriber **44** following login may be achieved in a conventional manner and need not be described further herein. In this embodiment, block **262** further directs the processor circuit to use the stock symbol transmitted by the subscriber to search the companies table **52** shown in Figure **5**, to locate a company record **95** having a stock symbol field **100** whose contents correspond to the contents of the stock symbol transmitted by the subscriber. Upon locating such a company record **95**, block **262** directs the processor circuit to copy the contents of the stock ID field **96** of the company record **95** into the stock ID field **72** of the portfolio record **69**.

Referring to Figures **1**, **3**, **13**, **16** and **17**, blocks **272**, **274** and **276** then configure the processor circuit **32** to store, as the at least one subscriber characteristic, an identification of at least one transaction made by the particular subscriber **44** relating to an investment holding.

Following execution of blocks **260** and **262**, or alternatively if no new stock signal is detected at block **260**, the processor circuit **32** is then directed at block **272** to determine whether a signal has been received from one of the plurality of subscribers **42** indicating that a new transaction is to be added to the subscriber's portfolio. For example, when the particular subscriber **44** is browsing the HTML page **264** shown in Figure **16** representing the particular subscriber's current portfolio, the subscriber may be presented with an "add trades" button **278** corresponding to each stock in the particular subscriber's portfolio. When the particular subscriber **44** actuates one of the "add trades" buttons **278**, a signal requesting addition of a transaction relating to the corresponding stock in the subscriber's portfolio is transmitted to the processor circuit **32**.

Upon receiving such a signal at block **272**, block **274** directs the processor circuit **32** to prompt the particular subscriber **44** to enter further subscriber characteristics, or more particularly, information relating to the subscriber's transaction. To achieve this, block **274** directs the processor circuit **32** to transmit to the particular subscriber **44** an HTML page such as that shown at **280** in Figure **17**. The HTML page **280** includes a subscriber characteristic entry interface **282**, which in this embodiment includes a buy/sell field **284** for entry of an indication of whether the particular subscriber **44** has bought or sold the stock identified in the HTML page **280**, a date field **286** for entry of the date of the share purchase or sale, a quantity field **288** for entry of a number of shares bought or sold by the particular subscriber **44**, and a share price field **290** for entry of a price per share of the transaction. If desired, the subscriber characteristic entry interface **282** may also include a commission field **292**. When the particular subscriber **44** has entered such information, the subscriber actuates an "add transaction" button **294** in the HTML page **280** to transmit the contents of the subscriber characteristic entry interface **282** to the processor circuit **32**.

Upon receiving such subscriber characteristics, block **276** directs the processor circuit **32** to generate, in the transactions table **51** shown in Figure

4, an individual transaction record **77**, and to store the user ID and stock ID corresponding to the particular subscriber **44** and the stock to which the transaction and the HTML page relate, in the user ID field **78** and the stock ID field **80** respectively of the newly generated individual transaction record.

5 Block **276** then directs the processor circuit to store the contents of the buy/sell field **284**, the date field **286**, the quantity field **288** and the share price field **290** shown in Figure **17**, in the buy/sell field **84**, the datestamp field **82**, the quantity field **86** and the price field **88** respectively of the newly generated individual transaction record **77**.

10 Following execution of block **276**, the processor circuit **32** is directed back to block **240**, to continue processing as described above.

Communications Monitoring Thread

15 Referring to Figures **1**, **6**, **11**, **14** and **18**, in addition to the subscriber characteristics thread, the web server software **198** of the server **34** also directs the processor circuit **32** to store further subscriber characteristics associated with each particular subscriber **44** in the subscriber database **38**. of the plurality of subscribers **42** shown in Figure **1**. More particularly, in this embodiment the communications monitoring thread **199** of the web server software **198** configures the processor circuit **32** to monitor communications between the particular subscriber **44** and a service, and to produce and store, as the at least one subscriber characteristic, a usage log of usage of the service by the particular subscriber. In this embodiment, the service is the informational web-site maintained by the server **34** shown in Figure **1**.
20
25 Alternatively, however, communications between the particular subscriber **44** and other services may be monitored, and similarly, other methods of monitoring communications may be substituted.

The communications monitoring thread is shown generally at **199** in Figure **14** and begins with a first block **296** of codes which directs the processor circuit

32 to determine whether a signal representing a Uniform Resource Locator (URL), such as that shown at **302** in Figure **18**, has been received from one of the subscribers **42**, indicating selection of a resource such as a web-page shown generally at **300** for viewing by the subscriber, for example.

5 Upon detecting such a signal, block **298** directs the processor circuit **32** to record, in the usage log **54** shown in Figure **6**, the uniform resource locator **302** specified by the particular subscriber **44**. More particularly, after transmitting the resource **300** identified by the URL **302** to the particular subscriber **44** who transmitted the URL to the processor circuit, block **298**
10 further directs the processor circuit to generate a new usage record **113** in the usage log **54**. The processor circuit is directed to store, in the originating IP address field **114** of the new usage record **113**, an Internet Protocol (IP) address associated with the particular subscriber **44**, or more particularly, the IP address from which the particular subscriber selected the URL. Block **298**
15 further directs the processor circuit to store the URL **302** transmitted by the particular subscriber **44**, in the URL field **116** of the new usage record **113**. As discussed above in connection with Figure **6**, this URL **302** may additionally include stock symbol data **122** and/or user identification data **124**. Block **298** also directs the processor circuit to store, in the datestamp field
20 **118**, the date and time at which the particular subscriber **44** transmitted the URL to the processor circuit **32** to request the corresponding resource.

If desired, block **298** may additionally direct the processor circuit to store additional information relating to or identifying the requested resource, such as a number or a string for example, in the requested resource field **120**.
25 Such additional information may be extracted from the source code, such as the page title or meta data for example, of the requested resource. Alternatively, the requested resource field **120** may be omitted entirely.

Custom Newscast Routine

Referring to Figures **1**, **11** and **19**, the custom newscast routine is shown in
30 greater detail at **192** in Figure **19**. Generally, the custom newscast routine

5 **192** configures the processor circuit **32** to cause video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program including the segments. Customized multimedia content is thus presented to the particular subscriber.

10 In this embodiment, the custom newscast routine **192** is executed automatically in response to a particular subscriber **44** logging onto the server **34**, by entering the subscriber's username and password. Alternatively, the custom newscast routine may be invoked in response to a signal received from the particular subscriber after login, indicating a desire to view the customized newscast.

15 The custom newscast routine **192** begins with a first block of codes shown at **310** in Figure **19**, that configures the processor circuit **32** to identify the video segments having information content associated with the particular subscriber.

20 More particularly, referring to Figures **2**, **11** and **19**, block **310** first directs the processor circuit **32** to locate a subscriber information record **55** in the subscriber information table **48** shown in Figure **2**, having username field **56** and password field **57** contents identical to the username and password supplied by the particular subscriber at login. Upon locating the subscriber information record **55**, block **310** directs the processor circuit to copy the contents of the user ID field **58** into the user ID register **200** in the RAM **182** shown in Figure **11**.

25 Referring to Figures **3**, **4**, **11** and **19**, block **310** then directs the processor circuit **32** to identify subscriber characteristics associated with the particular subscriber **44** identified by the contents of the user ID register **200**. More particularly, the processor circuit is directed to locate all portfolio records **69** in the portfolio table **50** shown in Figure **3**, having user ID field **70** contents matching the contents of the user ID register **200** in the RAM **182** shown in Figure **11**. For each such located portfolio record **69**, block **310** directs the

30

processor circuit to read the contents of the stock ID field **72**, and to use such contents to address the corresponding company record **95** in the companies table **52** shown in Figure **5**. Block **310** then directs the processor circuit to append the stock symbol stored in the stock symbol field **100** of the addressed company record **95** to the contents of the characteristics list register **202** in the RAM **182**, unless the stock symbol is already stored in the characteristics list register **202**. Accordingly, following execution of block **310** the characteristics list register **202** will contain identifications of all stock symbols associated with the particular subscriber **44** identified by the contents of the user ID register **200**. Such stock symbols may be stored as delimited string data, or alternatively, in any other suitable way to allow the processor circuit to distinguish one stock symbol from the next. Alternatively, if desired, other identifications of such stocks may be stored, such as contents of the stock ID field **72** of each portfolio record **69**. More broadly, stocks are merely one example of subscriber characteristics that may be stored in the characteristics list register **202**.

Referring to Figures **1**, **6**, **11** and **19**, block **310** further directs the processor circuit **32** to determine the time and date of the most recent usage of the server **34** by the particular subscriber **44**. In this regard, block **310** directs the processor circuit to locate the usage record **113** in the usage log **54** shown in Figure **6**, having user ID data **124** in the contents of the URL field **116** matching the contents of the user ID register **200**, and having the most recent time and date stored in the timestamp field **118**. Upon locating this most recent usage record, block **310** directs the processor circuit to copy the contents of the timestamp field **118** of the usage record into the last usage time/date register **204** in the RAM **182**. Alternatively, if no usage records **113** having user ID data **124** matching the contents of the user ID register **200** can be located, block **310** directs the processor circuit to store an arbitrarily old date in the last usage time/date register **204**. As explained below, the processor circuit will not attempt to locate video segments prior to this last usage time/date, as the subscriber is unlikely to wish to view video segments

pre-dating his or her previous interaction with the server **34**. Alternatively, if desired, the processor circuit may be configured to locate in the usage log **54** the time and date of the last custom newscast received by the particular subscriber rather than the last interaction with the server, and to store the time and date of this most recent newscast in the last usage time/date register **204**.

Referring to Figures **8**, **11** and **19**, block **310** then configures the processor circuit **32** to access the content database **36** for content associated with at least one subscriber characteristic of the particular subscriber **44**. More particularly, block **310** directs the processor circuit to search the content description table **140** shown in Figure **8**, for all content description records **142** having at least one stock symbol stored in the stock symbol field **154** matching at least one stock symbol stored in the characteristics list register **202** in the RAM **182**, having datestamp field **148** contents representing a time and date equal to or more recent than the contents of the last usage time/date register **204** in the RAM **182**, and having type field **159** contents indicative of a content type other than advertisements. Thus, each such content description record **142** corresponds to a news or other non-advertisement video segment relating to a stock held by the particular subscriber, and more recent than the subscriber's last interaction with the server **34**. Upon locating each such content description record **142**, block **310** directs the processor circuit to generate a corresponding video segment record in the video program list register **206**, and to copy the contents of the video ID field **144**, the location link field **152** and the stock symbol field **154**, to a video ID field **312**, a link field **314** and a stock symbol field **315** in the new video segment record in the video program list register **206**, respectively. Block **310** further directs the processor circuit to increase the contents of the total program duration register **208** (initially zero) by the contents of the time duration field **157** of the content description record **142**.

Referring to Figures **3**, **5**, **11** and **19**, block **316** then directs the processor circuit **32** to generate current stock values representing the current values of the stocks associated with the particular subscriber **44**. In this embodiment,

block **316** directs the processor circuit to calculate total values of the particular subscriber's investment holdings. Block **316** directs the processor circuit to address each stock symbol stored in the characteristics list register **202** in the RAM **182**. For each such addressed stock symbol, block **316** directs the processor circuit to locate and address the company record **95** in the companies table **52** shown in Figure **5** having stock symbol field **100** contents matching the currently addressed stock symbol, and to copy the contents of the stock ID field **96** of the addressed company record **95** into a calculation area (not shown) of the RAM **182**, to thus produce and store a currently addressed stock ID corresponding to the currently addressed stock symbol.

Block **316** then directs the processor circuit to locate and address all individual transaction records **77** in the transactions table **51** having user ID field **78** contents and stock ID field **80** contents matching those of the user ID register **200** and the currently addressed stock ID in the calculation area of the RAM. Block **316** directs the processor circuit to subtract the sum of the contents of the quantity field **86** of all addressed individual transaction records **77** having a "sell" indication in their buy/sell fields **84**, from the sum of the contents of the quantity field **86** of all addressed individual transaction records having a "buy" indication in their buy/sell fields **84**, to yield a net current quantity of the stock owned by the particular subscriber. Block **316** further directs the processor circuit to communicate via the I/O unit **186** and the network **40** shown in Figure **1**, with the remote quote server **45**, and to query the quote server for the current share value of the stock identified by the stock ID stored in the calculation area of the RAM. Upon receiving the current share value of the stock from the quote server, block **316** directs the processor circuit to multiply this current share value by the net current quantity of the stock, to obtain the net current value of the particular subscriber's holding of that stock. Block **316** directs the processor circuit to store the currently addressed stock symbol and this calculated net current value in a stock symbol field **318** and a stock value field **320** respectively, of a new stock value record in the current stock values register **210**. Although calculation of

such current total stock values is not necessary, it facilitates data mining for additional video segments and data weeding to eliminate superfluous video segments, and also facilitates ordering of the video segments according to relevance to the user.

5 Referring to Figures **11** and **19**, blocks **322**, **324**, **326** and **328** configure the processor circuit **32** to optimize the continuous video program. In this embodiment, optimizing includes optimizing a playback duration of the continuous video program. Alternatively, however, the continuous video program may be optimized in other ways, such as optimizing content, for
10 example.

Block **322** configures the processor circuit **32** to compare a playback duration of the continuous video program to a desired playback duration. More particularly, block **322** directs the processor circuit to compare the contents of the total program duration register **208** in the RAM **182** to a predefined
15 desired playback duration, which in this embodiment is a range of **20** to **25** minutes. Alternatively, the desired playback duration may be defined in other ways, such as other time duration ranges, or may simply include a minimum duration or a maximum duration, for example.

