US008170395B2

(12) **United States Patent**
Sterner et al.

(10) **Patent No.: US 8,170,395 B2**
(45) **Date of Patent: May 1, 2012**

(54) **METHODS AND SYSTEMS FOR HANDLING MONTAGE VIDEO DATA**

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(73) Assignee: **Wellcomemat LLC**, Boulder, CO (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1262 days.

(21) Appl. No.: **11/744,764**

(22) Filed: **May 4, 2007**

(65) **Prior Publication Data**

US 2007/0263984 A1 Nov. 15, 2007

Related U.S. Application Data

(60) Provisional application No. 60/746,645, filed on May 7, 2006.

(51) **Int. Cl.**

H04N 9/80	(2006.01)
H04N 5/76	(2006.01)
H04N 7/173	(2011.01)

(52) **U.S. Cl.** **386/248**; 386/239; 386/291; 725/86

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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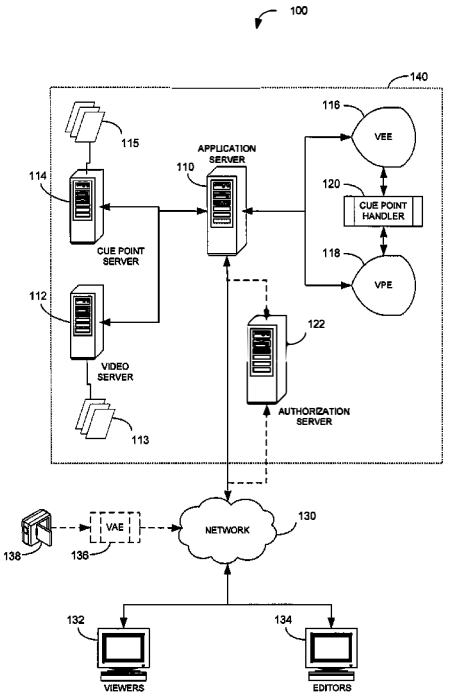
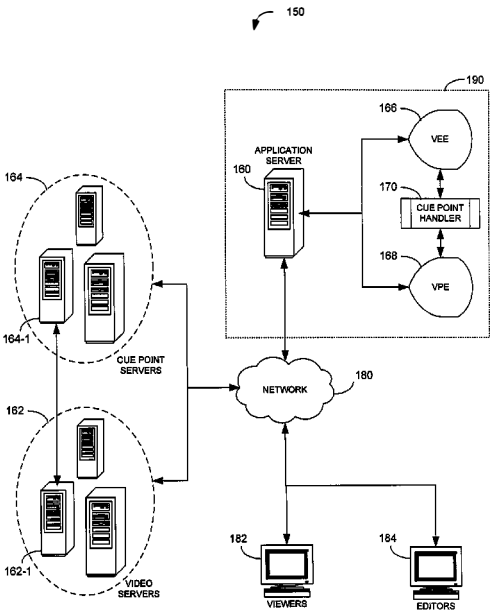
Primary Examiner — Thai Tran
Assistant Examiner — Hung Dang
(74) *Attorney, Agent, or Firm* — Marsh Fischmann & Breyfogle LLP; Daniel J. Sherwinter

(57) **ABSTRACT**

Video data may be extremely useful in online property commerce. However, the current methods of handling this video data fail to provide users of the data with effective and convenient ways of consolidating footage from multiple videos or portions thereof and conveying their particular viewpoints and other property features. Among other things, embodiments of the invention address these failures by providing methods and systems for generating and handling montage video data.

25 Claims, 28 Drawing Sheets





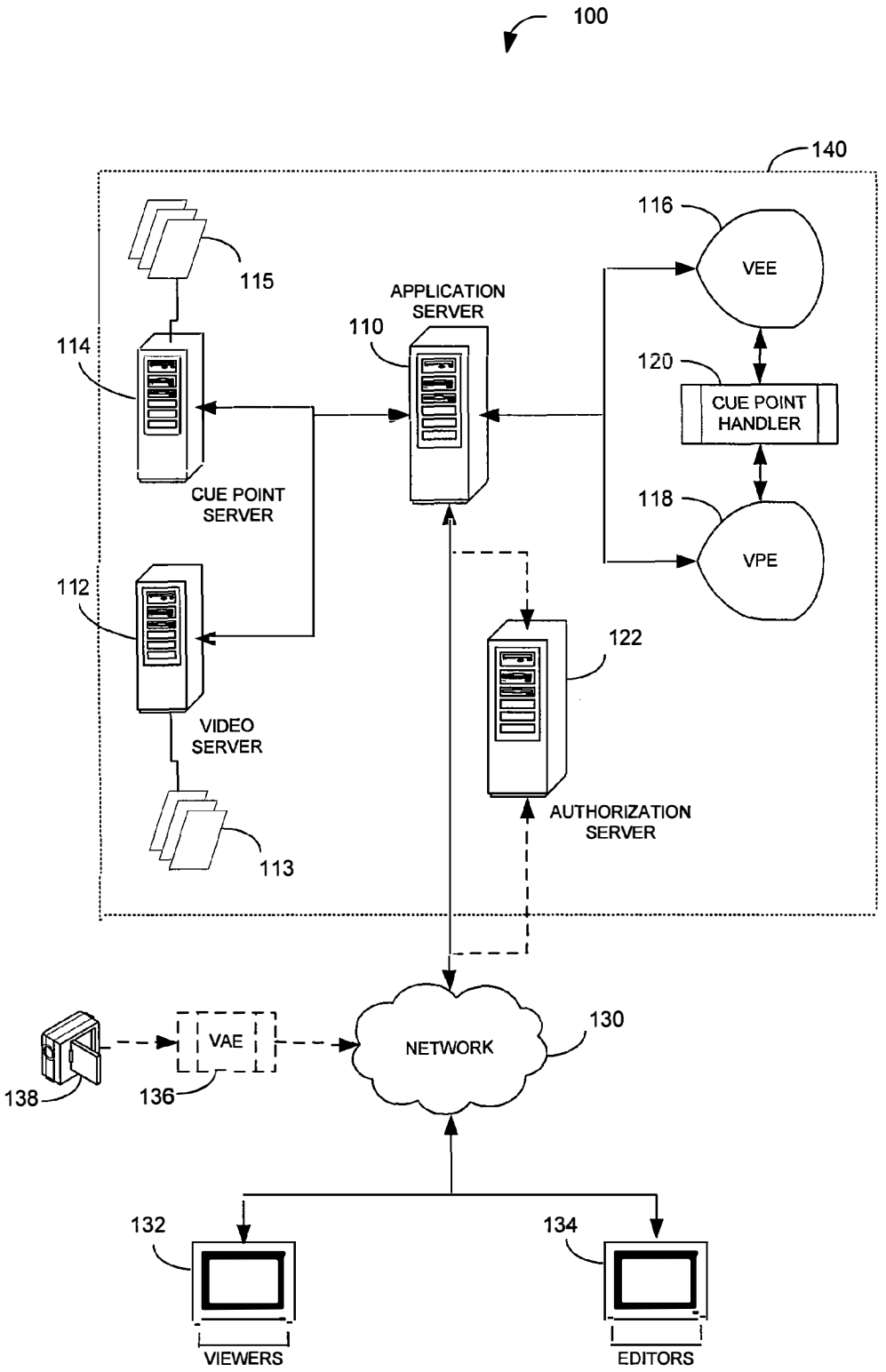

100
140
116
VEE
115
APPLICATION SERVER
110
114
120
CUE POINT HANDLER
CUE POINT SERVER
118
VPE
112
122
VIDEO SERVER
AUTHORIZATION SERVER
113
VAE
NETWORK
130
138
136
132
134
VIEWERS
EDITORS

Fig. 1A

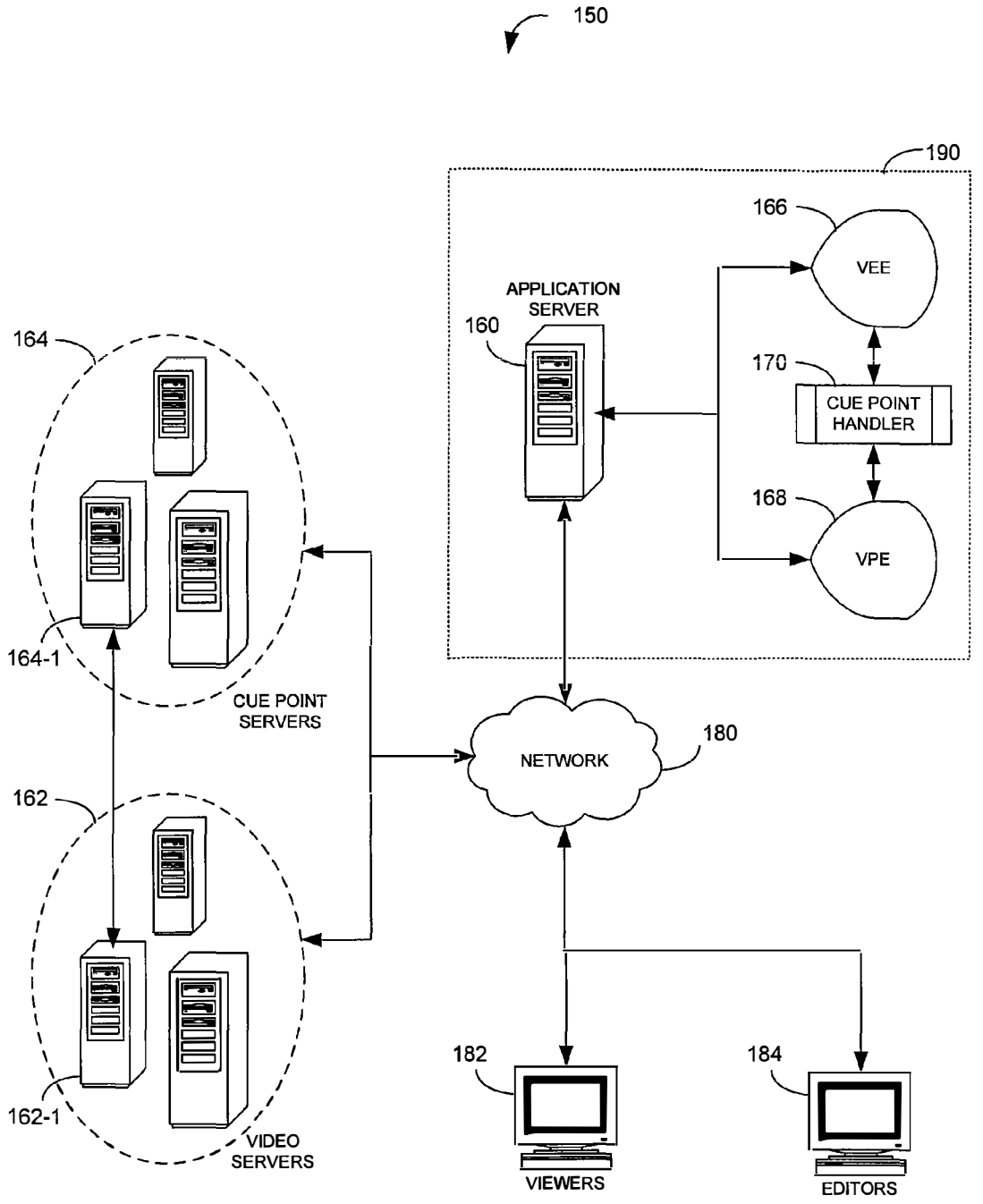

150
190
166
VEE
APPLICATION SERVER
160
170
CUE POINT HANDLER
168
VPE
164
164-1
CUE POINT SERVERS
NETWORK
180
162
162-1
VIDEO SERVERS
182
VIEWERS
184
EDITORS