If the contents of the total program duration register **208** represent a playback
20 duration that is shorter than the desired playback range, the processor circuit **32** is directed at block **324** to call the data mining subroutine **194**. Effectively, the data mining subroutine **194** configures the processor circuit **32** to identify an additional video segment in the content database having information content associated with the particular subscriber, when the playback duration
25 of the continuous video program is less than the desired playback duration. The data mining subroutine **194** continues to identify additional video segments in this manner and add them to the video program list register **206**, until the playback duration of the continuous video program is no longer less than the desired playback range. The data mining subroutine is discussed in
30 greater detail below.

If at block **322** the contents of the total program duration register **208** are not less than the desired playback range, block **326** directs the processor circuit **32** to determine whether the contents of the total program duration register **208** exceed the desired playback range. If so, the processor circuit is directed at block **328** to call the data weeding subroutine **195**. Effectively, the data weeding subroutine **195** configures the processor circuit **32** to eliminate a video segment identified as having information content associated with the particular subscriber **44**, when the playback duration of the continuous video program exceeds the desired playback duration. The data weeding subroutine directs the processor circuit to continue eliminating video segments in this manner until the contents of the total program duration register **208** no longer exceed the desired playback duration range. The data weeding subroutine is discussed in greater detail below.

Following execution of either the data mining subroutine **194** or the data weeding subroutine **195**, or alternatively if the contents of the total program duration register **208** fall within the desired playback duration range, the processor circuit **32** is directed to block **330**.

Generally, block **330** configures the processor circuit **32** to order the video segments into a playback sequence. More particularly, in this embodiment block **330** configures the processor circuit to order the video segments according to relevance of each of the segments to the particular subscriber **44**. Block **330** configures the processor circuit to determine the relevance of each of the segments to the particular subscriber, in response to subscriber characteristics associated with the particular subscriber. More particularly, in this embodiment relevance is determined in response to quantities of respective investment holdings associated with the particular subscriber **44**.

To achieve this, block **330** first directs the processor circuit **32** to locate the stock value record having the highest value in the stock value field **320** in the current stock values register **210** in the RAM **182**. Block **330** then directs the processor circuit to store a plurality of relevance threshold values in the

relevance thresholds register **216**. In this embodiment, a first value equal to one-third of the highest value in the stock value field **320** is stored in a “medium” relevance threshold field **332** of the relevance thresholds register **216**, and a second value equal to two-thirds of the highest value is stored in a “high” relevance threshold field **334**.

Block **330** then directs the processor circuit **32** to sequentially address each video segment record in the video program list register **206**. Block **330** directs the processor circuit to read the contents of the stock symbol field **315** of the currently addressed video segment record, and to locate all corresponding records in the current stock values register **210** having stock symbol field **318** contents matching at least one stock symbol in the stock symbol field **315**. Block **330** further directs the processor to add the contents of the stock value fields **320** of any such located records, and to compare the resulting sum to the contents of the relevance thresholds register **216**. If the resulting sum is less than the contents of the medium relevance threshold field **332**, then a relevance value representing “low” relevance is stored in a relevance field **336** of the currently addressed video segment record in the video program list register **206**. If the resulting sum is greater than or equal to the contents of the medium relevance threshold field **332** but less than the contents of the high relevance threshold field **334**, then a relevance value representing “medium” relevance is stored in the relevance field **336**. If the resulting sum is greater than or equal to the contents of the high relevance threshold field **334**, then a relevance value representing “high” relevance is stored in the relevance field **336**. Block **330** continues to direct the processor circuit to address video segment records until a relevance value has been generated and stored in the relevance field **336** of each video segment record in the video program list register **206**. Alternatively, other ways of determining the relevance of each of the segments to the particular subscriber may be substituted.

Block **330** then configures the processor circuit **32** to schedule a first video segment of high relevance to the particular subscriber **44** at a commencement

of the playback sequence, and to schedule a second video segment of high relevance to the particular subscriber at an end of the playback sequence. Such scheduling may be more likely to keep a particular subscriber's attention throughout the playback sequence, and may increase the likelihood that the subscriber will view entire playback sequences on future logins, rather than cutting off playback before the video program has been completely viewed.

To achieve such scheduling, block **330** directs the processor circuit to count the total number "N" of video segment records in the video program list register **206**, and to locate two video segment records having the highest possible relevance value, which in this embodiment is a "high" relevance value, in their relevance fields **336**. Upon locating two such records, block **330** directs the processor circuit to store a value of "1" in a playback order field **338** of one of the video segment records indicating that it is to be played first, and to store a value equal to "N" in the playback order field **338** of the other video segment record, indicating that it is to be played last. Similarly, if only one video segment record having a "high" relevance value exists, its playback order field contents will be set to "1", and a video segment having the next highest contents of its relevance field **336** will have its playback order field contents set to "N". Likewise, if no "high" relevance video segments exist, the video segment records having the highest relevance values will have their playback order field contents set to indicate first and last playback respectively.

For each of the remaining video segment records in the video program list register **206**, block **330** directs the processor circuit to randomly store a unique number between 2 and N-1 in the playback order field **338** of the record. Alternatively, if desired, block **330** may be modified to direct the processor circuit to store playback order values in order to "alternate" relevance, by placing "low" relevance video segments in between "medium" or "high" relevance video segments.

Finally, block **330** directs the processor circuit to sort the video segment records according to the contents of their playback order fields **338**.

Referring to Figures **7**, **8**, **11** and **19**, block **340** then configures the processor circuit **32** to cause at least one advertisement video segment to be played in the continuous video program. More particularly, in this embodiment block **340** configures the processor circuit to identify at least one advertisement video segment having information content associated with the particular subscriber. By selecting advertisements having information content associated with the subscriber, the subscriber is more likely to be interested in the content of the ads, and the advertisers are more likely to be willing to pay more money for the advertisement, as it will be shown to a target audience rather than a random audience. Alternatively, however, advertisements may be omitted entirely, or may be randomly selected.

Identification of advertisement video segments having information content associated with the particular subscriber is performed analogously to the identification of video segments described above in connection with block **310**, with the following exceptions. First, block **340** directs the processor circuit to identify only content description records **142** having type field **159** contents indicative of advertisement content. Second, the most recent usage time of the particular subscriber is not used at block **340** to eliminate advertisements pre-dating the subscriber's last login. If a suitable advertisement cannot be located using a procedure analogous to block **310**, data mining analogous to block **324** is applied to the advertisement description, and conversely, if too many relevant ads are located, data weeding analogous to block **328** is performed to reduce the number of relevant ads. As these procedures are described in detail elsewhere in this specification relating to video segments generally, such details are not repeated here in relation to advertisement video segments.

After identifying a suitable number of advertisement video segments in the above manner, block **340** further directs the processor circuit **32** to insert a

video segment record corresponding to each advertisement video segment into the video program list register **206**, each such record having a unique video ID stored in the video ID field **312**, a location link stored in the link field **314** providing a link to the location in the video segment database **132** of the video segment store **138** in which the advertisement video segment is stored, and a playback order number stored in the playback order field **338** indicating the position in the playback sequence of the advertisement video segment. Upon inserting each such advertisement video segment record into the video program list register **206**, the processor circuit increments the contents of the playback order fields **338** of all succeeding video segment records in the sorted video program list register. In this embodiment, block **340** directs the processor circuit to insert an advertisement video segment record at every tenth position in the video program list register **206**. Alternatively, however, advertisements may be inserted more or less frequently, and may be inserted based on playback duration of the segments rather than the number of segments, for example.

Alternatively, if desired, block **340** may be omitted, thereby omitting the playback of any advertisements. This may be desirable in order to provide a "premium" service to some subscribers for a fee, for example. Thus, referring to Figures **2** and **19**, a modified block **340** may read the contents of a premium playback field (not shown) of the subscriber information record **55** corresponding to the particular subscriber, and may proceed to insert advertisement content into the video program only if the premium playback field contents have not been set active.

Referring to Figures **1**, **9**, **11** and **19**, block **348** then configures the processor circuit **32** to cause the video segments having information content associated with the particular subscriber **44** and having smooth transition features, to be successively played to produce the continuous video program including the segments.

Block **348** first directs the processor circuit **32** to generate and store a program synchronization file in the program synchronization file register **219**. More particularly, in this embodiment block **348** directs the processor circuit **32** to address the video program list register **206**, and to produce a Synchronized Multimedia Integration Language (SMIL) file that schedules sequential and continuous playback of the video segments identified by the video segment records stored in the video program list register, according to the contents of the playback order field **338**, beginning with the record corresponding to the first video segment to be played. For illustrative purposes only, such a SMIL file may include the following code segment (in addition to other code), for example, illustrating sequential playback of three hypothetical video files without delay therebetween:

```
...  
<seq>  
    <video src="video00000273.ram"/>  
    <video src="video0005326.ram"/>  
    <video src="video0013629.ram"/>  
</seq>  
...
```

Thus, the result of the execution of block **348** is a single synchronization file, i.e. the SMIL file, stored in the program synchronization file register **219**, which controls synchronized playback of each of the video segments in succession, to produce the continuous video program.

Alternatively, rather than a SMIL file, the synchronization file may include other suitable synchronization file types, such as an Advanced Streaming Format (ASF) file, for example.

Block **348** then directs the processor circuit **32** to transmit to the particular subscriber **44**, over the network **40**, the single synchronization file stored in the program synchronization file register **219**, along with the contents of the

segment content portions **162** shown in Figure **9** of each video segment listed in the video program list register **206**.

In this embodiment, each of the subscribers **42** is equipped with software capable of executing synchronization files. More particularly, in this embodiment, where the synchronization file is a SMIL file, each subscriber **42** is equipped with RealPlayer **7**, version **6.0.7.380** embedded mode, available from RealNetworks.com. Alternatively, where other types of synchronization files are employed, other players, such as Internet Explorer version **5.0** available from Microsoft Corporation, or QuickTime version **4.1** available from Apple Computer, Inc. for example, may be substituted, as appropriate. Thus, transmission of the single synchronization file stored in the program synchronization file register **219** along with the contents of the corresponding segment content portions **162**, from the processor circuit **32** to the particular subscriber **44**, results in execution of the synchronization file by such software, thereby causing each of the video segments identified in the video program list register to be successively played, to produce the continuous video program.

In light of the smooth transition features of the segment content portions **162** shown in Figure **9**, transmission by the processor circuit **32** of the synchronization file stored in the program synchronization file register **219** to the particular subscriber **44**, causes video segments having opening and closing scenes of the video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment, to be played, at the location of the particular subscriber **44**.

Data Mining Subroutine

In this embodiment, the data mining subroutine **194** is called by the custom newscast routine **192** shown in Figure **19**, at block **324**, after having

determined at block **322** that the continuous video program is not long enough.

Referring to Figures **11** and **20**, the data mining subroutine is shown in greater detail at **194** in Figure **20**. Generally, the data mining subroutine **194** configures the processor circuit **32** to identify an additional video segment in the content database **36** having information content associated with the particular subscriber **44**, when the playback duration of the continuous video program is less than the desired playback duration.

The data mining subroutine **194** begins with a first block of codes **350** that directs the processor circuit **32** to generate a subscriber category percentage table and a video segment category percentage table, and to store such tables in the SUB-CAT % register **212** and the VID-CAT % register **214** in the RAM **182**, respectively.

Referring to Figures **5**, **11** and **20**, to generate the subscriber category percentage table, block **350** directs the processor circuit **32** to successively address each current stock value record in the current stock values register **210**. For each addressed stock value record, block **350** directs the processor circuit to use the contents of the stock symbol field **318** to locate a corresponding company record **95** in the companies table **52** shown in Figure **5**, and to read the contents of the category/sector field **104** of the located company record **95**.

Block **350** then directs the processor circuit **32** to locate and address a SUB-CAT % record in the SUB-CAT % register **212** having contents of a category field **352** equal to the contents of the category/sector field **104** of the located company record **95**, and if no such SUB-CAT % record exists, block **350** directs the processor circuit to create and address a new SUB-CAT % record having such category field **352** contents. Block **350** then directs the processor circuit to add the contents of the stock value field **320** of the currently addressed current stock value record into a percentage field **354** of the currently addressed SUB-CAT % record.

When all of the records in the current stock values register **210** have been addressed in the above manner, the resulting SUB-CAT % table contains a SUB-CAT % record for each sector in which the particular subscriber **44** owns an investment holding. The category field **352** of each such SUB-CAT % record identifies the industry sector, and the percentage field **354** contains a number representing the raw total value of the particular subscriber's investment holdings in that sector. Block **350** then directs the processor circuit to calculate a sum of the contents of the percentage fields **354** of all SUB-CAT % records, and to divide the contents of each percentage field **354** by this sum, so that the percentage field **354** of each SUB-CAT % record contains a value between zero and one, expressing the dollar value of the particular subscriber's investment holdings in each industry sector as a fraction of the subscriber's total investment holdings.

Referring to Figures **5**, **8**, **11** and **20**, to generate the VID-CAT % table, block **350** directs the processor circuit **32** to address each video segment record in the video program list register **206** in succession. For each addressed video segment record, block **350** directs the processor circuit to determine a category, in this embodiment industry sector, to which the video segment record relates. In this embodiment the processor circuit determines this category by using the contents of the stock symbol field **315** of the video segment record to locate a corresponding company record **95** of the companies table **52** shown in Figure **5**, and by reading the contents of the category/sector field **104** of the corresponding company record **95**. Alternatively, the category may be obtained using the contents of the video ID field **312** of the video segment record in conjunction with the category/sector field **156** of the corresponding content description record **142** in the content description table **140** shown in Figure **8** if the category/sector field **156** is not empty, for example.

Block **350** then directs the processor circuit **32** to locate and address a VID-CAT % record in the VID-CAT % register **214** having contents of a category field **356** equal to the category of the currently addressed video segment

record, as determined above, and if no such record exists, block **350** directs the processor circuit to create and address a new VID-CAT % record having such category field **356** contents. Block **350** then directs the processor circuit to use the contents of the video ID field **312** of the currently addressed video segment record to locate the corresponding segment duration value stored in the time duration field **157** of the corresponding content description record **142** shown in Figure 8. Block **350** directs the processor circuit to divide this time duration by the contents of the total program duration register **208** in the RAM **182**, and to add the result of such division to the contents of a percentage field **358** of the currently addressed VID-CAT % record.

When all of the video segment records in the video program list register **206** have been addressed in the above manner, the resulting VID-CAT % table contains a VID-CAT % record for each sector to which any of the video segments identified in the video program list register **206** relates. The category field **356** of each VID-CAT % record identifies the industry sector, and the percentage field **358** contains a number between zero and 1 representing the fraction of the duration of the continuous video program that relates to that sector.

Referring to Figures **11** and **20**, blocks **360** and **362** then configure the processor circuit **32** to identify a characteristic category associated with at least one subscriber characteristic, and to identify other video segments associated with the characteristic category. More particularly, in this embodiment blocks **360** and **362** configure the processor circuit to identify another video segment associated with a particular characteristic category, when the category is underrepresented in the continuous video program.

To achieve this, block **360** first directs the processor circuit **32** to compare the contents of the SUB-CAT % register **212** and the VID-CAT % register **214**, to determine whether an underrepresented category in the SUB-CAT % register **212** exists. For example, in this embodiment, if 50% of the value of a subscriber's investment holdings are in the technology sector but only 20% of

the duration of the continuous video program relates to the technology sector, the technology sector would be considered to be an under-represented category. Block **360** directs the processor circuit to address each record in the SUB-CAT % register **212**. For each addressed SUB-CAT % record, the processor circuit is directed to subtract the contents of the percentage field **358** of a VID-CAT % record in the VID-CAT % register **214** corresponding to the same category or sector as the addressed SUB-CAT % record, from the contents of the percentage field **354** of the addressed SUB-CAT % record, to produce an under-representation value. Such under-representation values are temporarily stored in the RAM **182** in the calculation area (not shown) along with identifications of the categories or sectors to which they relate. Block **360** further directs the processor circuit to determine whether any of the under-representation values is positive and exceeds a threshold under-representation value, such as **0.1**, for example, indicating a potentially noticeable under-representation of the category or sector in the continuous video program.

Referring to Figures **5**, **8**, **11** and **20**, if any positive under-representation values greater than the threshold are detected at block **360**, block **362** directs the processor circuit **32** to identify the under-represented category or sector to which the greatest positive under-representation value relates, and to identify another video segment associated with that category. In this regard, block **362** directs the processor circuit to successively address the content description records **142** in the content description table **140** shown in Figure **8**. For each addressed content description record, if the contents of the category/sector field **156** of the content description record **142** correspond to the under-represented category or sector and the type field **159** contents are not indicative of an advertisement, block **362** directs the processor circuit to determine whether the video ID stored in the video ID field **144** matches a video ID already stored in the video ID field **312** of the video program list register **206**. If such video ID contents do not match, block **362** directs the processor circuit to add a new video segment record to the video program list

register, and to copy the contents of the video ID field **144**, the location link field **152** and the stock symbol field **154**, to the video ID field **312**, the link field **314** and the stock symbol field **315** respectively in the new video segment record.

5 If the contents of the category/sector field **156** of the currently addressed content description record **142** are empty, block **362** directs the processor circuit **32** to use the contents of the stock symbol field **154** to look up the category in the category/sector field **104** of the company record **95** in the companies table **52** corresponding to the addressed content description
10 record. If this category corresponds to the under-represented category and the segment is not already listed in the video program list register **206**, a new video segment record is created in the video program list register **206** corresponding to the content description record **142**, as described above.

If no additional content description records can be located in the content
15 description table **140** corresponding to the under-represented category, block **362** then directs the processor circuit **32** to search the content description database **130** for a video segment associated with the category to which the next-greatest under-representation value corresponds. If no such record corresponding to any of the under-representation values can be located, block
20 **362** directs the processor circuit to go to block **368**, described below.

After identifying another video segment and adding a corresponding video segment record to the video program list register **206** in the above manner, block **364** directs the processor circuit **32** to update the contents of the VID-CAT % register **214** and the total program duration register **208** to reflect the
25 addition of the new video segment to the continuous video program.

Referring to Figures **11**, **19** and **20**, block **366** then directs the processor circuit **32** to compare the revised contents of the total program duration register **208** to the desired playback duration, as described above in connection with block **326** of the custom newscast routine **192**, to determine
30 whether the continuous video program is still too short. If so, the processor

circuit is directed back to block **360** above. If not, the data mining subroutine **194** is ended and the processor circuit is directed to return to block **330** of the custom newscast routine **192**.

Referring to Figures **8**, **11** and **20**, if at block **360** no category or sector was identified as being under-represented in the continuous video program by at least the threshold under-representation percentage, block **368** configures the processor circuit **32** to identify another video segment in response to a video segment characteristic of a video segment already identified as having information content associated with the particular subscriber. More particularly, in this embodiment, block **368** directs the processor circuit to address a first video segment record in the video program list register **206**. Block **368** directs the processor circuit to use the contents of the video ID field **312** of the video segment record to locate the corresponding content description record **142** in the content description table **140** shown in Figure **8**. The processor circuit is then directed to read the contents of the description field **146**, and to search the content description table **140** for other content description records **142** having at least some description field **146** contents matching the description field **146** contents of the currently addressed record, and having type field **159** contents indicative of a content type other than advertisements.

For example, assuming that the currently addressed description field **146** contains a description "WirelessMD Inc. and Glenayre Technologies, Inc. Announce Strategic Alliance", and corresponds to a video segment that has already been added to the video program list register **206** because the particular subscriber **44** owns stock in WirelessMD but not in Glenayre, and assuming that another content description record **142** has description field **146** contents relating to Glenayre, such as "OfficeDomain, Glenayre Technologies Enable Complete Wireless Message Management on Handspring Visor" for example, block **368** directs the processor circuit to create a new video segment record in the video program list register **206**

corresponding to this latter content description record **142**, in the manner previously described.

Alternatively, rather than merely searching for partial matches among the description fields **146**, the processor circuit may be directed to identify another video segment in response to any other video segment characteristic or combination of video segment characteristics of a video segment already identified as having information content associated with the particular subscriber **44**. For example, contents of one or more of the fields **146**, **148**, **150**, **154**, **156**, **157** or **158** may be used for this purpose, or alternatively, other video segment characteristics may be used.

After identifying another video segment and adding a corresponding video segment record to the video program list register **206** in the above manner, block **370** directs the processor circuit to update the contents of the VID-CAT % register **214** and the total program duration register **208** to reflect the addition of the new video segment to the continuous video program.

Referring to Figures **11**, **19** and **20**, block **372** then directs the processor circuit **32** to compare the revised contents of the total program duration register **208** to the desired playback duration, as described above in connection with block **326** of the custom newscast routine **192**, to determine whether the continuous video program is still too short. If so, the processor circuit is directed back to block **360** above. If not, the data mining subroutine **194** is ended and the processor circuit is directed to return to block **330** of the custom newscast routine **192**.

Data Weeding Subroutine

In this embodiment, the data weeding subroutine **195** is called by the custom newscast routine **192** shown in Figure **19**, at block **328**, after having determined at block **326** that the continuous video program is too long.

Referring to Figures 11 and 21, the data weeding subroutine is shown in greater detail at 195 in Figure 21. Generally, the data weeding subroutine 195 configures the processor circuit 32 to eliminate a video segment identified as having information content associated with the particular subscriber 44, when the playback duration of the continuous video program exceeds the desired playback duration.

The data weeding subroutine 195 begins with a first block of codes 380, that directs the processor circuit 32 to generate a subscriber category percentage table and a video segment category percentage table, and to store such tables in the SUB-CAT % register 212 and the VID-CAT % register 214 in the RAM 182, respectively. This procedure is identical to that described in greater detail above in connection with block 350 of the data mining routine 194.

In this embodiment, blocks 382 and 384 effectively configure the processor circuit 32 to eliminate from the program a video segment associated with a particular characteristic category, when the category is over-represented in the continuous video program.

Block 382 then directs the processor circuit 32 to compare the contents of the SUB-CAT % register 212 and the VID-CAT % register 214, to determine whether an over-represented category in the SUB-CAT % register 212 exists. For example, in this embodiment, if 30% of the duration of the video program relates to the mining sector, but only 4% of the value of the particular subscriber's investment holdings consists of mining sector stocks, the mining sector would be considered to be over-represented. Block 382 directs the processor circuit to address each record in the SUB-CAT % register 212. For each addressed SUB-CAT % record, the processor circuit is directed to subtract the contents of the percentage field 354 of the currently addressed SUB-CAT % record, from the contents of the percentage field 358 of a VID-CAT % record in the VID-CAT % register 214 corresponding to the same category or sector as the addressed SUB-CAT % record, to produce an over-

representation value. Such over-representation values are temporarily stored in the RAM **182** in the calculation area (not shown) along with identifications of the categories or sectors to which they relate. Block **382** further directs the processor circuit to determine whether any of the over-representation values is positive and exceeds a threshold over-representation value, such as **0.1**, for example, indicating a potentially noticeable over-representation of the category or sector in the continuous video program.

If a noticeably over-represented category is identified at block **382**, block **384** directs the processor circuit **32** to address a set of video segment records consisting only of those video segment records in the video program list register **206** corresponding to the over-represented category, for the remainder of the execution of the data weeding routine, until the next time (if any) that block **382** is executed. Thus, the first video segment to be eliminated from the video program will be a video segment associated with the over-represented category.

If a noticeably over-represented category is not identified at block **382**, block **386** directs the processor circuit to address a set of video segment records comprising all video segment records in the video program list register **206**, for the remainder of the execution of the data weeding routine, until the next execution (if any) of block **382**.

Block **388** then directs the processor circuit **32** to address the video segment record from among the set of records addressed at block **384** or **386**, corresponding to the least valuable stock in the portfolio of the particular subscriber **44**, as determined from the contents of the current stock values register **210** and the stock symbol field **315**.

Referring to Figures **3**, **11** and **21**, blocks **390** to **400** configure the processor circuit **32** to eliminate from the video program a video segment associated with a particular subscriber characteristic, in response to a transaction history associated with the particular subscriber and with the particular subscriber characteristic. More particularly, in this embodiment blocks **392** to **398**

configure the processor circuit to eliminate a video segment when a change in a dynamic value associated with the particular subscriber characteristic is less than a threshold value derived from the transaction history.

Block **390** directs the processor circuit **32** to calculate a transaction threshold value relating to the stock identified in the currently addressed video segment record in the video program list register **206**. In this embodiment, the transaction threshold value represents an average difference in share price of the identified stock, between successive transactions made by the particular subscriber. Thus, the transaction threshold value represents the average change in share price of the stock which is likely to prompt the particular subscriber to buy or sell the stock.

To calculate the transaction threshold value, block **390** first directs the processor circuit to locate and address the company record **95** in the companies table **52** shown in Figure **5** having stock symbol field **100** contents matching those of the stock symbol field **315** of the currently addressed video segment record, and to copy the contents of the stock ID field **96** of the addressed company record **95** into the calculation area (not shown) of the RAM **182**, to thus produce and store a currently addressed stock ID corresponding to the stock symbol field **315** of the currently addressed video segment record. Block **390** then directs the processor circuit to locate all individual transaction records **77** in the transactions table **51** shown in Figure **4** having user ID field **78** contents matching those of the particular subscriber **44** and having stock ID field **80** contents matching the contents of the currently addressed stock ID stored in the calculation area of the RAM. Block **390** then directs the processor circuit to address all such located individual transaction records **77** in chronological order, according to the contents of the datestamp field **82** of the records **77**. The processor circuit is then directed to determine the transaction threshold value, by calculating an average of the absolute magnitude of the difference between the contents of the price field **88** of one individual transaction record **77** and the contents of the price field **88** of the next individual transaction record **77** relating to the particular

subscriber and the particular stock. In other words, the transaction threshold value may be calculated as:

$$\frac{\sum_{x=2}^N |P_x - P_{x-1}|}{N-1}$$

5 where N is the number of addressed individual transaction records **77**, and P_x = the contents of the price field **88** of the x^{th} individual transaction record **77**. Block **390** directs the processor circuit to store this transaction threshold value in another portion of the calculation area (not shown) in the RAM **182**.

10 Referring to Figures **1**, **3**, **5**, **11** and **21**, block **392** then directs the processor circuit **32** to determine the change in share price of the stock since the particular subscriber's most recent transaction, and to determine whether or not this change in share price exceeds the transaction threshold value. More particularly, block **392** directs the processor circuit to control the I/O unit **186** to query the remote quote server **45** for the most recent trade price of the stock identified by the contents of the stock symbol field **315** of the currently
15 addressed video segment record. Upon receiving the most recent trade price from the quote server, block **392** directs the processor circuit to calculate, as the change in share price, the absolute value of a difference between the most recent trade price and the price field **88** of the N^{th} or most recent individual transaction record **77**.