Fig. 1B

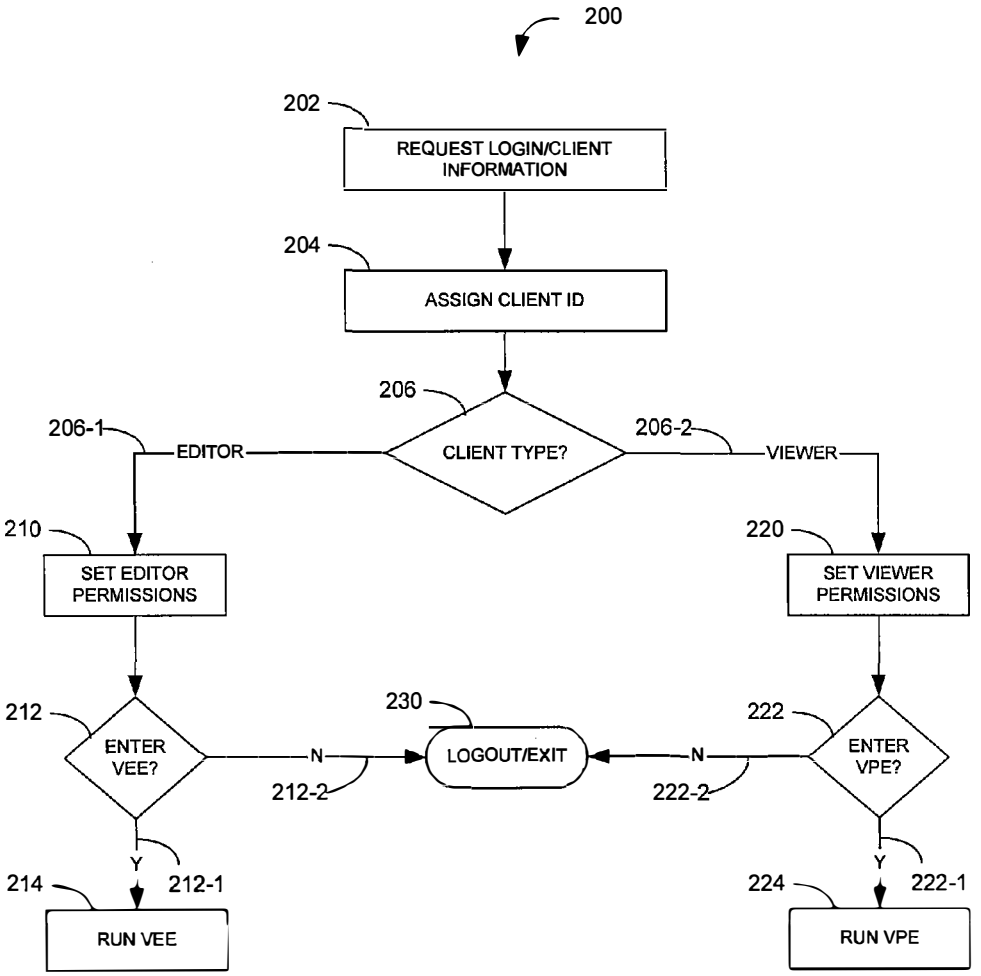

200
202
REQUEST LOGIN/CLIENT INFORMATION
204
ASSIGN CLIENT ID
206
CLIENT TYPE?
206-1
EDITOR
206-2
VIEWER
210
SET EDITOR PERMISSIONS
220
SET VIEWER PERMISSIONS
212
ENTER VEE?
N
212-2
230
LOGOUT/EXIT
N
222-2
222
ENTER VPE?
Y
212-1
214
RUN VEE
Y
222-1
224
RUN VPE

Fig. 2

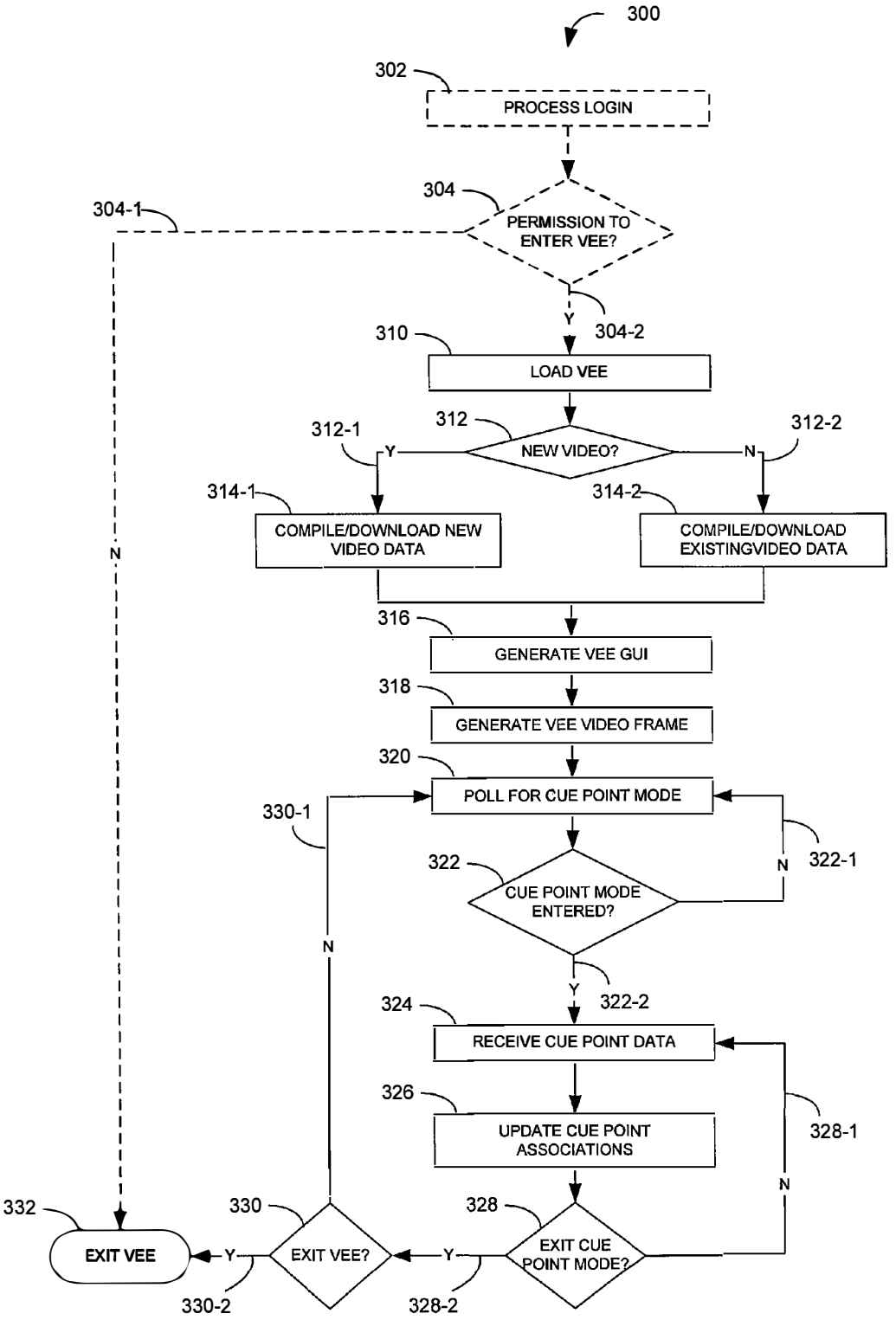

300
302
PROCESS LOGIN
304
PERMISSION TO ENTER VEE?
304-1
Y
304-2
310
LOAD VEE
312
NEW VIDEO?
312-1
312-2
Y
N
314-1
314-2
COMPILE/DOWNLOAD NEW VIDEO DATA
COMPILE/DOWNLOAD EXISTINGVIDEO DATA
N
316
GENERATE VEE GUI
318
GENERATE VEE VIDEO FRAME
320
POLL FOR CUE POINT MODE
330-1
322
CUE POINT MODE ENTERED?
N
322-1
N
Y
322-2
324
RECEIVE CUE POINT DATA
326
UPDATE CUE POINT ASSOCIATIONS
328-1
N
332
EXIT VEE
330
EXIT VEE?
328
EXIT CUE POINT MODE?
Y
Y
330-2
328-2

Fig. 3A

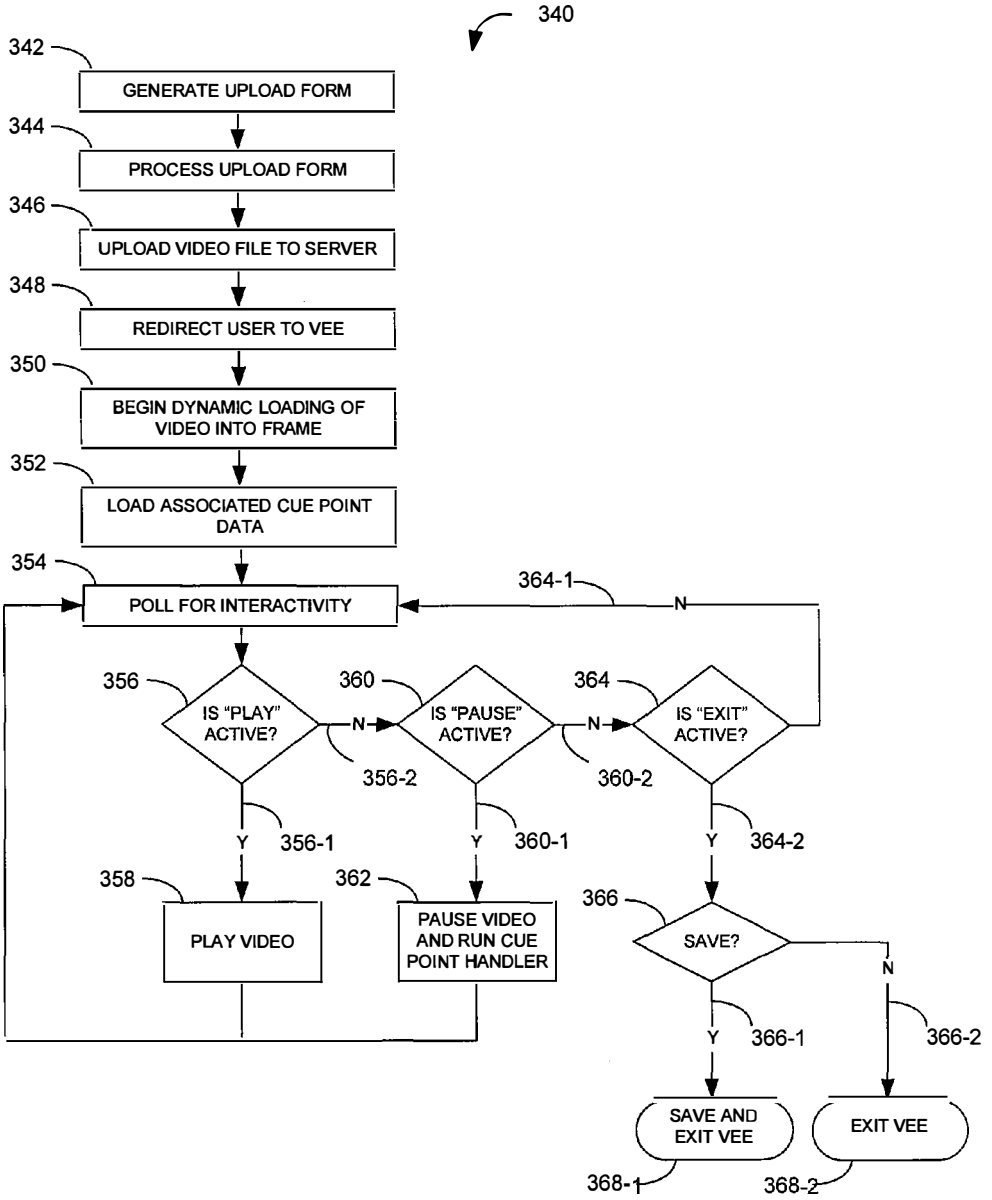

340
342
GENERATE UPLOAD FORM
344
PROCESS UPLOAD FORM
346
UPLOAD VIDEO FILE TO SERVER
348
REDIRECT USER TO VEE
350
BEGIN DYNAMIC LOADING OF VIDEO INTO FRAME
352
LOAD ASSOCIATED CUE POINT DATA
354
POLL FOR INTERACTIVITY
364-1
N
356
IS "PLAY" ACTIVE?
360
IS "PAUSE" ACTIVE?
364
IS "EXIT" ACTIVE?
N
356-2
N
360-2
Y
356-1
Y
360-1
Y
364-2
358
PLAY VIDEO
362
PAUSE VIDEO AND RUN CUE POINT HANDLER
366
SAVE?
N
Y
366-1
366-2
SAVE AND EXIT VEE
EXIT VEE
368-1
368-2