20 If this change in share price is less than the transaction threshold value as determined above, block **394** directs the processor circuit **32** to eliminate the currently addressed video segment record from the video program list register **206**. Block **394** further directs the processor circuit to update the contents of the VID-CAT % register **214** and the total program duration register **208** to
25 reflect the elimination of the video segment from the continuous video program.

However, if at block **392**, the change in share price is not less than the transaction threshold value, block **396** directs the processor circuit **32** to determine whether all video segment records in the set of records addressed at block **384** or **386** have been tested at block **392**. If they have not, block **398** directs the processor circuit to address the next video segment record corresponding to the next least valuable stock in the particular subscriber's portfolio, as determined from the contents of the current stock values register **210** and the stock symbol field **315**, and the processor circuit is directed back to block **390** to calculate a transaction threshold value corresponding to the stock to which the newly-addressed video segment record relates, as indicated by its stock symbol field **315**.

If, at block **396**, all video segment records in the set of records addressed at block **384** or **386** have been tested at block **392**, then block **400** directs the processor circuit **32** to eliminate the video segment record from the currently addressed set of records, corresponding to the least valuable stock, as indicated by the contents of the stock symbol field **315** of the video segment records and the contents of the current stock values register **210**. Block **400** further directs the processor circuit to update the contents of the VID-CAT % register **214** and the total program duration register **208** to reflect the elimination of the video segment from the continuous video program.

Referring to Figures **11**, **19** and **21**, following elimination of a video segment record from the video program list register **206** at either block **294** or block **400**, block **402** directs the processor circuit **32** to determine whether the continuous video program is still too long, by determining whether the contents of the total program duration register **208** exceed the desired playback range, as described above in connection with block **326** of the custom newscast routine **192**. If the video program is still too long, the processor circuit is directed back to block **382** to identify another video segment to be eliminated. If the video program is not too long, the data weeding routine **195** is ended and the processor circuit is directed to return to block **330** of the custom newscast routine **192**.

ALTERNATIVES

Content Topics

5 Although the foregoing embodiment of the invention has been described in relation to video segments pertaining to financial information such as particular stocks or particular financial sectors, alternatively, any other types of information may be substituted, such as cooking, sports, music, or pop culture information for example, or any other conceivable content topic.

Content Types

10 Although the description of the foregoing embodiment has focused on television-style video news segments in particular, alternatively, the video segments may include other types of media assets or multimedia files.

Data Mining and Data Weeding

15 Referring back to Figure 20, although block 362 of the data mining subroutine 194 has been described in the context of identifying video segments associated with an underrepresented category, alternatively, block 362 could be implemented without such a constraint. For example, an alternative embodiment of the data mining subroutine involves deletion of block 360, and execution of a modified block 362 that configures the processor circuit 32 to
20 identify a characteristic category associated with the at least one subscriber characteristic, and to identify other video segments associated with the characteristic category.

For example, in one alternative embodiment the modified block 362 determines an industry sector corresponding to a stock associated with the
25 particular subscriber, and identifies another video segment associated with the industry sector. The current stock values register 210, or alternatively a portfolio record 69, is used to identify a stock symbol associated with the

subscriber. A company record **95** corresponding to the stock symbol, in the companies table **52**, is used to identify the sector. Either the category/sector field **156** of the content description table **140**, or alternatively the stock symbol field **154** in conjunction with the category/sector field **104** of the companies table **52**, is used to identify additional video segments associated with the sector.

Similarly, although the data mining subroutine **194** and the data weeding subroutine **195** were each described as being called by the custom newscast routine **192** in response to determining that the continuous video program is either too short or too long respectively, alternatively, such subroutines may be desirable even if the video program is not necessarily too long or too short. Thus, the processor circuit **32** may be configured to optimize the video program by adjusting a proportion of content of the continuous video program in response to subscriber characteristics associated with the particular subscriber.

For example, even if the video program is not too short, the processor circuit **32** may be configured to add to the continuous video program a video segment associated with a particular characteristic category, when the category is underrepresented in the continuous video program, in a manner similar to that shown in Figure **20**. Conversely, even if the video program is not too long, the processor circuit may be configured to eliminate from the continuous video program a video segment associated with a particular characteristic category, when the category is overrepresented in the continuous video program.

More generally, the specific data mining and data weeding techniques described herein are merely illustrative. Alternatively, other data mining or data weeding methods may be substituted.

Artificial Intelligence

Referring back to Figure 11, the storage medium **184** is also used to store program codes for directing the processor circuit **32** to execute an artificial intelligence routine **197**. Although various specific linkages and interrelationships between data fields of records contained in the subscriber database **38** and the content database **36** have been discussed herein, alternatively, the artificial intelligence routine **197** may be executed by the processor circuit **32**, to direct the processor circuit to identify additional interrelationships between any of the data fields disclosed herein. Such additional interrelationships may be particularly advantageous for modifications of the data mining subroutine **194** for example, to direct the processor circuit **32** to execute the artificial intelligence routine **197** to identify additional video segments having information content associated with a particular subscriber. However, the artificial intelligence routine **197** may also be used more broadly, to determine additional interrelationships for potential use by the processor circuit in any of the routines, subroutines and threads disclosed herein.

General Interest Content

Referring back to Figures 8, 11 and 19, if desired, the custom newscast routine **192** may be modified to cause at least one general interest video segment having information content of general interest to subscribers to be played in the continuous video program. Thus, in an alternative embodiment, an optional block **342** of codes may be inserted into the custom newscast routine between blocks **340** and **348**. In this embodiment, block **342** directs the processor circuit **32** to search the content description table **140** for a content description record whose type field **159** contents indicate a general interest video segment. Optionally, if desired, block **342** may further restrict this search to general interest records whose datestamp field **148** contents fall within a desired range, such as the most recent **24** hours, for example.

For each such general interest content description record, block **342** directs the processor circuit to generate a new video segment record in the video program list register **206**, in the same manner as described above in relation to other types of video segments. If desired, block **342** may be further modified to impose a mandatory playback order position on the general interest segment. Block **342** also directs the processor circuit to adjust the contents of the playback order fields **338** of other video segment records in the video program list register, to reflect the addition of the general interest segment.

Alternatively, other methods of identifying general interest content may be substituted. For example, a wildcard value may be stored in the stock symbol field **154** of the content description record, which may be recognized by the processor circuit at block **310** as a command to identify the video segment as having information content associated with every subscriber, regardless of the subscriber's stock portfolio. Or, a separate general interest video program may be played immediately prior to and continuously joined to the continuous video program, for example. This may be achieved by way of a modification to the synchronization file, discussed above, for example.

Group Subscriber Characteristics

Although the foregoing specific embodiments have generally relied upon subscriber characteristics that are unique to a particular subscriber in order to identify video segments having information content associated with that particular subscriber, alternatively, subscriber characteristics associated with a group with which the particular subscriber is associated may be employed for this purpose. For example, the particular subscriber may log onto the server by providing only general identifying information, such as an occupation or profession, or an age group, or other demographic information, for example, rather than providing information unique to that particular subscriber.

Referring back to Figures **3**, **11** and **19**, in response to a subscriber logging in by identifying such a group, the custom newscast routine **192** may include a

modified block **310** which stores a unique group user ID corresponding to the identified group, in the user ID register **200** in the RAM **182**, to identify the subscriber. The portfolio table **50** shown in Figure **3** may additionally contain one or more portfolio records **69**, in which the user ID field **70** is used to store a number representing a group, rather than a particular subscriber, so that particular content topics, which in this embodiment are particular stocks, may be associated with a group of subscribers. Modified block **310** directs the processor circuit to search the portfolio table **50** for portfolio records **69** having user ID field **70** contents equal to the group user ID stored in the user ID register **200** in the RAM **182**, to read the contents of the stock ID field **72**, and to use such contents to address the corresponding company record **95** in the companies table **52** shown in Figure **5**. Modified block **310** then directs the processor circuit to append the stock symbol stored in the stock symbol field **100** of the addressed company record **95** to the contents of the characteristics list register **202** in the RAM **182**, unless the stock symbol is already stored in the characteristics list register **202**.

Block **310** is further modified by omitting any determination of the time and date of most recent usage by a subscriber having the same group user ID, and by omitting any comparison of such time and date to the time and date of video segments, as it would not be desirable to eliminate any such video segments from a custom newscast merely because a subscriber other than the particular subscriber but belonging to the same group, had already viewed such segments.

While specific embodiments of the invention have been described and illustrated, such embodiments should be considered illustrative of the invention only and not as limiting the invention as construed in accordance with the accompanying claims.

What is claimed is:

1. A method of presenting customized multimedia content, the method comprising causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments.
5
2. The method of claim 1 further comprising identifying said video segments having information content associated with said particular subscriber.
- 10 3. The method of claim 2 wherein identifying comprises accessing a content database for content associated with at least one subscriber characteristic of said particular subscriber.
4. The method of claim 3 further comprising storing, in a subscriber database, at least one said subscriber characteristic associated with each said particular subscriber of a plurality of subscribers.
15
5. The method of claim 4 further comprising acquiring at least some of said subscriber characteristics from said subscribers.
6. The method of claim 4 wherein storing said at least one subscriber characteristic comprises storing an identification of an investment holding of said particular subscriber.
20
7. The method of claim 6 wherein storing said at least one subscriber characteristic further comprises storing an identification of at least one transaction made by said particular subscriber relating to said investment holding.
- 25 8. The method of claim 4 further comprising monitoring communications between said particular subscriber and a service, and wherein storing

said at least one subscriber characteristic comprises producing a usage log of usage of said service by said particular subscriber.

- 5
9. The method of claim 8 wherein producing said usage log comprises recording a uniform resource locator specified by said particular subscriber.
- 10.
10. The method of claim 8 wherein producing said usage log comprises recording an Internet Protocol (IP) address associated with said particular subscriber.
- 10
11. The method of claim 3 further comprising optimizing said continuous video program.
12. The method of claim 11 wherein optimizing comprises comparing a playback duration of said continuous video program to a desired playback duration.
- 15
13. The method of claim 12 wherein optimizing comprises identifying an additional video segment in said content database having information content associated with said particular subscriber, when said playback duration of said continuous video program is less than said desired playback duration.
- 20
14. The method of claim 13 wherein identifying an additional video segment comprises identifying a characteristic category associated with said at least one subscriber characteristic, and identifying other video segments associated with said characteristic category.
- 25
15. The method of claim 13 wherein identifying an additional video segment comprises identifying another video segment associated with a particular characteristic category, when said category is underrepresented in said continuous video program.

16. The method of claim 13 wherein identifying an additional video segment comprises identifying another video segment in response to a video segment characteristic of a video segment already identified as having information content associated with said particular subscriber.
- 5 17. The method of claim 12 wherein optimizing comprises eliminating a video segment identified as having information content associated with said particular subscriber, when said playback duration of said continuous video program exceeds said desired playback duration.
- 10 18. The method of claim 17 wherein eliminating a video segment comprises eliminating from said program a video segment associated with a particular characteristic category, when said category is overrepresented in said continuous video program.
- 15 19. The method of claim 17 wherein eliminating a video segment comprises eliminating from said program a video segment associated with a particular subscriber characteristic, in response to a transaction history associated with said particular subscriber and with said particular subscriber characteristic.
- 20 20. The method of claim 19 wherein eliminating a video segment comprises eliminating said video segment when a change in a dynamic value associated with said particular subscriber characteristic is less than a threshold value derived from said transaction history.
- 25 21. The method of claim 11 wherein optimizing comprises adjusting a proportion of content of said continuous video program in response to subscriber characteristics associated with said particular subscriber.
22. The method of claim 21 wherein adjusting comprises adding to said continuous video program a video segment associated with a particular characteristic category, when said category is underrepresented in said continuous video program.

23. The method of claim **21** wherein adjusting comprises eliminating from said continuous video program a video segment associated with a particular characteristic category, when said category is overrepresented in said continuous video program.
- 5 24. The method of claim **1** further comprising ordering said video segments into a playback sequence.
25. The method of claim **24** wherein ordering comprises ordering said video segments according to relevance of each of said segments to said particular subscriber.
- 10 26. The method of claim **25** further comprising determining said relevance of each of said segments to said particular subscriber, in response to subscriber characteristics associated with said particular subscriber.
- 15 27. The method of claim **26** wherein determining relevance comprises determining relevance in response to quantities of respective investment holdings associated with said particular subscriber.
- 20 28. The method of claim **25** wherein ordering comprises scheduling a first video segment of high relevance to said particular subscriber at a commencement of said playback sequence, and scheduling a second video segment of high relevance to said particular subscriber at an end of said playback sequence.
- 25 29. The method of claim **1** wherein causing to be successively played comprises causing at least one general interest video segment having information content of general interest to subscribers to be played in said continuous video program.
30. The method of claim **1** further comprising causing at least one advertisement video segment to be played in said continuous video program.

- 5 **31.** The method of claim **2** wherein identifying comprises identifying at least one advertisement video segment having information content associated with said particular subscriber.
- 32.** The method of claim **1** further comprising storing said video segments having said smooth transition features in a content database.
- 10 **33.** The method of claim **32** wherein storing said video segments comprises storing video segments having, as said smooth transition features, opening and closing scenes of said video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment.
- 34.** The method of claim **1** wherein causing comprises causing to be successively played video segments having opening and closing scenes of said video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment.
- 15 **35.** An apparatus for presenting customized multimedia content, the apparatus comprising a processor circuit configured to cause video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments.
- 20 **36.** The apparatus of claim **35** wherein said processor circuit is configured to identify said video segments having information content associated with said particular subscriber.
- 25 **37.** The apparatus of claim **36** further comprising a content database in communication with said processor circuit, wherein said processor circuit is configured to access said content database for content

associated with at least one subscriber characteristic of said particular subscriber.

- 5 **38.** The apparatus of claim **37** further comprising a subscriber database in communication with said processor circuit, wherein said processor circuit is configured to store in said subscriber database at least one said subscriber characteristic associated with each said particular subscriber of a plurality of subscribers.
- 10 **39.** The apparatus of claim **38** wherein said processor circuit is configured to acquire at least some of said subscriber characteristics from said subscribers.
- 40.** The apparatus of claim **38** wherein said processor circuit is configured to store, as said at least one subscriber characteristic, an identification of an investment holding of said particular subscriber.
- 15 **41.** The apparatus of claim **40** wherein said processor circuit is further configured to store, as said at least one subscriber characteristic, an identification of at least one transaction made by said particular subscriber relating to said investment holding.
- 20 **42.** The apparatus of claim **38** wherein said processor circuit is configured to monitor communications between said particular subscriber and a service, and to produce and store, as said at least one subscriber characteristic, a usage log of usage of said service by said particular subscriber.
- 43.** The apparatus of claim **42** wherein said processor circuit is configured to record in said usage log a uniform resource locator specified by said particular subscriber.
- 25 **44.** The apparatus of claim **42** wherein said processor circuit is configured to record in said usage log an Internet Protocol (IP) address associated with said particular subscriber.

- 5
45. The apparatus of claim **37** wherein said processor circuit is configured to optimize said continuous video program.
46. The apparatus of claim **45** wherein said processor circuit is configured to compare a playback duration of said continuous video program to a desired playback duration.
- 10
47. The apparatus of claim **46** wherein said processor circuit is configured to identify an additional video segment in said content database having information content associated with said particular subscriber, when said playback duration of said continuous video program is less than said desired playback duration.
- 15
48. The apparatus of claim **47** wherein said processor circuit is configured to identify a characteristic category associated with said at least one subscriber characteristic, and to identify other video segments associated with said characteristic category.
- 20
49. The apparatus of claim **47** wherein said processor circuit is configured to identify another video segment associated with a particular characteristic category, when said category is underrepresented in said continuous video program.
50. The apparatus of claim **47** wherein said processor circuit is configured to identify another video segment in response to a video segment characteristic of a video segment already identified as having information content associated with said particular subscriber.
- 25
51. The apparatus of claim **46** wherein said processor circuit is configured to eliminate a video segment identified as having information content associated with said particular subscriber, when said playback duration of said continuous video program exceeds said desired playback duration.

52. The apparatus of claim **51** wherein said processor circuit is configured to eliminate from said program a video segment associated with a particular characteristic category, when said category is overrepresented in said continuous video program.
- 5 53. The apparatus of claim **51** wherein said processor circuit is configured to eliminate from said program a video segment associated with a particular subscriber characteristic, in response to a transaction history associated with said particular subscriber and with said particular subscriber characteristic.
- 10 54. The apparatus of claim **53** wherein said processor circuit is configured to eliminate said video segment when a change in a dynamic value associated with said particular subscriber characteristic is less than a threshold value derived from said transaction history.
- 15 55. The apparatus of claim **45** wherein said processor circuit is configured to adjust a proportion of content of said continuous video program in response to subscriber characteristics associated with said particular subscriber.
- 20 56. The apparatus of claim **55** wherein said processor circuit is configured to add to said continuous video program a video segment associated with a particular characteristic category, when said category is underrepresented in said continuous video program.
- 25 57. The apparatus of claim **55** wherein said processor circuit is configured to eliminate from said continuous video program a video segment associated with a particular characteristic category, when said category is overrepresented in said continuous video program.
58. The apparatus of claim **35** wherein said processor circuit is configured to order said video segments into a playback sequence.

59. The apparatus of claim **58** wherein said processor circuit is configured to order said video segments according to relevance of each of said segments to said particular subscriber.
- 5 60. The apparatus of claim **59** wherein said processor circuit is configured to determine said relevance of each of said segments to said particular subscriber, in response to subscriber characteristics associated with said particular subscriber.
- 10 61. The apparatus of claim **60** wherein said processor circuit is configured to determine said relevance in response to quantities of respective investment holdings associated with said particular subscriber.
- 15 62. The apparatus of claim **59** wherein said processor circuit is configured to schedule a first video segment of high relevance to said particular subscriber at a commencement of said playback sequence, and to schedule a second video segment of high relevance to said particular subscriber at an end of said playback sequence.
- 20 63. The apparatus of claim **35** wherein said processor circuit is configured to cause at least one general interest video segment having information content of general interest to subscribers to be played in said continuous video program.
- 25 64. The apparatus of claim **35** wherein said processor circuit is configured to cause at least one advertisement video segment to be played in said continuous video program.
65. The apparatus of claim **36** wherein said processor circuit is configured to identify at least one advertisement video segment having information content associated with said particular subscriber.
66. The apparatus of claim **35** further comprising a content database in communication with said processor circuit, said content database storing said video segments having said smooth transition features.

5 **67.** The apparatus of claim **66** wherein said smooth transition features of said video segments comprise opening and closing scenes of said video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment.

10 **68.** The apparatus of claim **35** wherein said processor circuit is configured to cause to be successively played video segments having opening and closing scenes of said video segments sufficiently dissimilar from each other to prevent jump cuts from a closing scene of one video segment to an opening scene of a following video segment.

69. An apparatus for presenting customized multimedia content, the apparatus comprising:

15 a) means for causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments; and

 b) means for identifying said video segments having information content associated with said particular subscriber.

20 **70.** A computer readable medium for providing instructions for directing a processor circuit to present customized multimedia content, by causing video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments.

25 **71.** A signal embodied in a carrier wave, the signal comprising a code segment for directing a processor circuit to cause video segments having information content associated with a particular subscriber and having smooth transition features, to be successively played to produce a continuous video program comprising the segments.

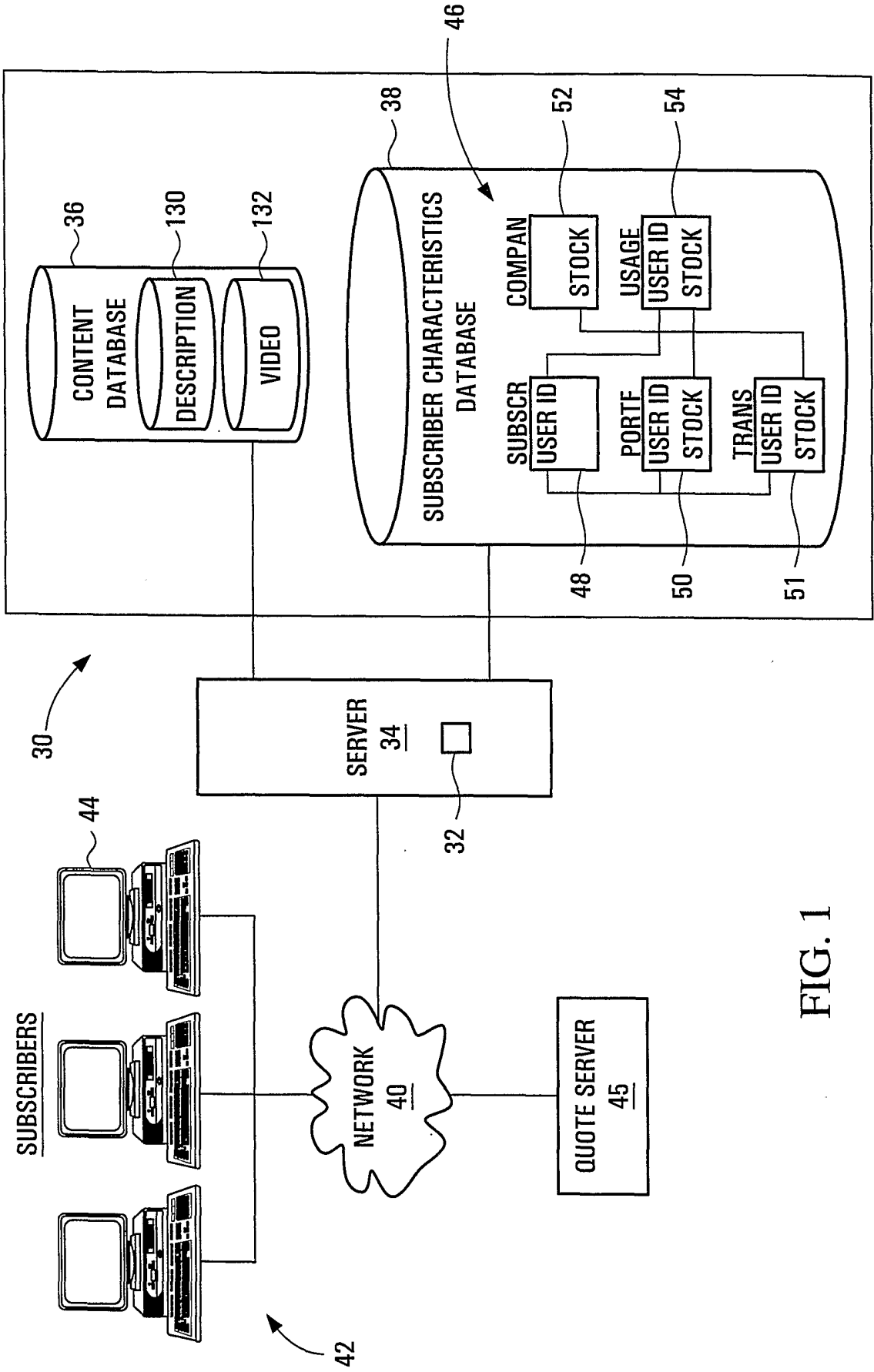


FIG. 1

48

SUBSCRIBER INFORMATION

56	57	58	60	62	64	66	68
USER NAME	PASSWORD	USER ID	FULL NAME	ADDRESS	PHONE	E-MAIL	RECEIVE GENERAL ALERTS
J DOE	X1TQ	3672	JOHN DOE	42 MAIN ST...	555-1133	JD0E@HOME.COM	0

55

FIG. 2

PORTFOLIO

70 USER ID	72 STOCK ID	73 RECEIVE	
		NEWS ALERT	MEDIA ALERT
3672	49217	Y	Y
~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~

69

74

75

FIG. 3

50

TRANSACTIONS

78 USER ID	80 STOCK ID	82 DATE/TIME	84 BUY/SELL	86 QUANTITY	88 PRICE
3672	49217	00.02.29 ...	B	1000	197.00
~~~~~	~~~~~	~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~	~~~~~	~~~~~
~~~~~	~~~~~	~~~~~	~~~~~	~~~~~	~~~~~