Fig. 3B

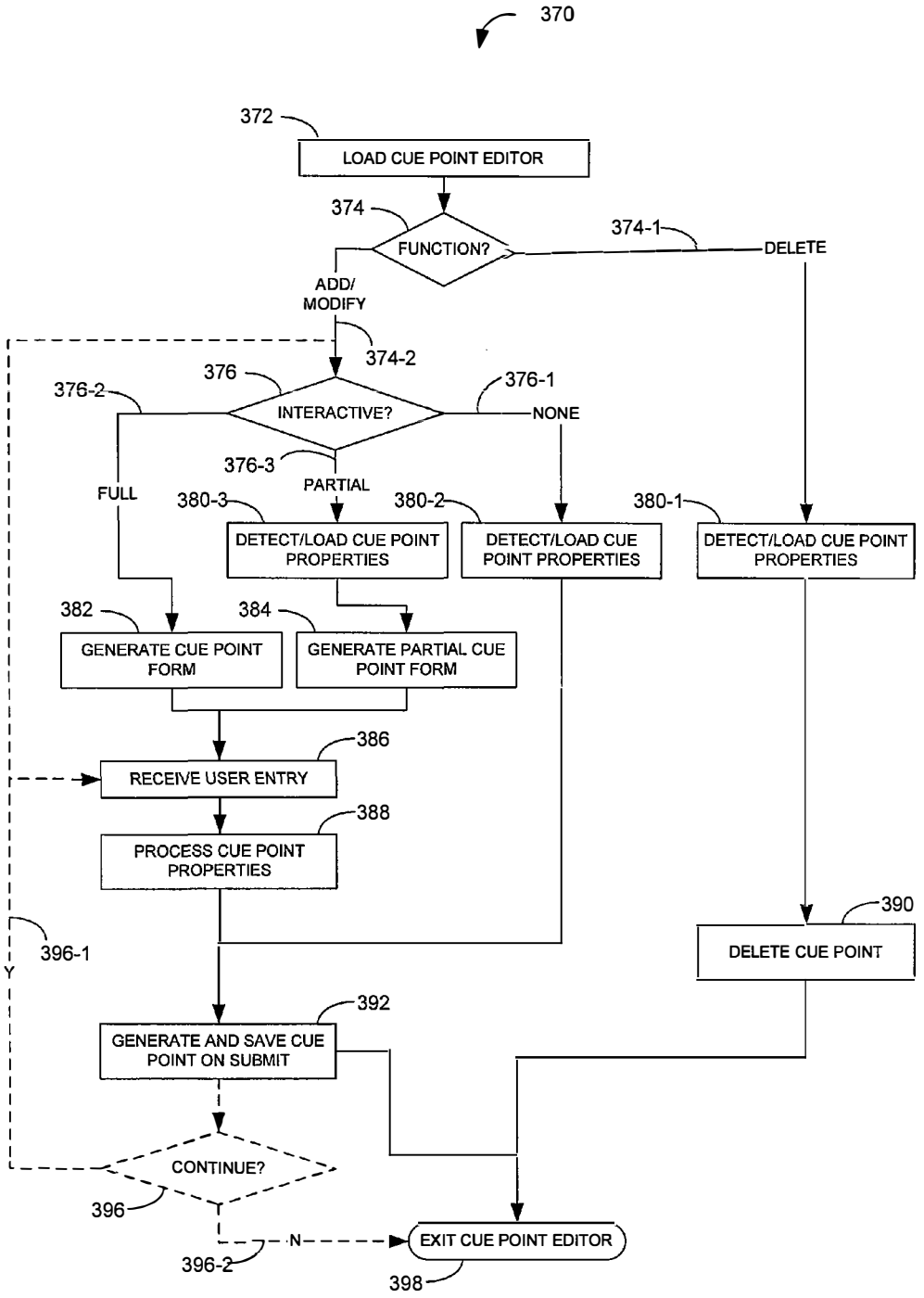

370
372
LOAD CUE POINT EDITOR
374
FUNCTION?
374-1
DELETE
ADD/
MODIFY
374-2
376
INTERACTIVE?
376-2
376-1
NONE
376-3
PARTIAL
FULL
380-3
380-2
380-1
DETECT/LOAD CUE POINT PROPERTIES
DETECT/LOAD CUE POINT PROPERTIES
DETECT/LOAD CUE POINT PROPERTIES
382
384
GENERATE CUE POINT FORM
GENERATE PARTIAL CUE POINT FORM
386
RECEIVE USER ENTRY
388
PROCESS CUE POINT PROPERTIES
390
DELETE CUE POINT
396-1
Y
392
GENERATE AND SAVE CUE POINT ON SUBMIT
CONTINUE?
396
N
396-2
EXIT CUE POINT EDITOR
398

Fig. 3C

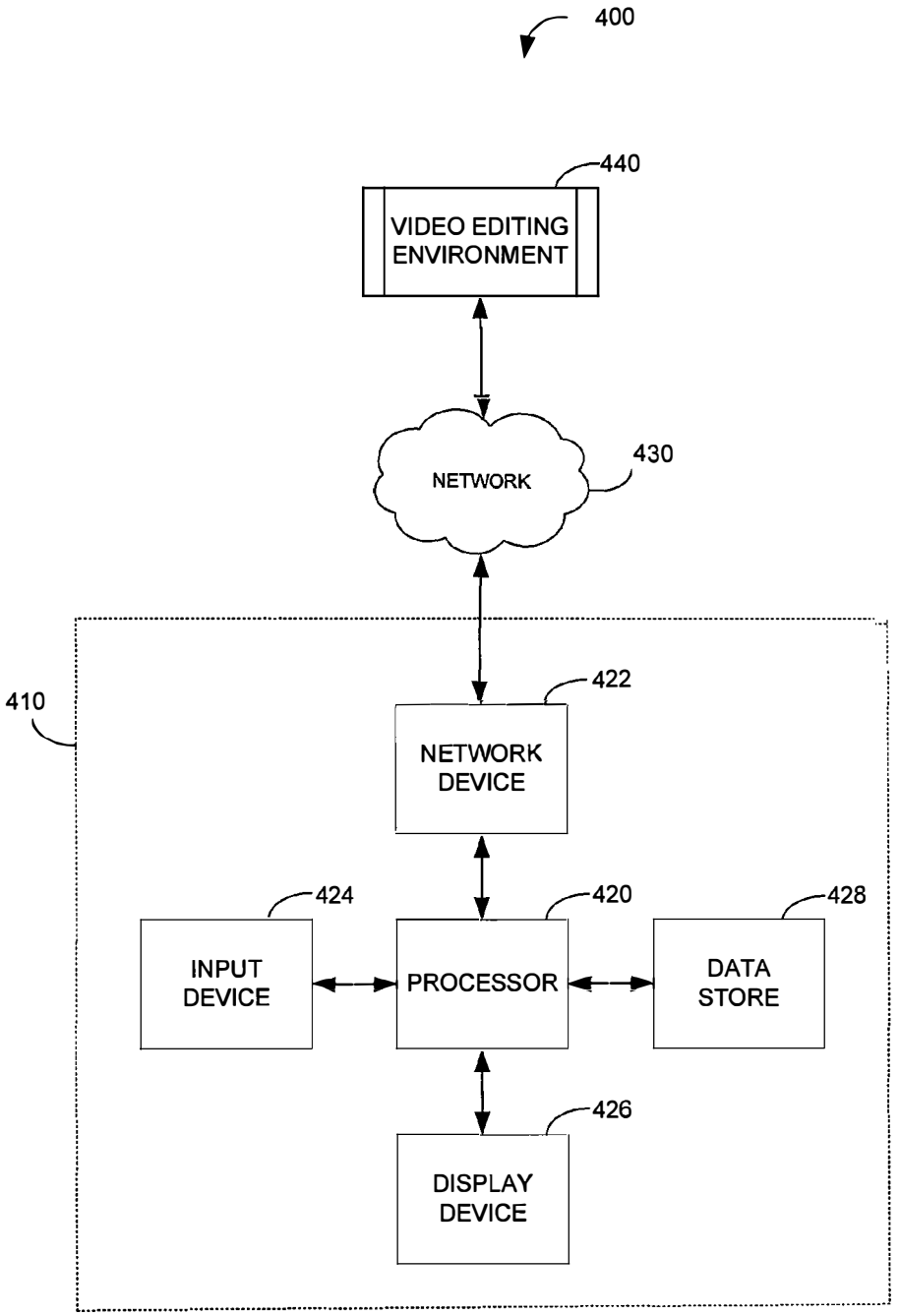

400
440
VIDEO EDITING ENVIRONMENT
NETWORK
430
410
422
NETWORK DEVICE
424
420
428
INPUT DEVICE
PROCESSOR
DATA STORE
426
DISPLAY DEVICE

Fig. 4

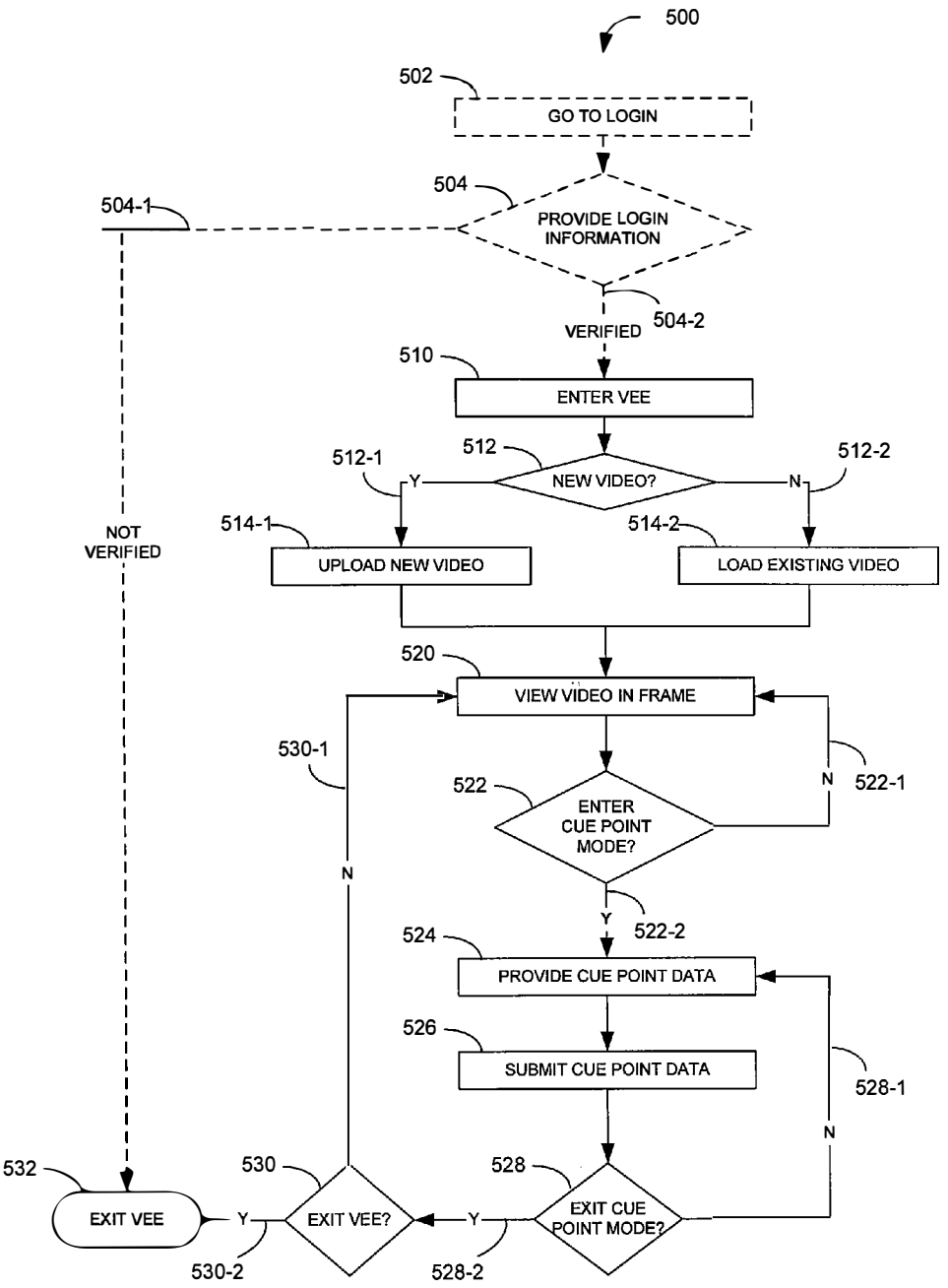

500
502
GO TO LOGIN
504
504-1
PROVIDE LOGIN INFORMATION
VERIFIED
504-2
510
ENTER VEE
512
512-1
NEW VIDEO?
512-2
Y
N
NOT VERIFIED
514-1
514-2
UPLOAD NEW VIDEO
LOAD EXISTING VIDEO
520
VIEW VIDEO IN FRAME
530-1
522
ENTER CUE POINT MODE?
N
522-1
N
Y
522-2
524
PROVIDE CUE POINT DATA
526
SUBMIT CUE POINT DATA
528-1
N
532
530
528
EXIT VEE
Y
EXIT VEE?
Y
EXIT CUE POINT MODE?
530-2
528-2