77

FIG. 4

51

COMPANIES

96	98	100	102	104
STOCK ID	STOCK NAME	STOCK SYMBOL	EXCHANGE	CATEGORY/ SECTOR
49217	BROADCOM	BRCM	NASDAQ	TECHNOLOGY

95

FIG. 5

52

113

113

114

116

118

120

122

124

54

ORIGINATING IP ADDRESS	URL	DATE/TIME	RESOURCE REQUESTED
145.34.10.3	www.stockhouse.com/news/news.asp?tick=(NST&newsid=437846	00/06/22/18:43	
~~~~~	~~~~~	~~~~~	~~~~~
141.112.24.102	www.stockhouse.com/portfolio/index.asp?uid=213076 &p=137142140137130142	00/08/19/21:15	

FIG. 6

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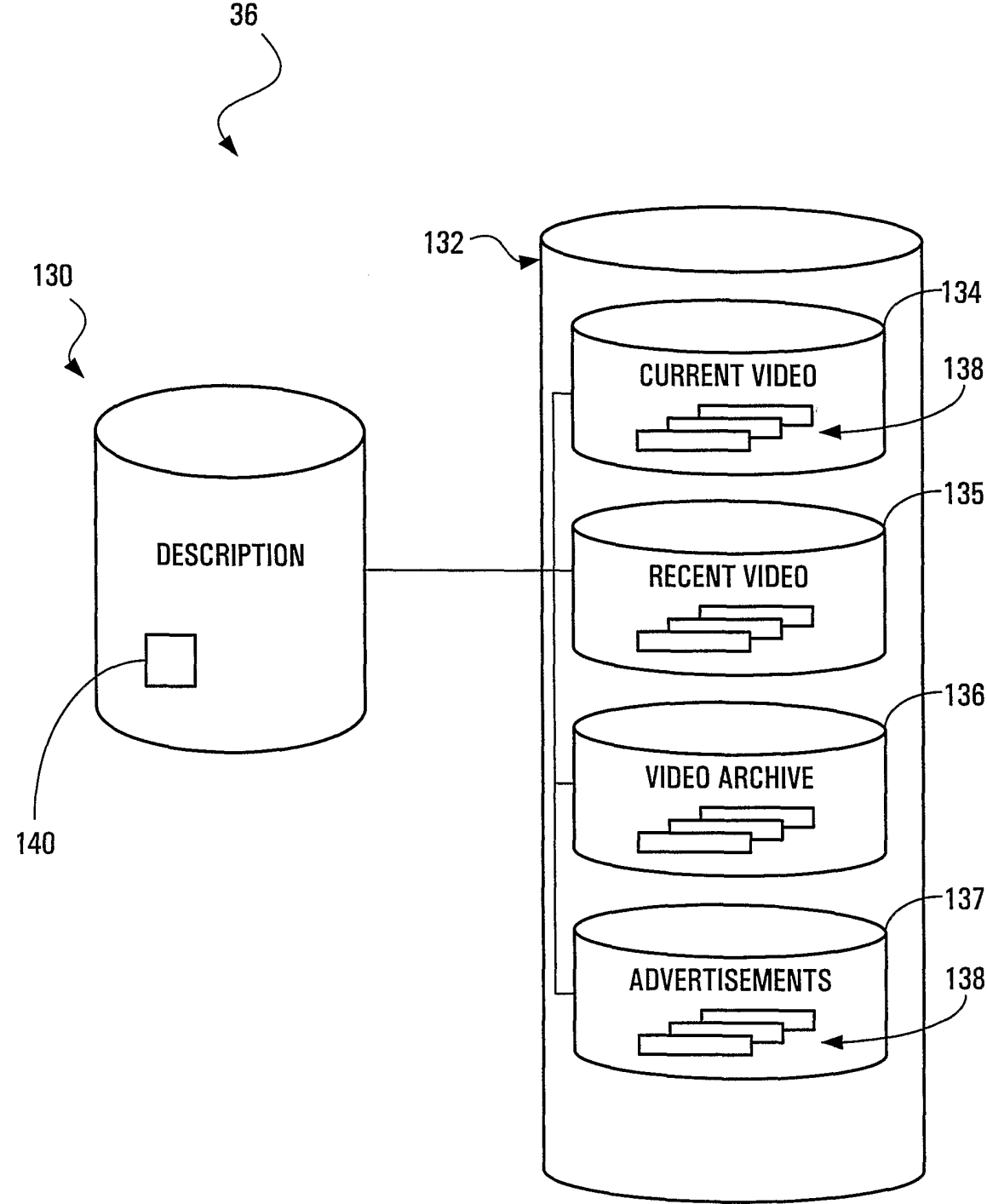


FIG. 7

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140

CONTENT DESCRIPTION

144	146	148	150	152	154	156	157	158	159
VIDEO ID	DESCRIPTION, KEYWORDS	DATE/TIME	SCRIPT	LOCATION LINK	STOCK SYMBOLS	SECTOR	TIME DURATION	META DATA	TYPE
									REG AD GEN

142

FIG. 8

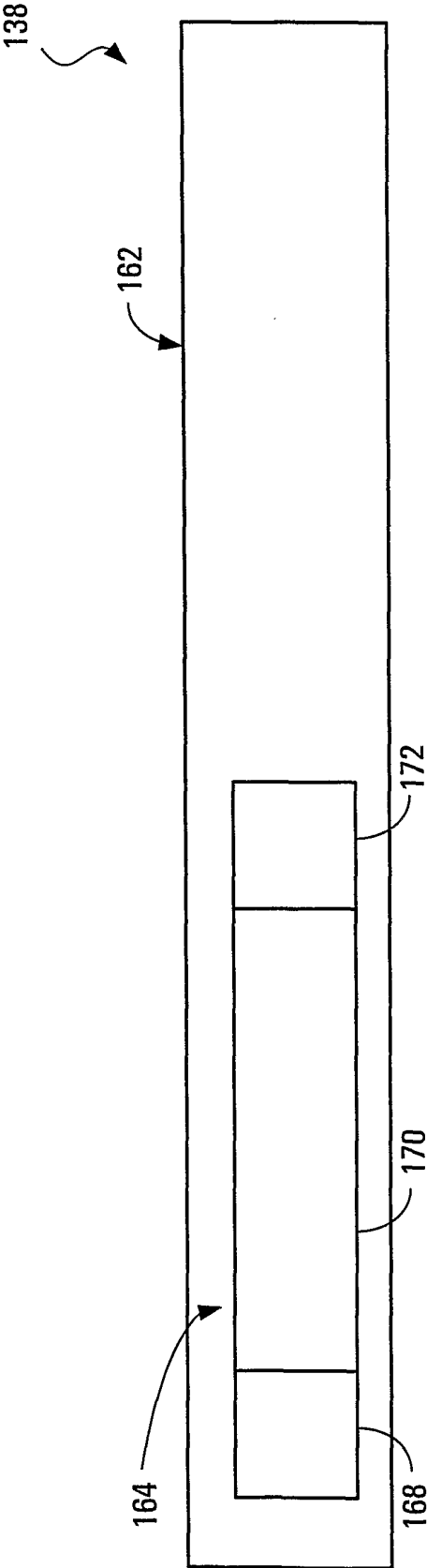


FIG. 9

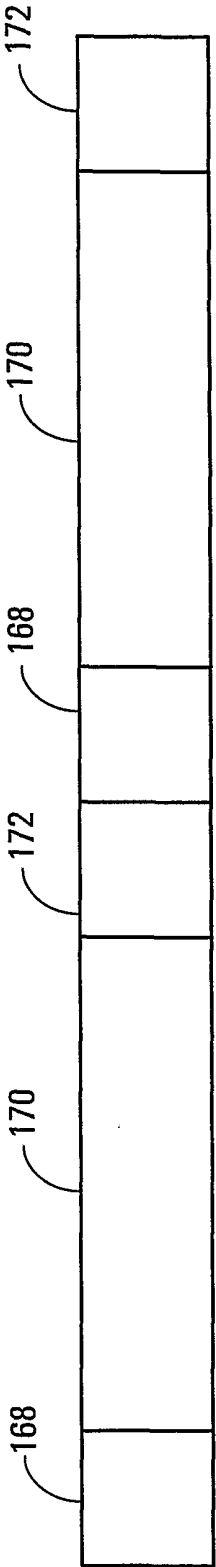


FIG. 10

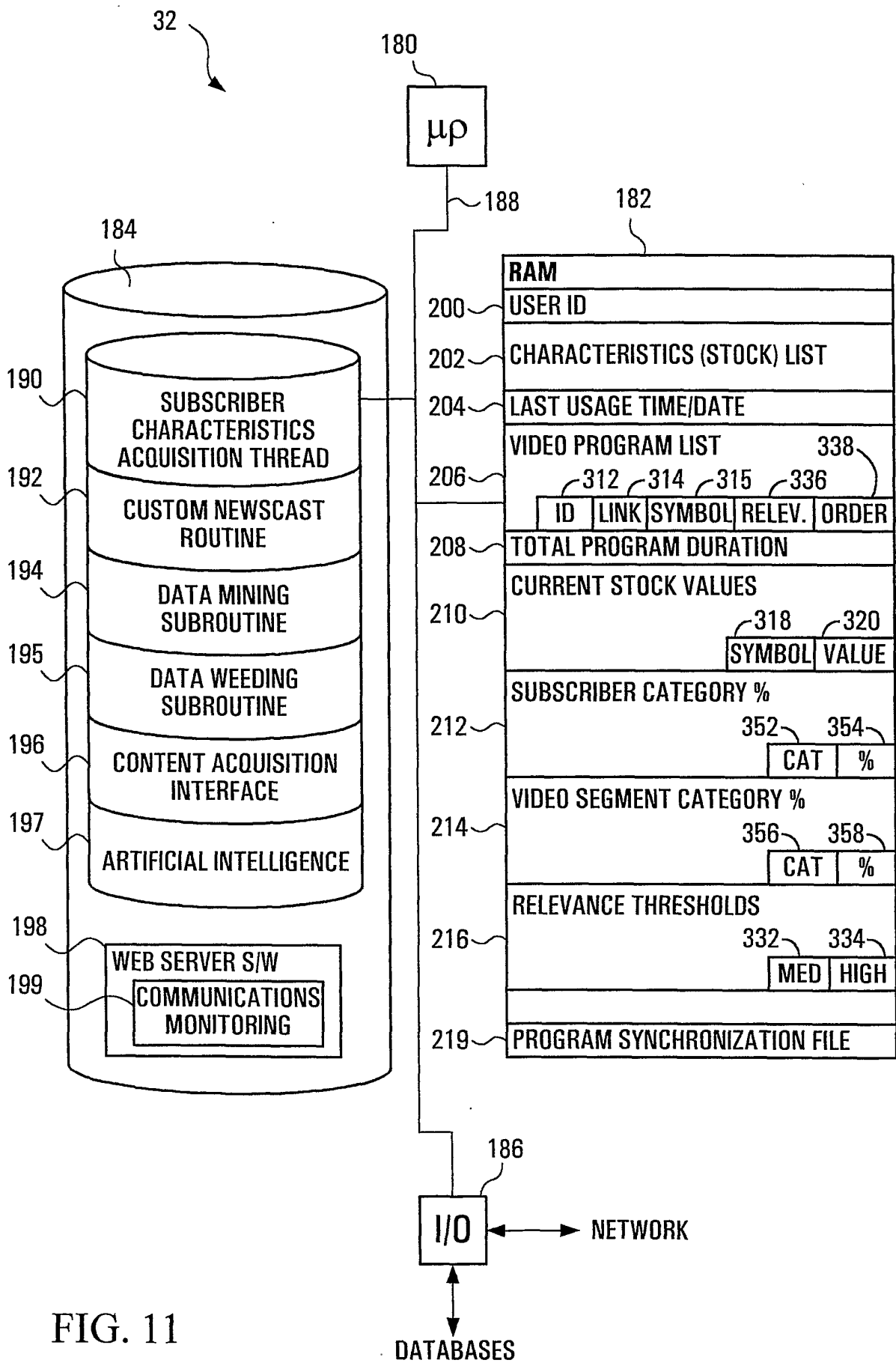


FIG. 11

10/19

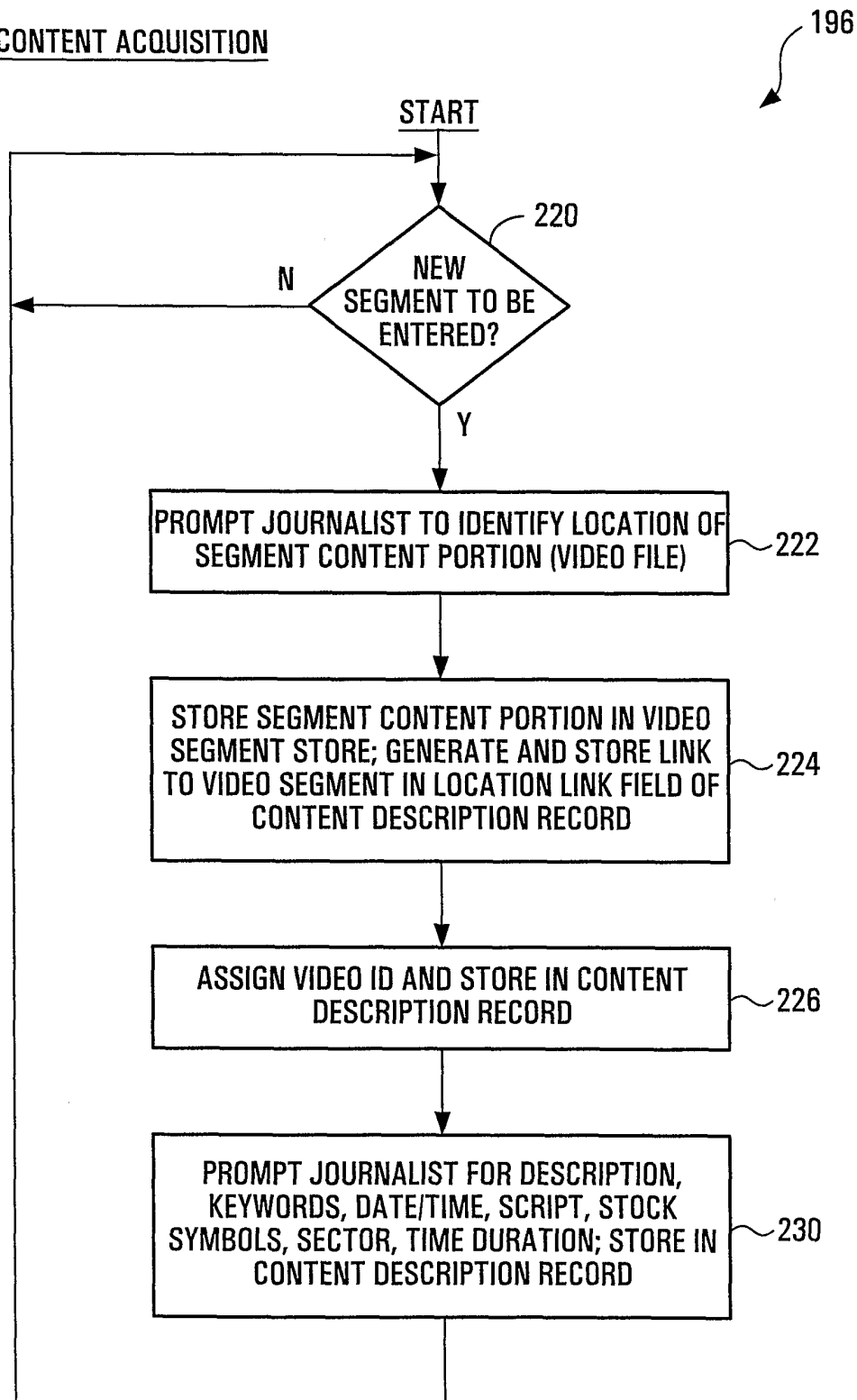
CONTENT ACQUISITION

FIG. 12

11/19

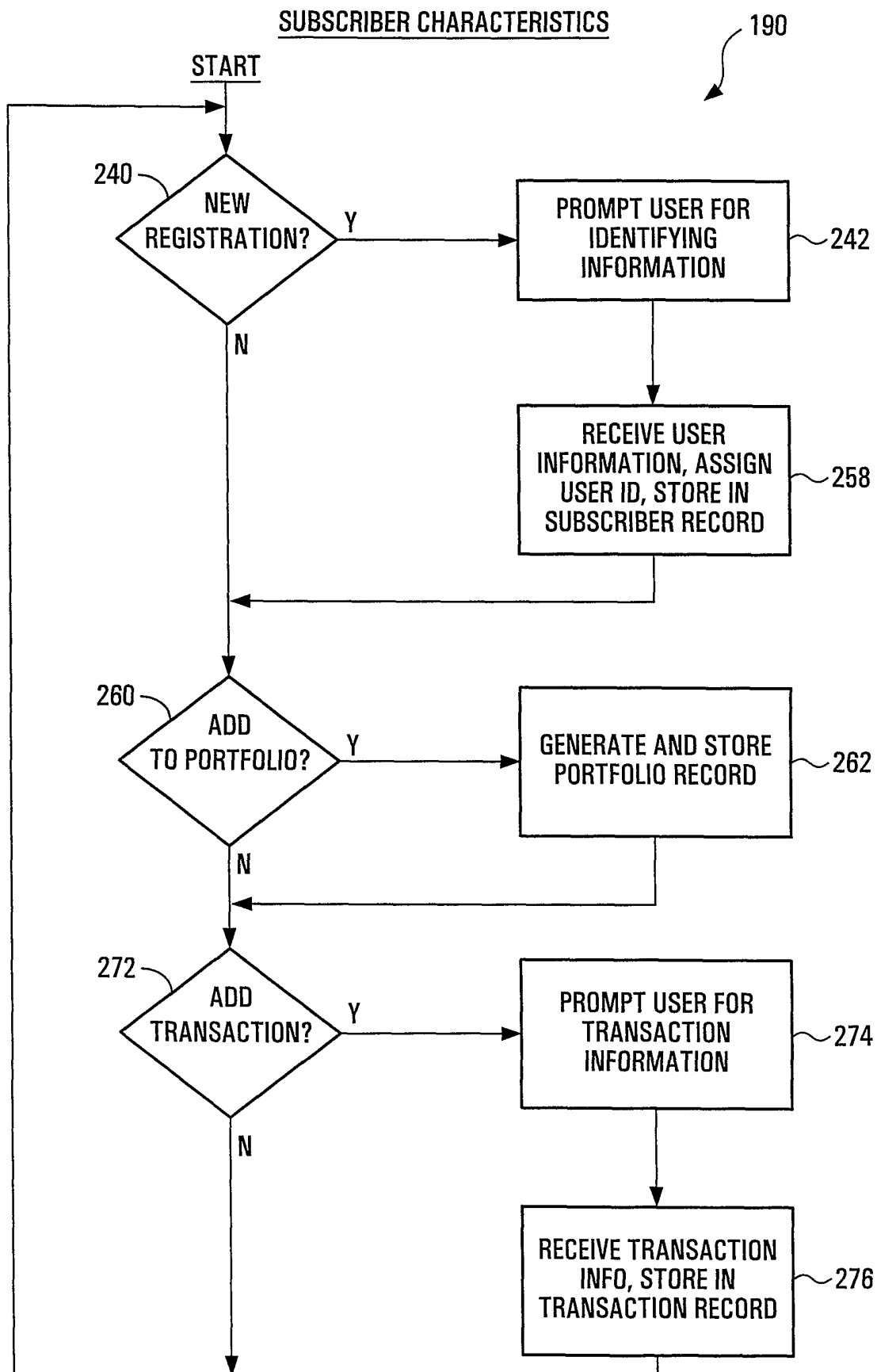
SUBSCRIBER CHARACTERISTICS

FIG. 13

12/19

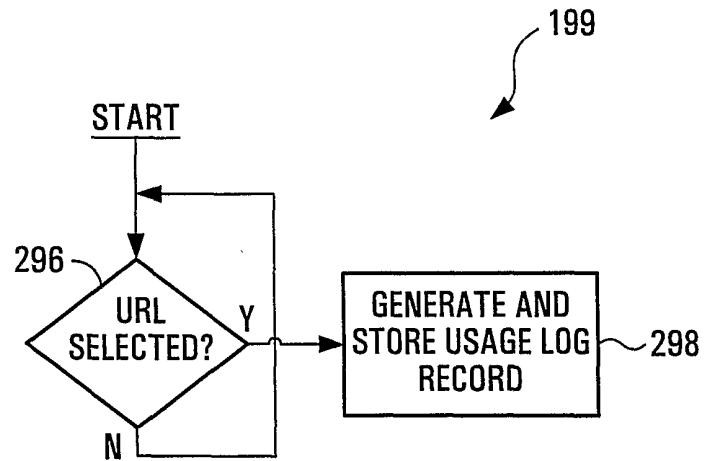
COMMUNICATIONS MONITORING

FIG. 14

NEW USER REGISTRATION

WELCOME TO STOCKHOUSE.COM'S NEW USER REGISTRATION.

THE FOLLOWING INFORMATION WILL ONLY BE USED INTERNALLY AT STOCKHOUSE. IT IS STRICTLY CONFIDENTIAL AND WILL NEVER BE GIVEN TO ANY OUTSIDE SOURCES.

PLEASE ENSURE THAT THE INFORMATION GIVEN IS CORRECT. FALSE INFORMATION MAY RESULT IN INCOMPLETE VALIDATION.

1. CHOOSE A USERNAME AND PASSWORD

*USERNAME:  246

*PASSWORD:  248

2. ENTER YOUR CONTACT INFORMATION

*FIRST NAME:

*LAST NAME:  250

*E-MAIL:  252

NOTE: YOUR E-MAIL WILL BE USED TO VERIFY YOUR ACCOUNT.

I WISH TO RECEIVE COMPANY SPONSORED NEWS AND INFORMATION VIA E-MAIL (STOCKHOUSE NEWSBLAST):

☐ INFO ☒ YES ☐ NO

I WISH TO RECEIVE STOCKHOUSE'S DAILY WRAP ON THE MARKET (STOCKHOUSE @ THE BELL) BY E-MAIL AT THE END OF EACH MARKET DAY.

☐ INFO ☒ YES ☐ NO

*COUNTRY:  CHOOSE A COUNTRY 254

*DENOTES REQUIRED FIELD

256

244

PORTFOLIO WATCH		PERFORMANCE		NEWS REVIEW		ALERTS		UPDATE QUOTES		LOGOFF	
COMPANY	LAST TRADE	CHANGE	BID/ASK			VOLUME	TRADES	DELETE			
BLS - BELL SOUTH CORP.	46.75	+0.75	N/A / N/A			1,702,900	ADD TRADES	<input checked="" type="checkbox"/>			
BRCM - BROADCOM CORP.	146.375	+2.375	146.313(1)/146.500(6)			3,995,500	ADD TRADES	<input checked="" type="checkbox"/>			
CSCO - CISCO SYSTEMS INC.	68.25	+0.438	68.250(39)/68.313(30)			26,870,500	ADD TRADES	<input checked="" type="checkbox"/>			
DCLK - DOUBLECLICK INC.	36.25	-2.25	36.188(15)/36.250(1)			9,208,500	ADD TRADES	<input checked="" type="checkbox"/>			
MOT - MOTOROLA INC.	33.625	-0.438	N/A / N/A			8,598,900	ADD TRADES	<input checked="" type="checkbox"/>			
NT - NORTEL NETWORKS	68.188	+0.625	N/A / N/A			6,933,200	ADD TRADES	<input checked="" type="checkbox"/>			
VIGN - VIGNETTE CORP.	41.188	+1.188	41.125(23)/41.188(5)			1,807,800	ADD TRADES	<input checked="" type="checkbox"/>			
THE MARKETS: HSI-166.91    NASDAQ +95.00    DJIA +145.93    S&P 500 +18.08    FTSE -35.80											
<b>ADD STOCK TO PORTFOLIO</b>											
<p>PRECEED THE SYMBOL WITH THE PREFIX LETTER FOLLOWED BY A PERIOD</p> <p>X. AUSTRALIA                      EXAMPLE: T.ADX O. CDN HK. HONG KONG L. UNITED KINGDOM T. TORONTO V. CDNX</p> <p>COMPANIES LISTED ON AMEX, NYSE OR NASDAQ DO NOT REQUIRE A PREFIX.</p>											
<p>*PORTFOLIO CALCULATIONS SHOULD NOT BE RELIED UPON FOR TAXATION PURPOSES. NEWS - OFFICIAL COMPANY DISTRIBUTED PRESS RELEASES MEDIA - A RANGE OF INFORMATION FROM HEADLINES TO STOCKHOUSE.COM FINANCIAL NEWS (SHFN). STOCKHOUSE NETWORK</p>											

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FIG. 17

**BROADCOM CORPORATION (BRCM)** > > BULLBOARDS > CHART > ALERTS

ADD TRADES

PORTFOLIO WATCH

PERFORMANCE

UPDATE QUOTES

LOGOFF

REMOVE STOCK

DATE	TYPE	QTY.	PRICE	TRANSACTIONS	COMMISSIONS	DELETE
2/29/00	BUY	1,000	197.00	197,000.00	-	✕
3/22/00	SELL	500	236.88	(118,440.00)	-	✕

RETURN: 9.07%    SHARES: 500    MARKET VALUE: #*\$85,687.50    COMMISSIONS: \$0.00    GAIN/LOSS: β*\$7,127.50

LAST TRADE: 171.375    CHANGE: 4.578    VOLUME: 5,219,700  