Fig. 5

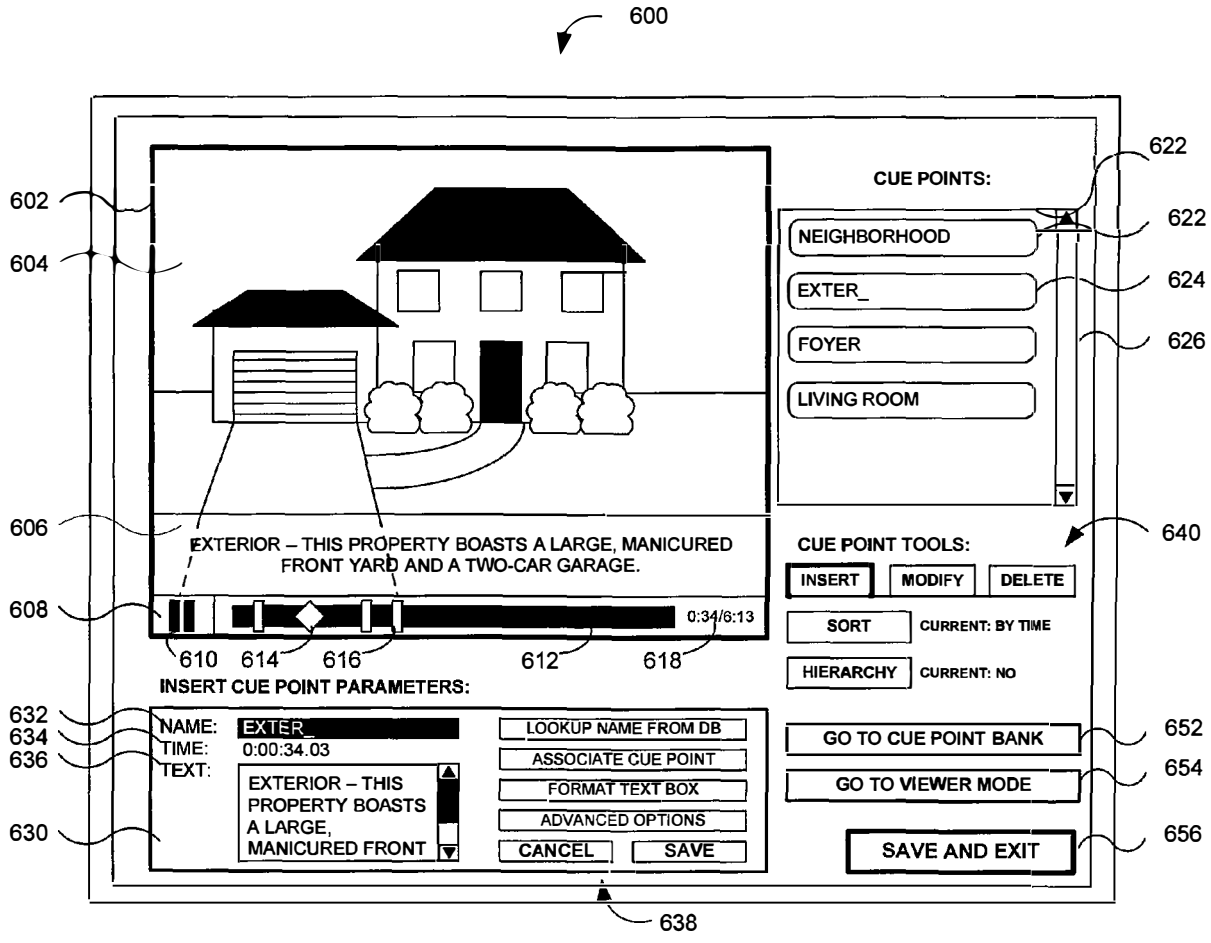

600
602
604
606
608
610
614
616
612
618
622
622
624
626
640
630
632
634
636
652
654
656
638
CUE POINTS:
NEIGHBORHOOD
EXTER_
FOYER
LIVING ROOM
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
0:34/6:13
CUE POINT TOOLS:
INSERT
MODIFY
DELETE
SORT
CURRENT: BY TIME
HIERARCHY
CURRENT: NO
INSERT CUE POINT PARAMETERS:
NAME: EXTER_
TIME: 0:00:34.03
TEXT:
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT
LOOKUP NAME FROM DB
ASSOCIATE CUE POINT
FORMAT TEXT BOX
ADVANCED OPTIONS
CANCEL
SAVE
GO TO CUE POINT BANK
GO TO VIEWER MODE
SAVE AND EXIT

Fig. 6

700

	VIDEO_ID	CP1	CP2	CP3	CP4	. . .
710-1	VID_0001	NEIGHBORHOOD	EXTERIOR	FOYER	LIVING ROOM	. . .
730 760	VID_0002	STREET	EXTERIOR	ENTRY	LIVING ROOM	. . .
710-2	VID_0003	ENTRY	DINING ROOM	OFFICE	BATHROOM	. . .
710-3	VID_0004	OUTSIDE	FRONT PORCH	GARAGE	FOYER	. . .
710-4	VID_0005	EXTERIOR	MAIN STAIRS	DINING ROOM	KITCHEN	. . .
710-5	. . .	. . .	. . .	. . .	. . .	. . .

720-1 720-2 740 750 720-3 720-4

Fig. 7

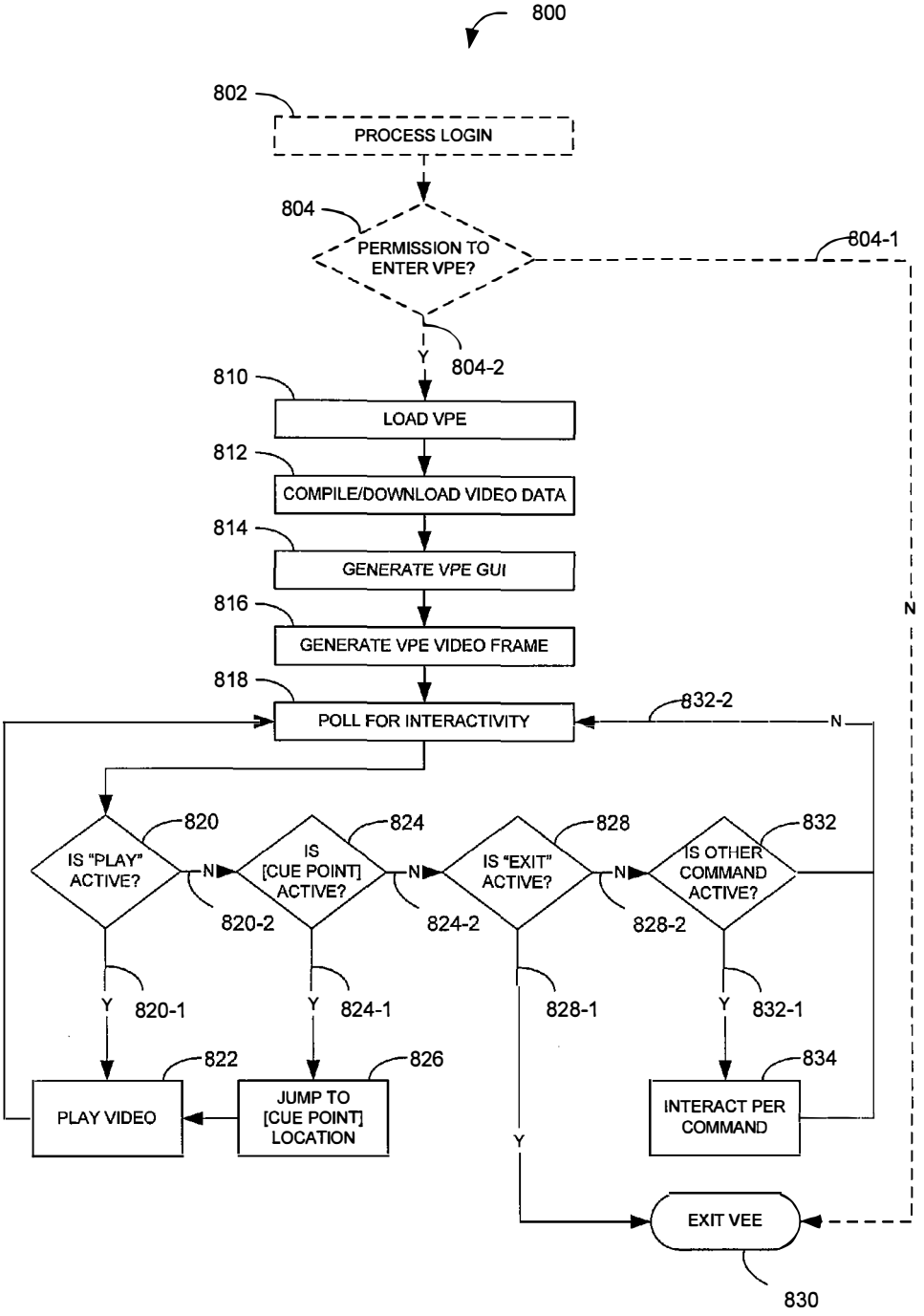

800
802
PROCESS LOGIN
804
PERMISSION TO ENTER VPE?
804-1
Y
804-2
N
810
LOAD VPE
812
COMPILE/DOWNLOAD VIDEO DATA
814
GENERATE VPE GUI
816
GENERATE VPE VIDEO FRAME
818
POLL FOR INTERACTIVITY
832-2
N
820
IS "PLAY" ACTIVE?
N
820-2
824
IS [CUE POINT] ACTIVE?
N
824-2
828
IS "EXIT" ACTIVE?
N
828-2
832
IS OTHER COMMAND ACTIVE?
Y
820-1
Y
824-1
828-1
Y
832-1
822
PLAY VIDEO
826
JUMP TO [CUE POINT] LOCATION
834
INTERACT PER COMMAND
Y
EXIT VEE
830

Fig. 8

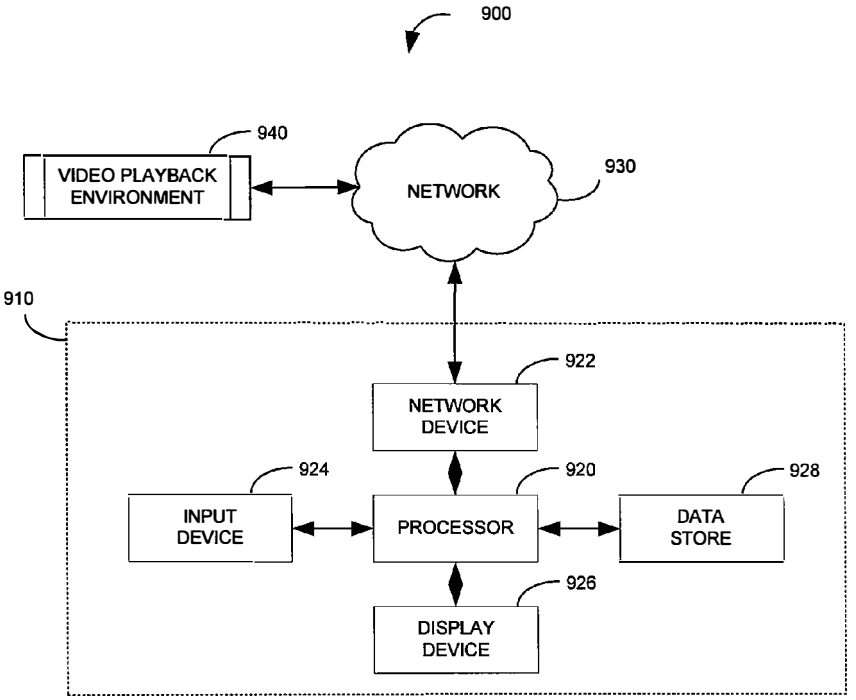

900
940
VIDEO PLAYBACK ENVIRONMENT
NETWORK
930
910
922
NETWORK DEVICE
924
920
928
INPUT DEVICE
PROCESSOR
DATA STORE
926
DISPLAY DEVICE

Fig. 9A

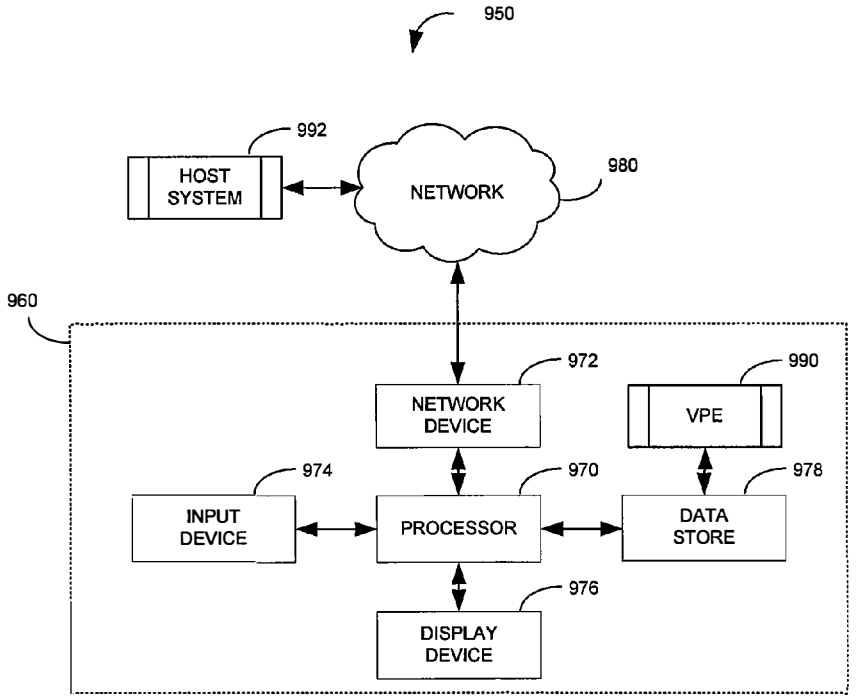

950
992
HOST SYSTEM
NETWORK
980
960
972
990
NETWORK DEVICE
VPE
974
970
978
INPUT DEVICE
PROCESSOR
DATA STORE
976
DISPLAY DEVICE

Fig. 9B

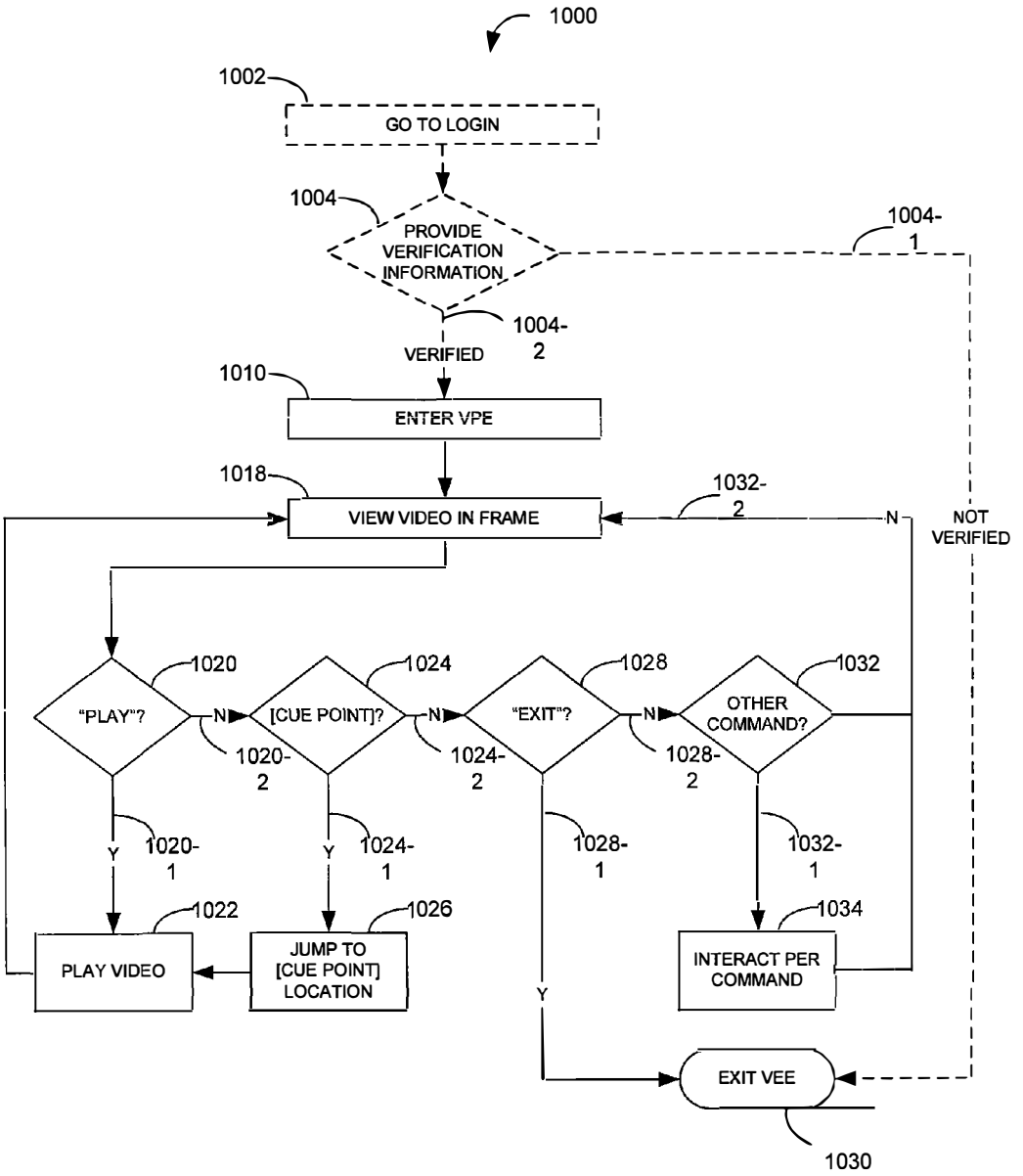

1000
1002
GO TO LOGIN
1004
PROVIDE VERIFICATION INFORMATION
1004-1
1004-2
VERIFIED
1010
ENTER VPE
1018
VIEW VIDEO IN FRAME
1032-2
N
NOT VERIFIED
1020
"PLAY"?
N
1020-2
1024
[CUE POINT]?
N
1024-2
1028
"EXIT"?
N
1028-2
1032
OTHER COMMAND?
Y
1020-1
Y
1024-1
1028-1
1032-1
1022
PLAY VIDEO
1026
JUMP TO [CUE POINT] LOCATION
1034
INTERACT PER COMMAND
Y
EXIT VEE
1030

Fig. 10

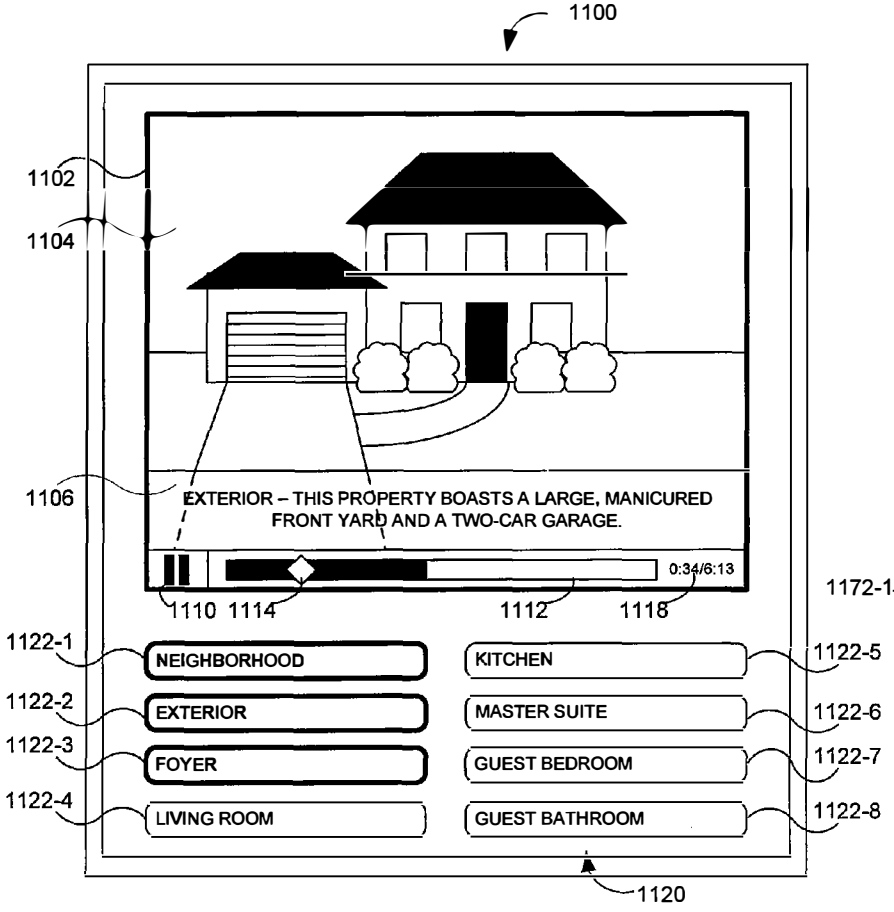


Fig. 11A

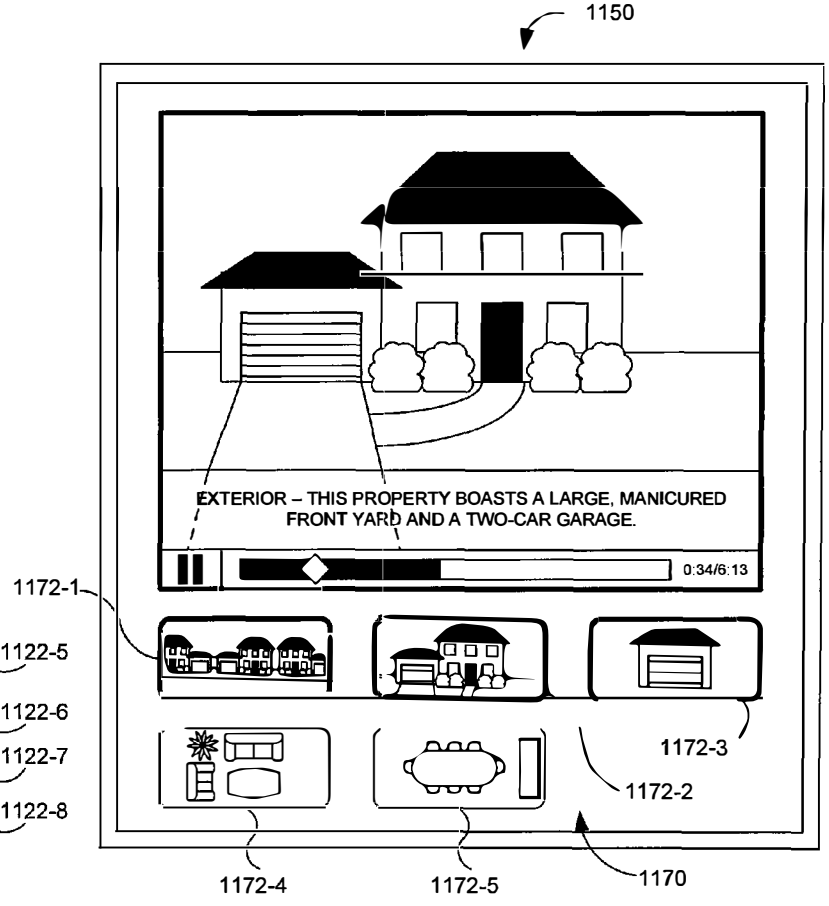


Fig. 11B

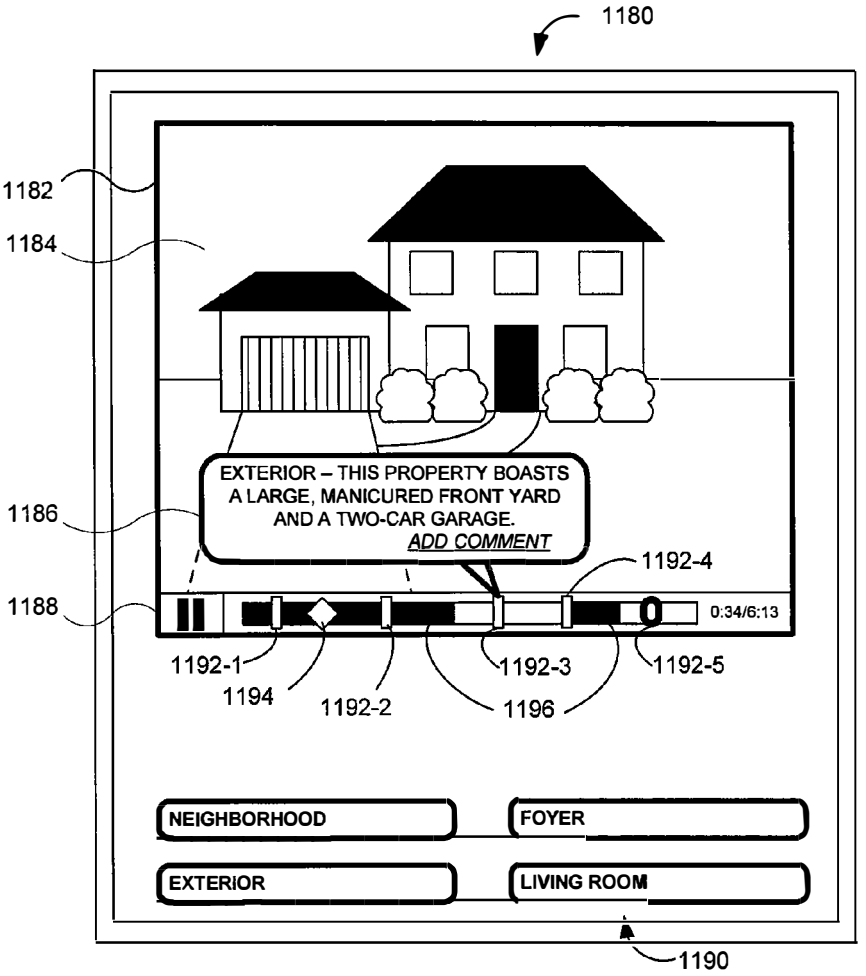

1180
1182
1184
1186
1188
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
ADD COMMENT
1192-4
0:34/6:13
1192-1
1194
1192-2
1192-3
1196
1192-5
NEIGHBORHOOD
FOYER
EXTERIOR
LIVING ROOM
1190