 BID (BID SIZE): 172.00(1)    ASK (ASK SIZE): 174.00(1)    PREV. CLOSE: 166.797  
 DAY HI/LOW: 175.125/163.000    YEAR HI/LOW: 253.000/50.750    OPEN: 164.625

BUY ▼

6/20/00

500

146.5

0

284

286

288

290

◎% ○\$

282

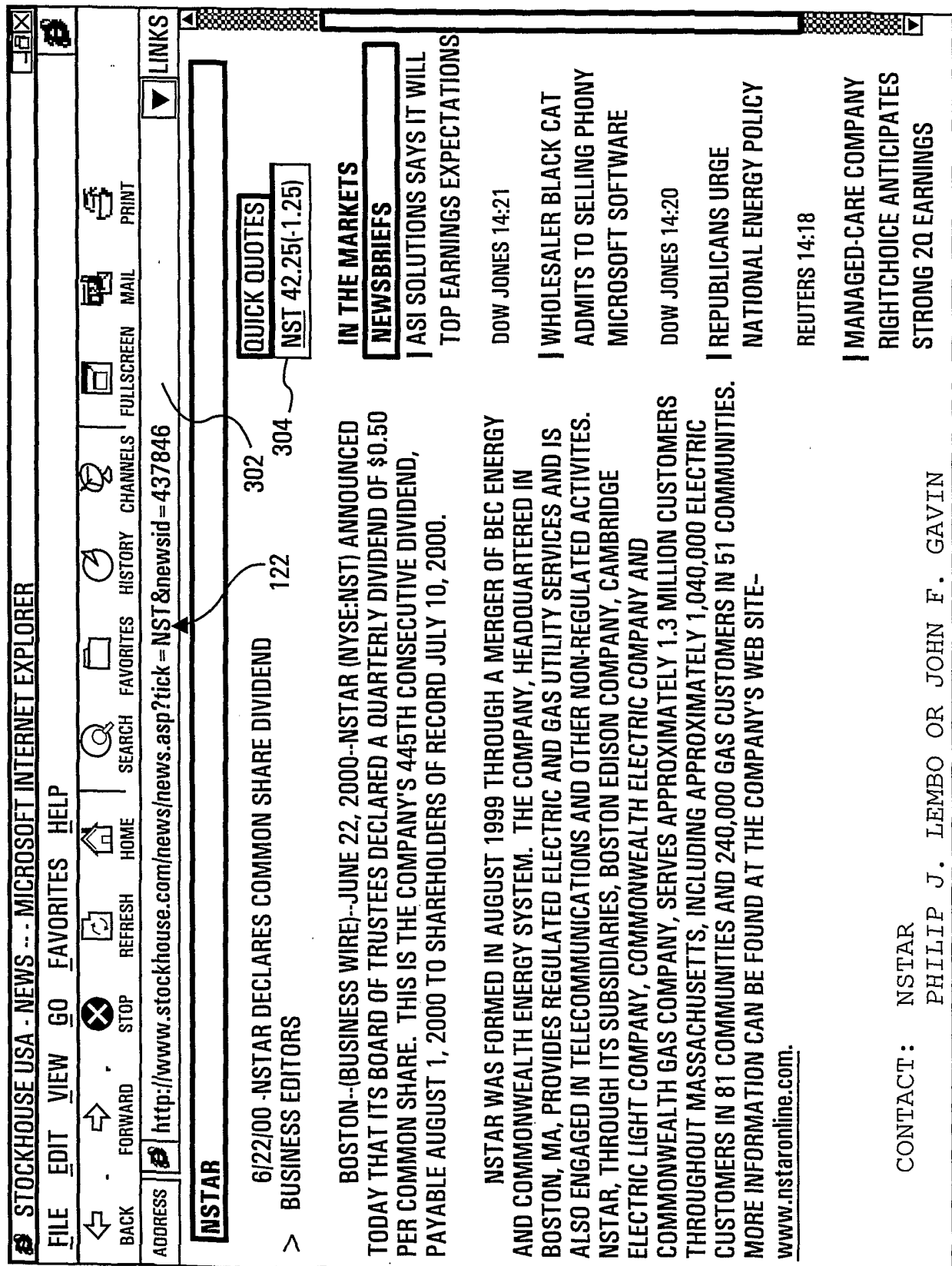
292

294

280

DIRECTIONS:  
 START BY SELECTING YOUR TRANSACTION TYPE; EITHER "BUY" OR "SELL". THE DATE FIELD DEFAULTS TO TODAY'S DATE, BUT YOU ARE ABLE TO ALTER THIS AS LONG AS YOU MAINTAIN THE MONTH/DAY/YEAR FORMAT. ENTER IN THE VOLUME OF THE SALE OR PURCHASE. THIS AMOUNT WILL BE ADDED OR DEDUCTED FROM YOUR CURRENT HOLDINGS. THE SHARE PRICE DISPLAYS THE CURRENT TRADING VALUE, BUT YOU MAY CHANGE THIS IF ENTERING PAST TRADES. THE FINAL STEP IS TO ENTER IN THE COMMISSION RATE, EITHER IN DOLLARS OR PERCENTAGE.

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300

FIG. 18

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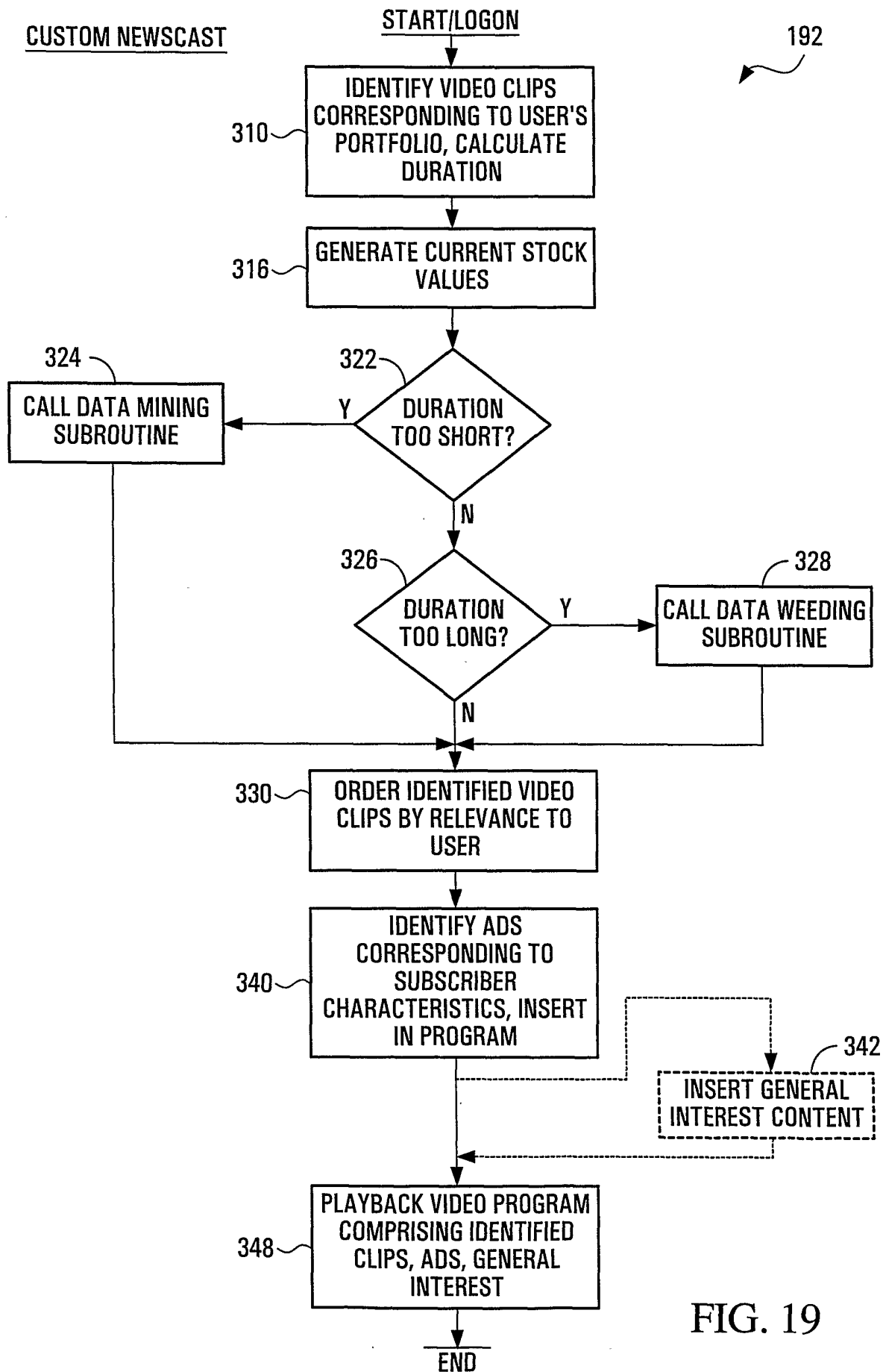


FIG. 19

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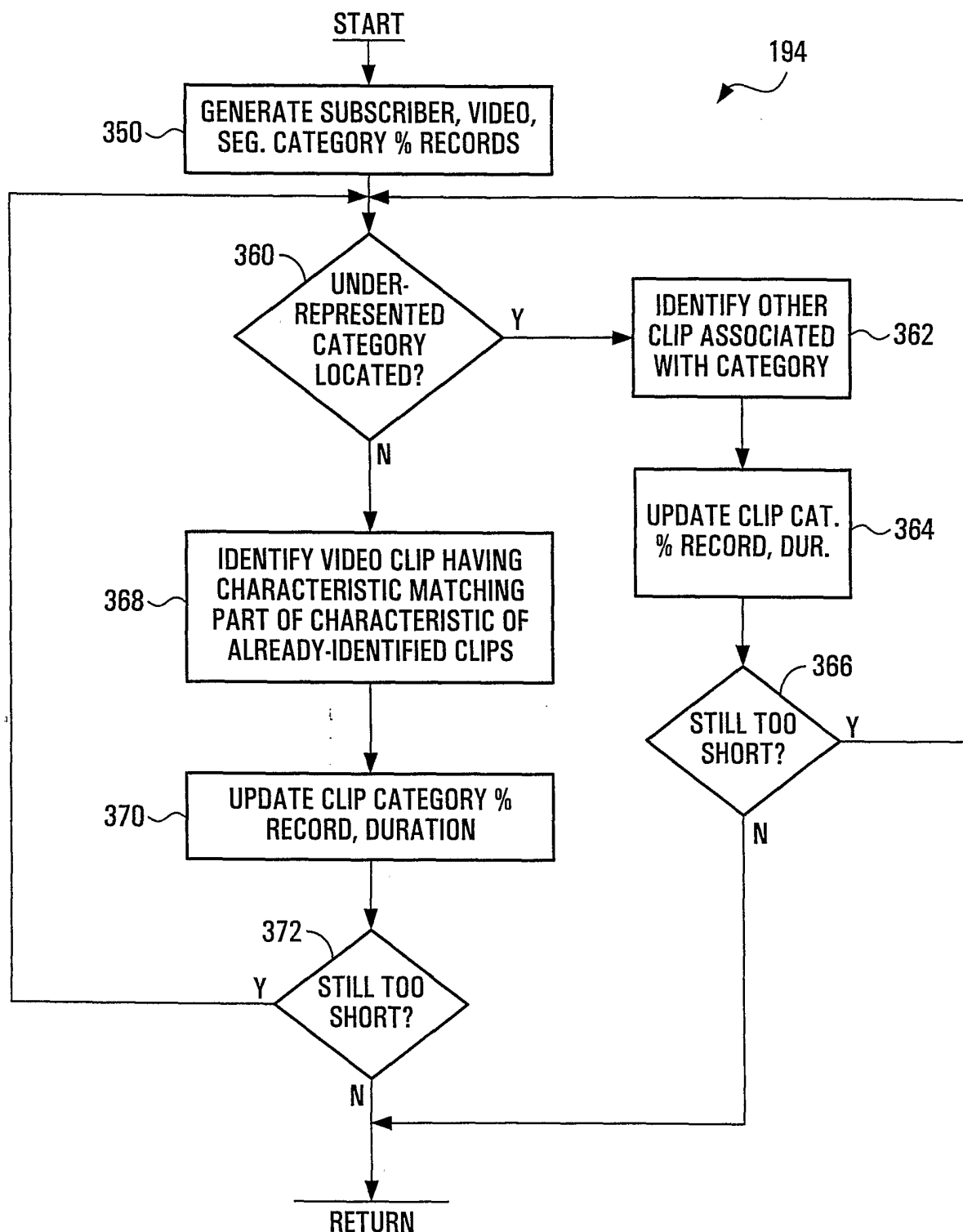
DATA MINING

FIG. 20

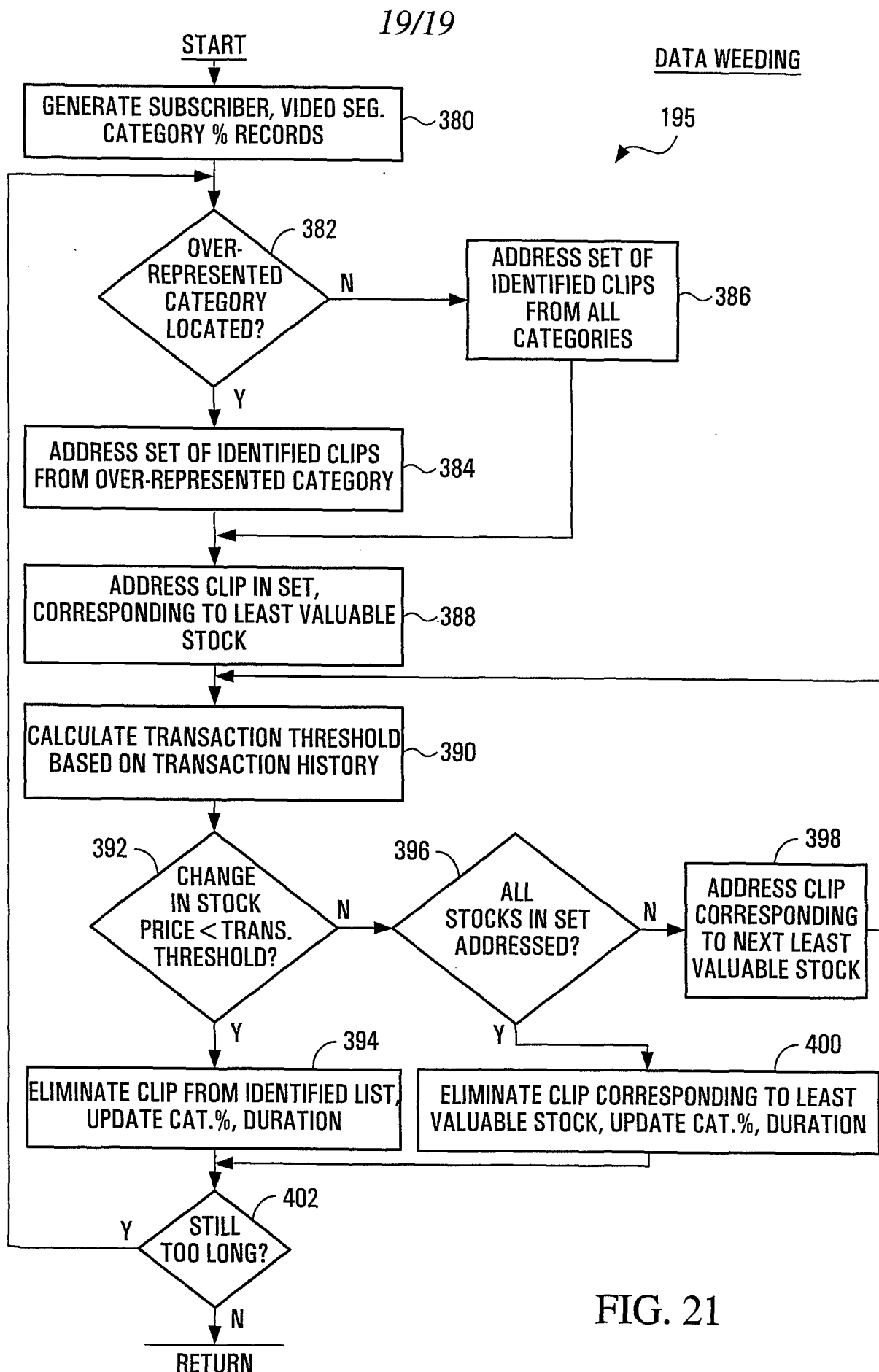


FIG. 21

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 01/00468

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04N7/173 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04N G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 835 087 A (HERTZ FREDERICK S M ET AL) 10 November 1998 (1998-11-10) column 9, line 1 -column 74, line 19 figures 2,5,10,12-16	1-71
X	US 5 861 881 A (FREEMAN MICHAEL J ET AL) 19 January 1999 (1999-01-19)  column 4, line 7 -column 8, line 65 column 14, line 8 -column 16, line 55 column 18, line 52 -column 19, line 52 figures 1-13	1-6, 8-16, 21-26, 30-39, 42-48, 55,63-71
A	WO 98 09243 A (INTERNET MEDIA CORP) 5 March 1998 (1998-03-05)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

7 August 2001

Date of mailing of the international search report

16/08/2001

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Van der Zaai, R

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 01/00468

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