Fig. 11C

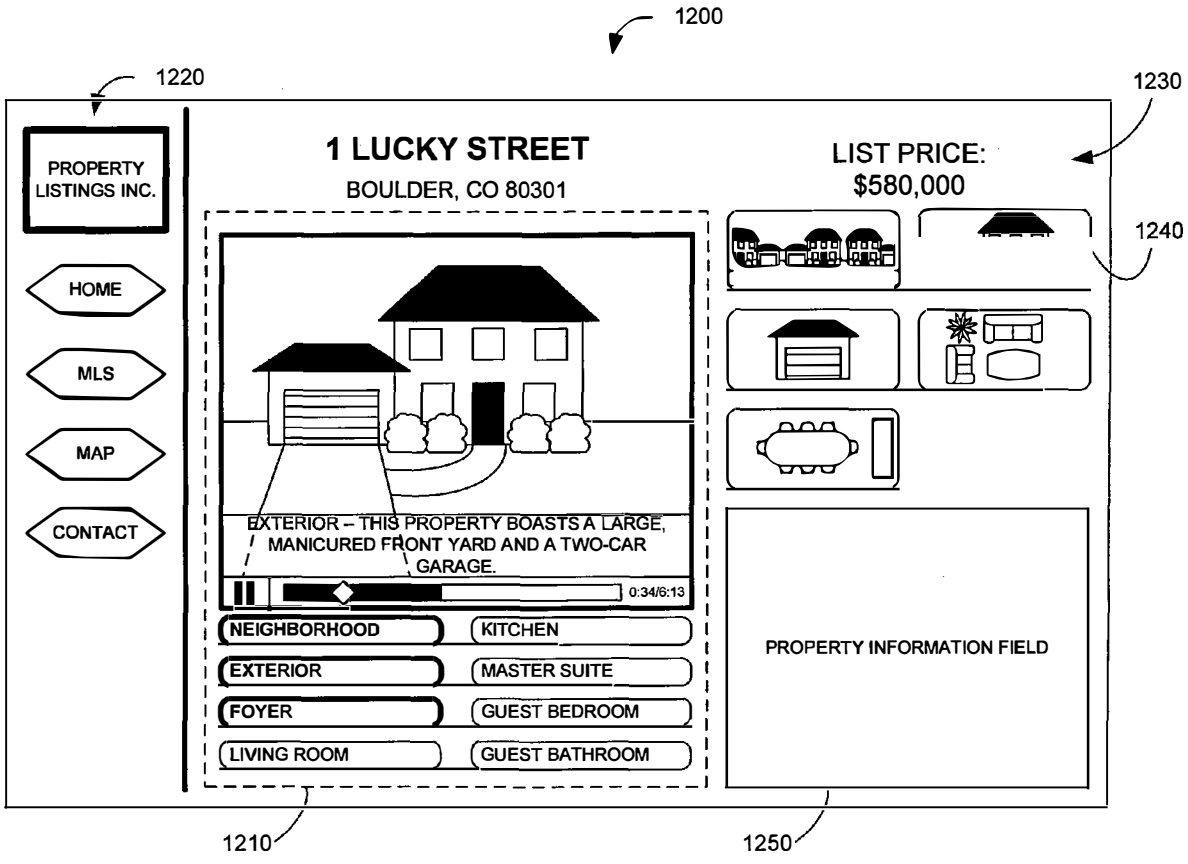

1200
1220
1230
1240
1210
1250
PROPERTY LISTINGS INC.
HOME
MLS
MAP
CONTACT
1 LUCKY STREET
BOULDER, CO 80301
LIST PRICE:
$580,000
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
0:34/6:13
NEIGHBORHOOD
KITCHEN
EXTERIOR
MASTER SUITE
FOYER
GUEST BEDROOM
LIVING ROOM
GUEST BATHROOM
PROPERTY INFORMATION FIELD

Fig. 12

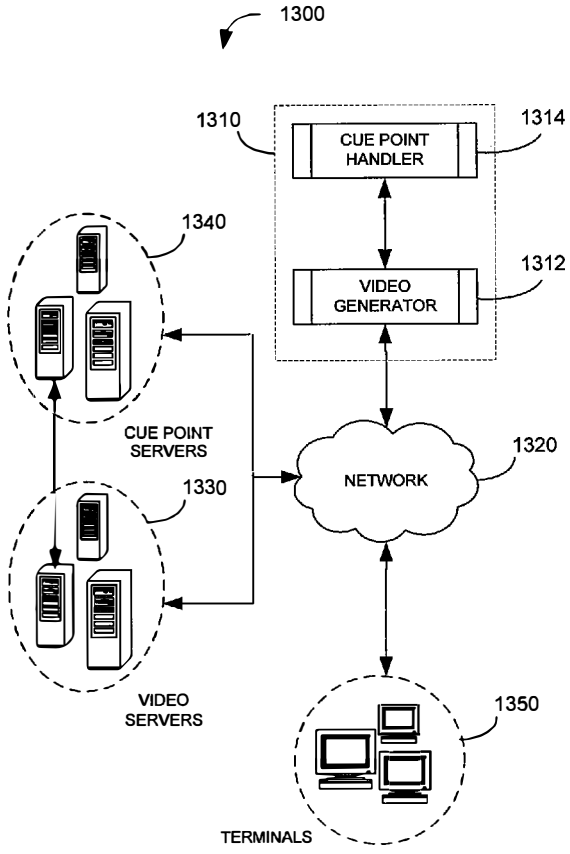


Fig. 13A

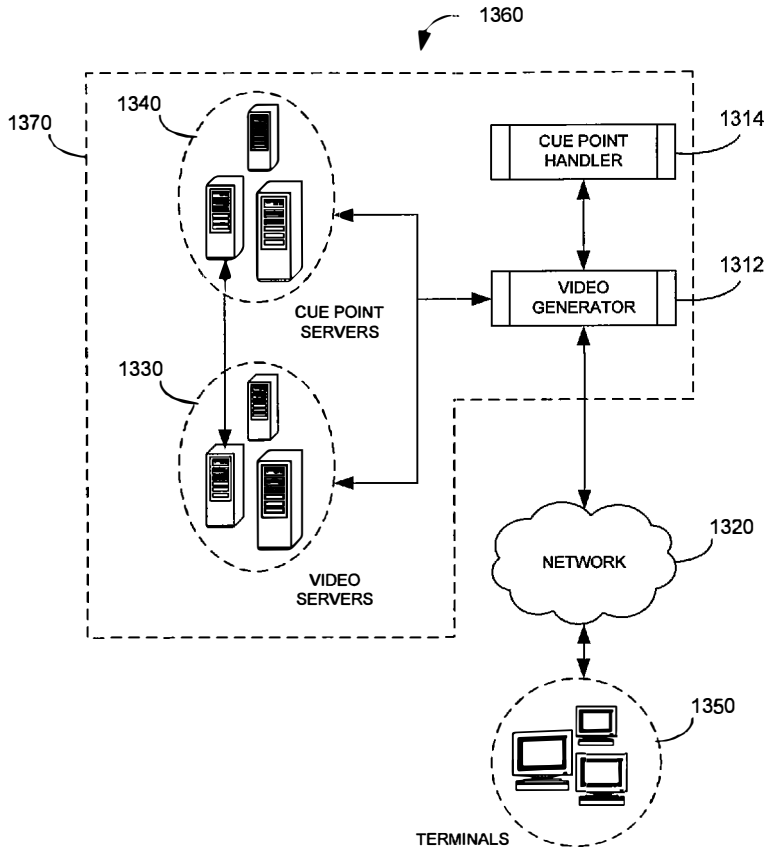


Fig. 13B

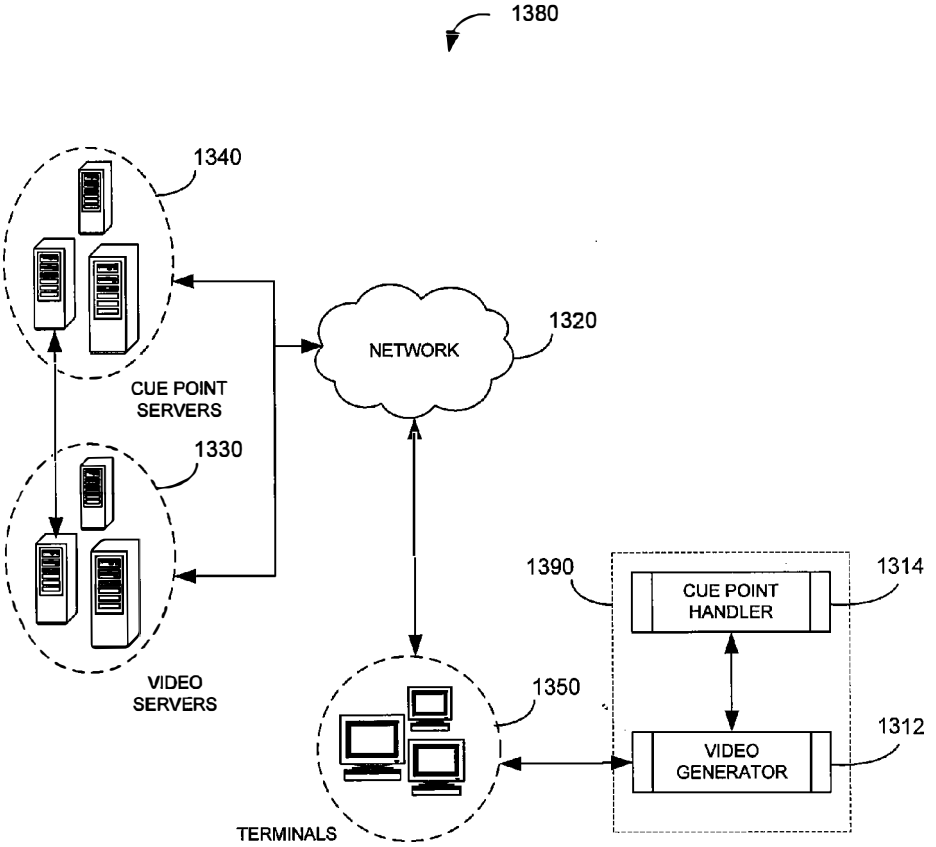

1380
1340
CUE POINT SERVERS
NETWORK
1320
1330
VIDEO SERVERS
1390
CUE POINT HANDLER
1314
1350
VIDEO GENERATOR
1312
TERMINALS

Fig. 13C

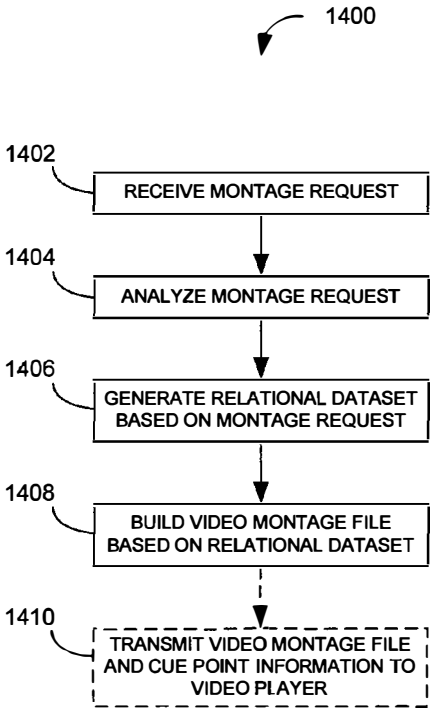

1400
1402
RECEIVE MONTAGE REQUEST
1404
ANALYZE MONTAGE REQUEST
1406
GENERATE RELATIONAL DATASET BASED ON MONTAGE REQUEST
1408
BUILD VIDEO MONTAGE FILE BASED ON RELATIONAL DATASET
1410
TRANSMIT VIDEO MONTAGE FILE AND CUE POINT INFORMATION TO VIDEO PLAYER

Fig. 14

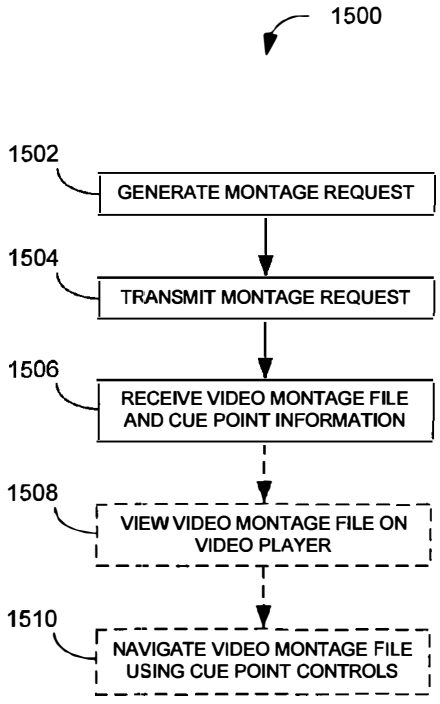
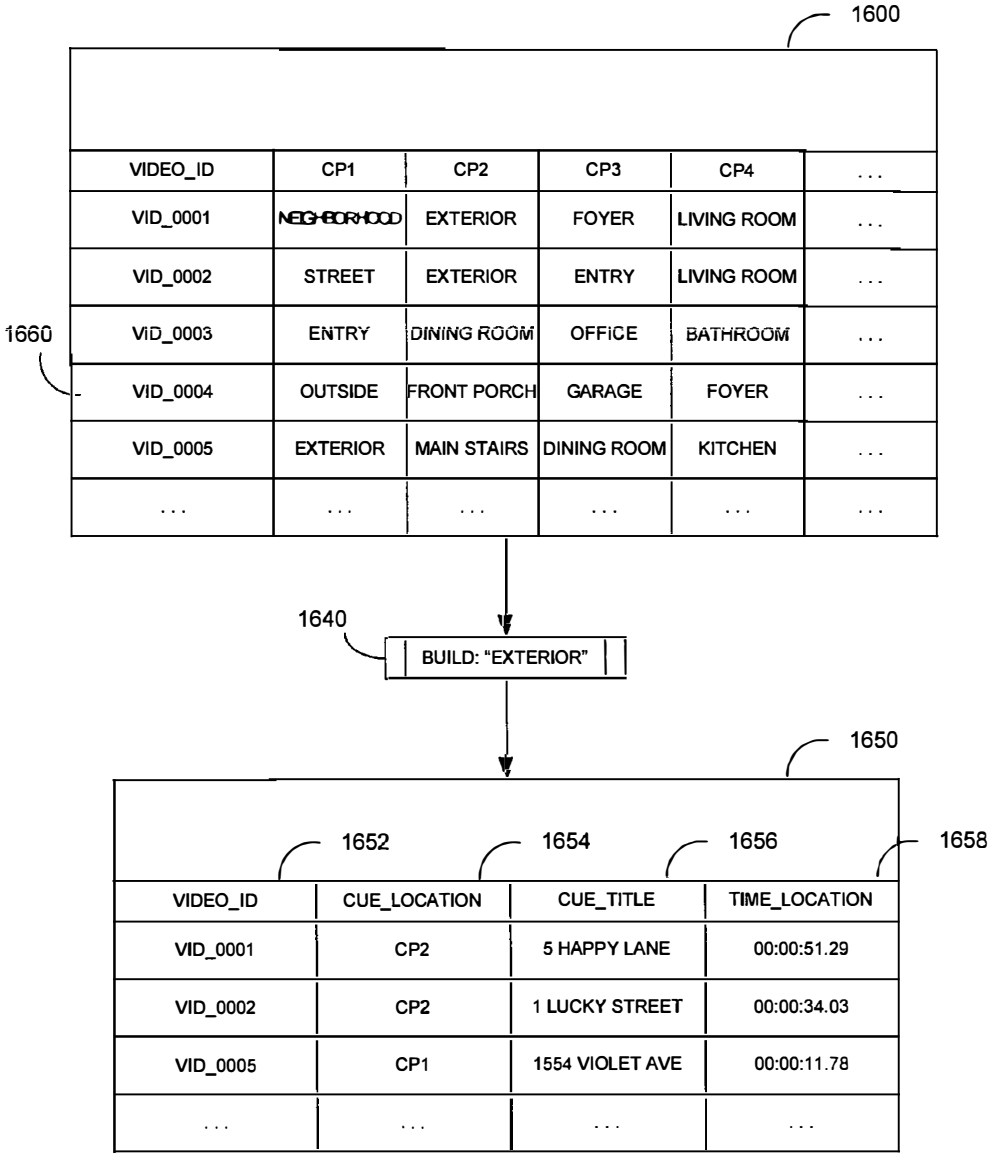

1500
1502
GENERATE MONTAGE REQUEST
1504
TRANSMIT MONTAGE REQUEST
1506
RECEIVE VIDEO MONTAGE FILE AND CUE POINT INFORMATION
1508
VIEW VIDEO MONTAGE FILE ON VIDEO PLAYER
1510
NAVIGATE VIDEO MONTAGE FILE USING CUE POINT CONTROLS

Fig. 15



VIDEO_ID	CP1	CP2	CP3	CP4	...
VID_0001	NEIGHBORHOOD	EXTERIOR	FOYER	LIVING ROOM	...
VID_0002	STREET	EXTERIOR	ENTRY	LIVING ROOM	...
VID_0003	ENTRY	DINING ROOM	OFFICE	BATHROOM	...
VID_0004	OUTSIDE	FRONT PORCH	GARAGE	FOYER	...
VID_0005	EXTERIOR	MAIN STAIRS	DINING ROOM	KITCHEN	...
...	...	...	...	...	...

VIDEO_ID	CUE_LOCATION	CUE_TITLE	TIME_LOCATION
VID_0001	CP2	5 HAPPY LANE	00:00:51.29
VID_0002	CP2	1 LUCKY STREET	00:00:34.03
VID_0005	CP1	1554 VIOLET AVE	00:00:11.78
...	...	...	...

Fig. 16

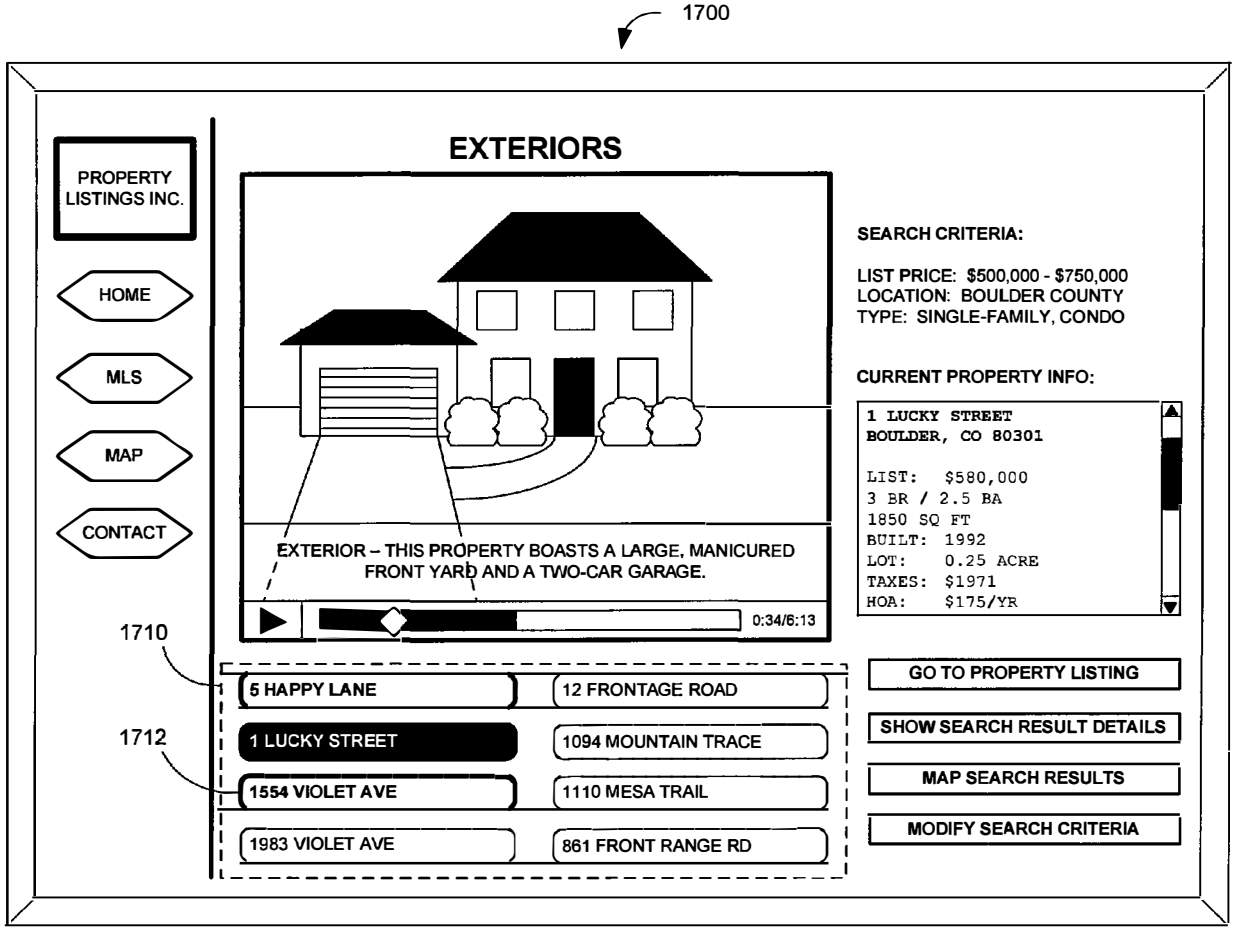

1700
PROPERTY LISTINGS INC.
HOME
MLS
MAP
CONTACT
EXTERIORS
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
0:34/6:13
SEARCH CRITERIA:
LIST PRICE: $500,000 - $750,000
LOCATION: BOULDER COUNTY
TYPE: SINGLE-FAMILY, CONDO
CURRENT PROPERTY INFO:
1 LUCKY STREET
BOULDER, CO 80301
LIST: $580,000
3 BR / 2.5 BA
1850 SQ FT
BUILT: 1992
LOT: 0.25 ACRE
TAXES: $1971
HOA: $175/YR
1710
1712
5 HAPPY LANE
12 FRONTAGE ROAD
1 LUCKY STREET
1094 MOUNTAIN TRACE
1554 VIOLET AVE
1110 MESA TRAIL
1983 VIOLET AVE
861 FRONT RANGE RD
GO TO PROPERTY LISTING
SHOW SEARCH RESULT DETAILS
MAP SEARCH RESULTS
MODIFY SEARCH CRITERIA

Fig.17A

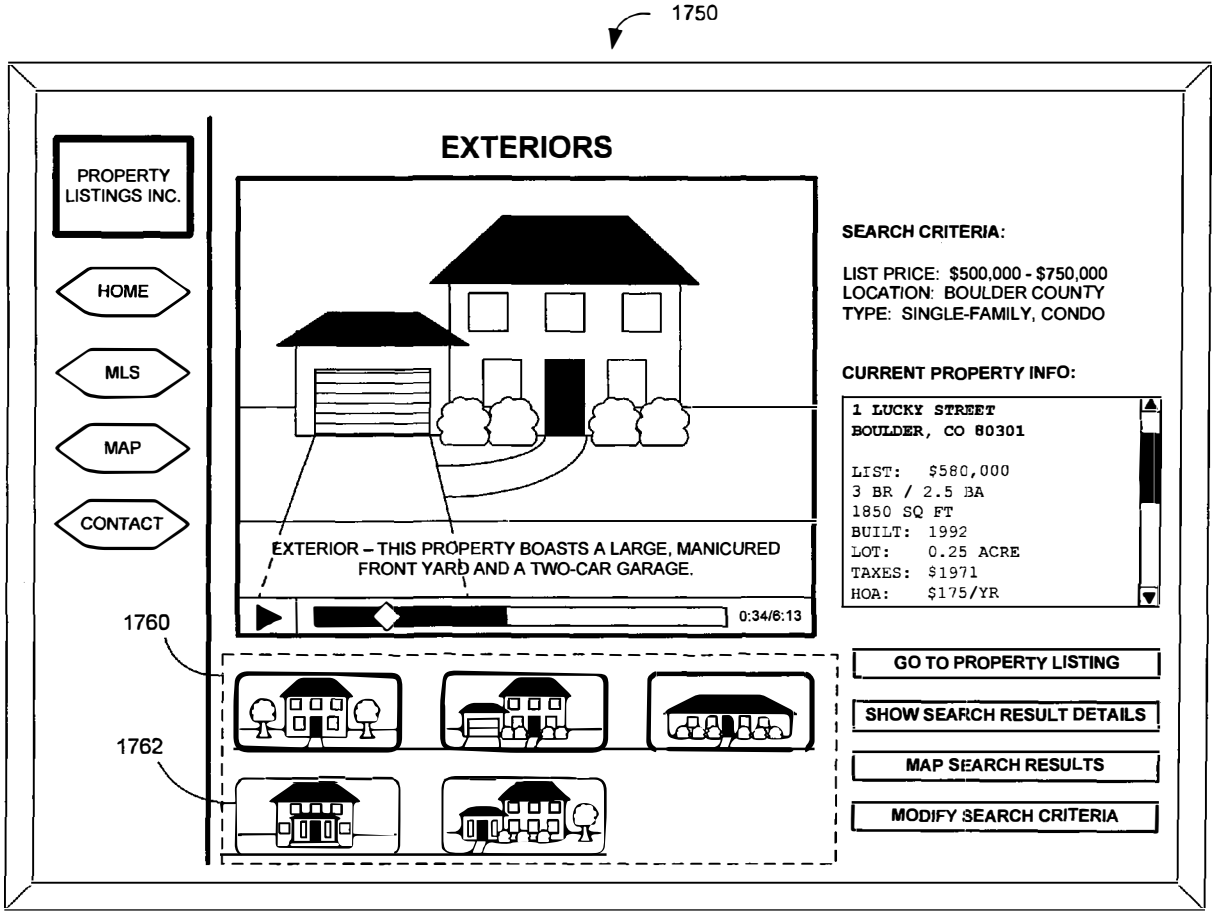

1750
PROPERTY LISTINGS INC.
HOME
MLS
MAP
CONTACT
EXTERIORS
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
0:34/6:13
SEARCH CRITERIA:
LIST PRICE: $500,000 - $750,000
LOCATION: BOULDER COUNTY
TYPE: SINGLE-FAMILY, CONDO
CURRENT PROPERTY INFO:
1 LUCKY STREET
BOULDER, CO 80301
LIST: $580,000
3 BR / 2.5 BA
1850 SQ FT
BUILT: 1992
LOT: 0.25 ACRE
TAXES: $1971
HOA: $175/YR
1760
1762
GO TO PROPERTY LISTING
SHOW SEARCH RESULT DETAILS
MAP SEARCH RESULTS
MODIFY SEARCH CRITERIA

Fig. 17B

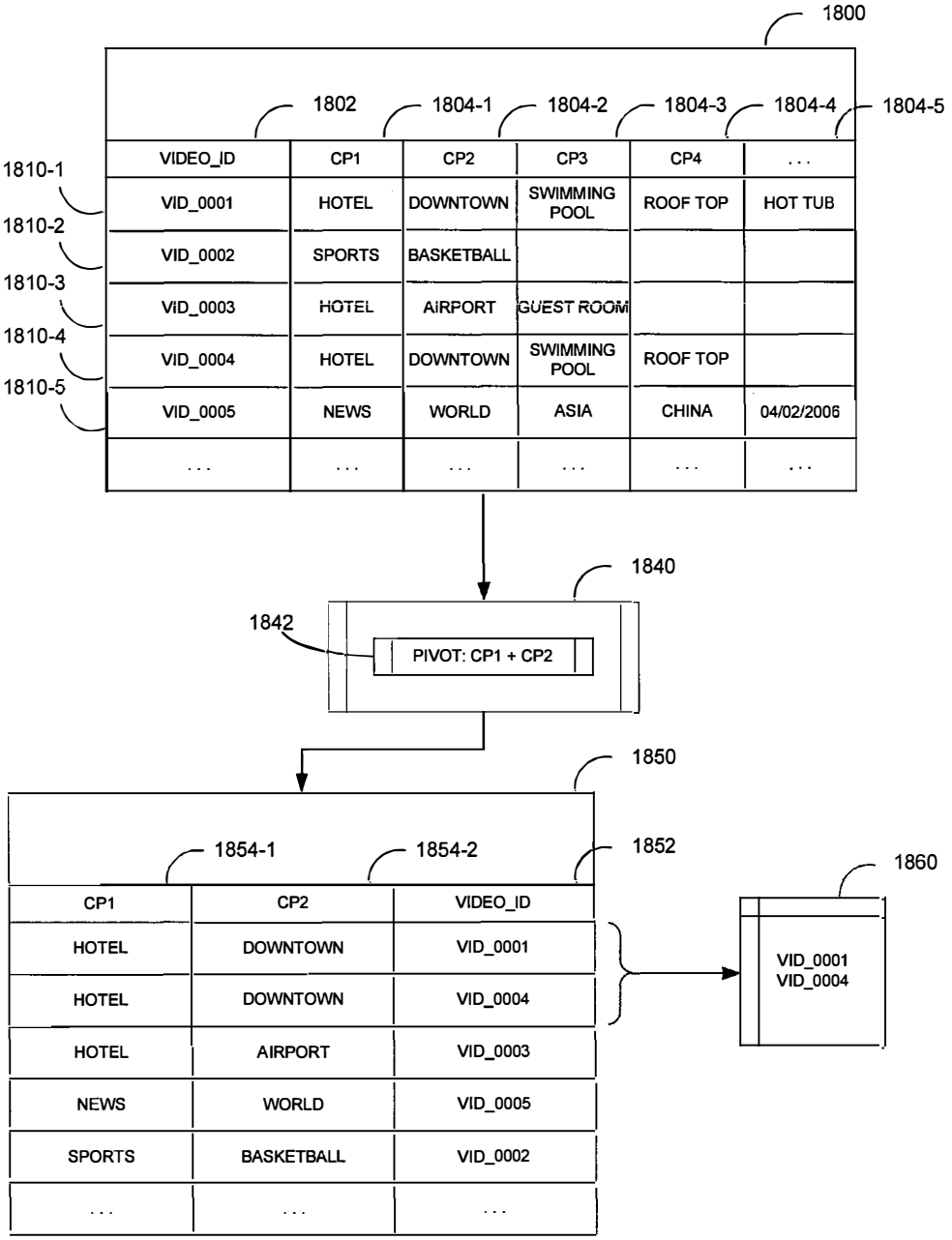

1800
1802
1804-1
1804-2
1804-3
1804-4
1804-5
1810-1
1810-2
1810-3
1810-4
1810-5
VIDEO_ID
CP1
CP2
CP3
CP4
...
VID_0001
HOTEL
DOWNTOWN
SWIMMING POOL
ROOF TOP
HOT TUB
VID_0002
SPORTS
BASKETBALL
VID_0003
HOTEL
AIRPORT
GUEST ROOM
VID_0004
HOTEL
DOWNTOWN
SWIMMING POOL
ROOF TOP
VID_0005
NEWS
WORLD
ASIA
CHINA
04/02/2006
1840
1842
PIVOT: CP1 + CP2
1850
1854-1
1854-2
1852
1860
CP1
CP2
VIDEO_ID
HOTEL
DOWNTOWN
VID_0001
HOTEL
DOWNTOWN
VID_0004
HOTEL
AIRPORT
VID_0003
NEWS
WORLD
VID_0005
SPORTS
BASKETBALL
VID_0002
VID_0001
VID_0004

Fig. 18

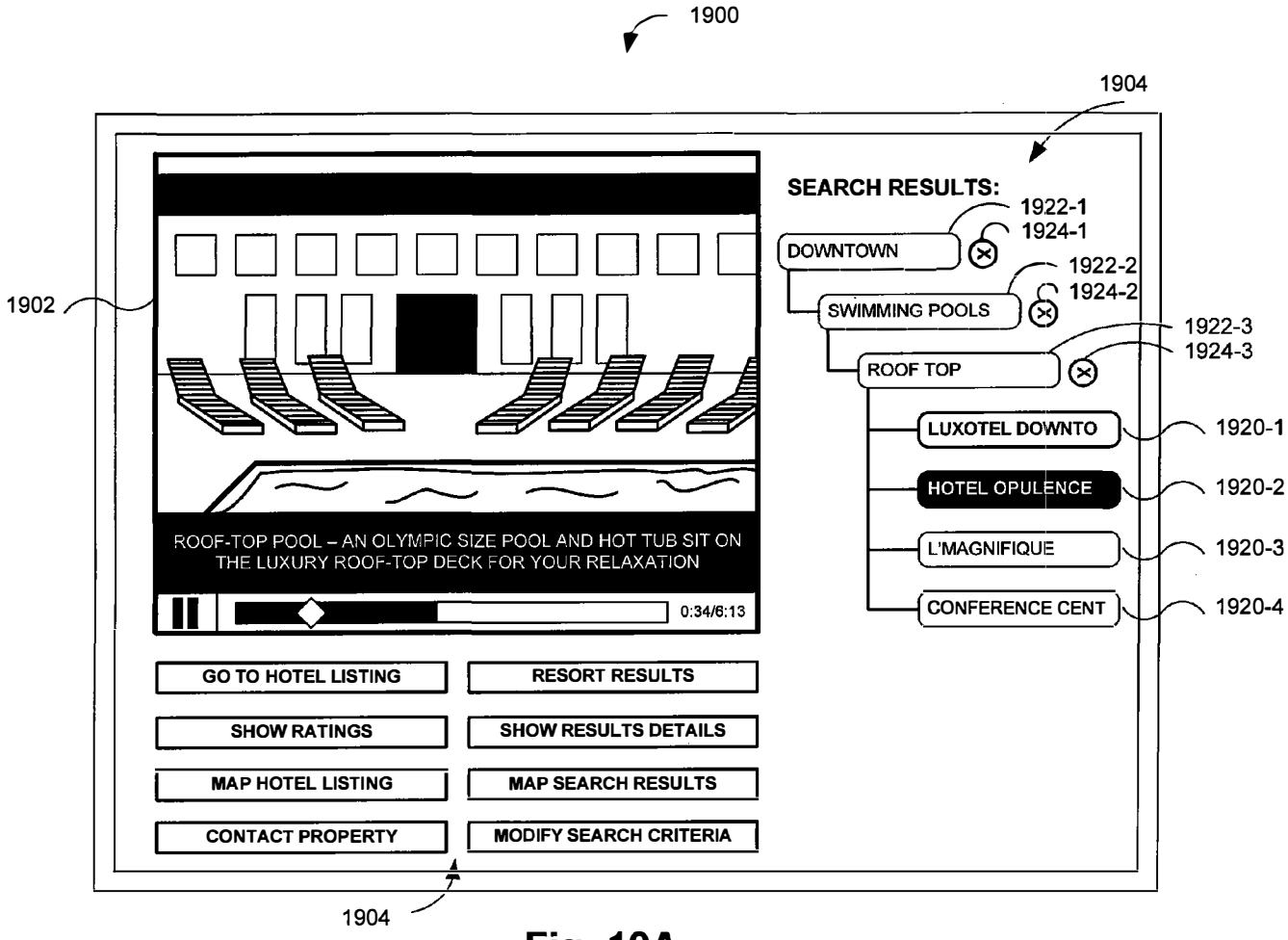

1900
1904
1902
SEARCH RESULTS:
1922-1
1924-1
DOWNTOWN
1922-2
1924-2
SWIMMING POOLS
1922-3
1924-3
ROOF TOP
LUXOTEL DOWNTO
1920-1
HOTEL OPULENCE
1920-2
L'MAGNIFIQUE
1920-3
CONFERENCE CENT
1920-4
ROOF-TOP POOL – AN OLYMPIC SIZE POOL AND HOT TUB SIT ON THE LUXURY ROOF-TOP DECK FOR YOUR RELAXATION
0:34/6:13
GO TO HOTEL LISTING
RESORT RESULTS
SHOW RATINGS
SHOW RESULTS DETAILS
MAP HOTEL LISTING
MAP SEARCH RESULTS
CONTACT PROPERTY
MODIFY SEARCH CRITERIA
1904

Fig. 19A

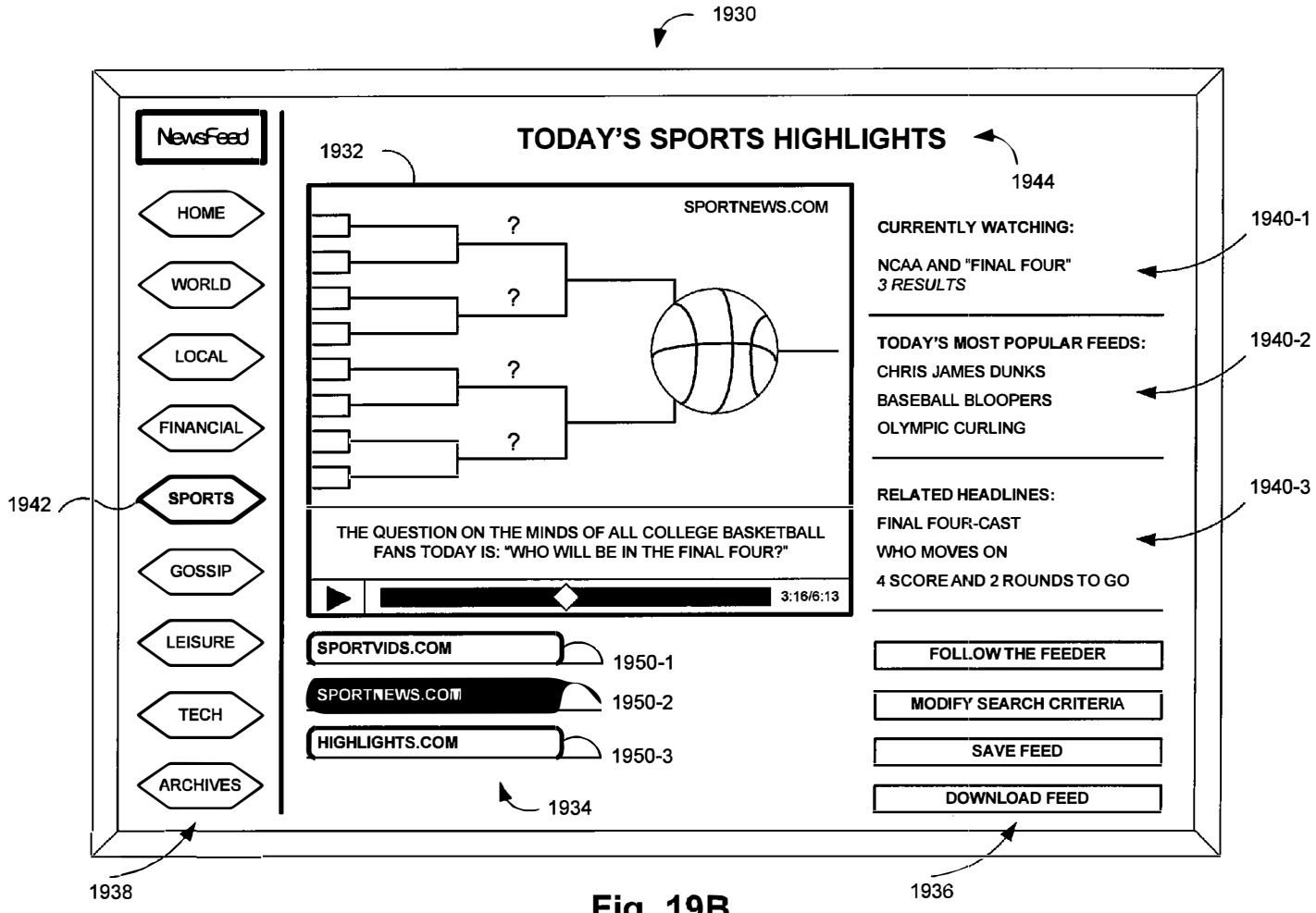

1930
NewsFeed
HOME
WORLD
LOCAL
FINANCIAL
SPORTS
GOSSIP
LEISURE
TECH
ARCHIVES
1942
1932
TODAY'S SPORTS HIGHLIGHTS
1944
SPORTNEWS.COM
?
?
?
?
THE QUESTION ON THE MINDS OF ALL COLLEGE BASKETBALL FANS TODAY IS: "WHO WILL BE IN THE FINAL FOUR?"
3:16/6:13
SPORTVIDS.COM
SPORTNEWS.COM
HIGHLIGHTS.COM
1950-1
1950-2
1950-3
1934
CURRENTLY WATCHING:
NCAA AND "FINAL FOUR"
3 RESULTS
1940-1
TODAY'S MOST POPULAR FEEDS:
CHRIS JAMES DUNKS
BASEBALL BLOOPERS
OLYMPIC CURLING
1940-2
RELATED HEADLINES:
FINAL FOUR-CAST
WHO MOVES ON
4 SCORE AND 2 ROUNDS TO GO
1940-3
FOLLOW THE FEEDER
MODIFY SEARCH CRITERIA
SAVE FEED
DOWNLOAD FEED
1938
1936

Fig. 19B

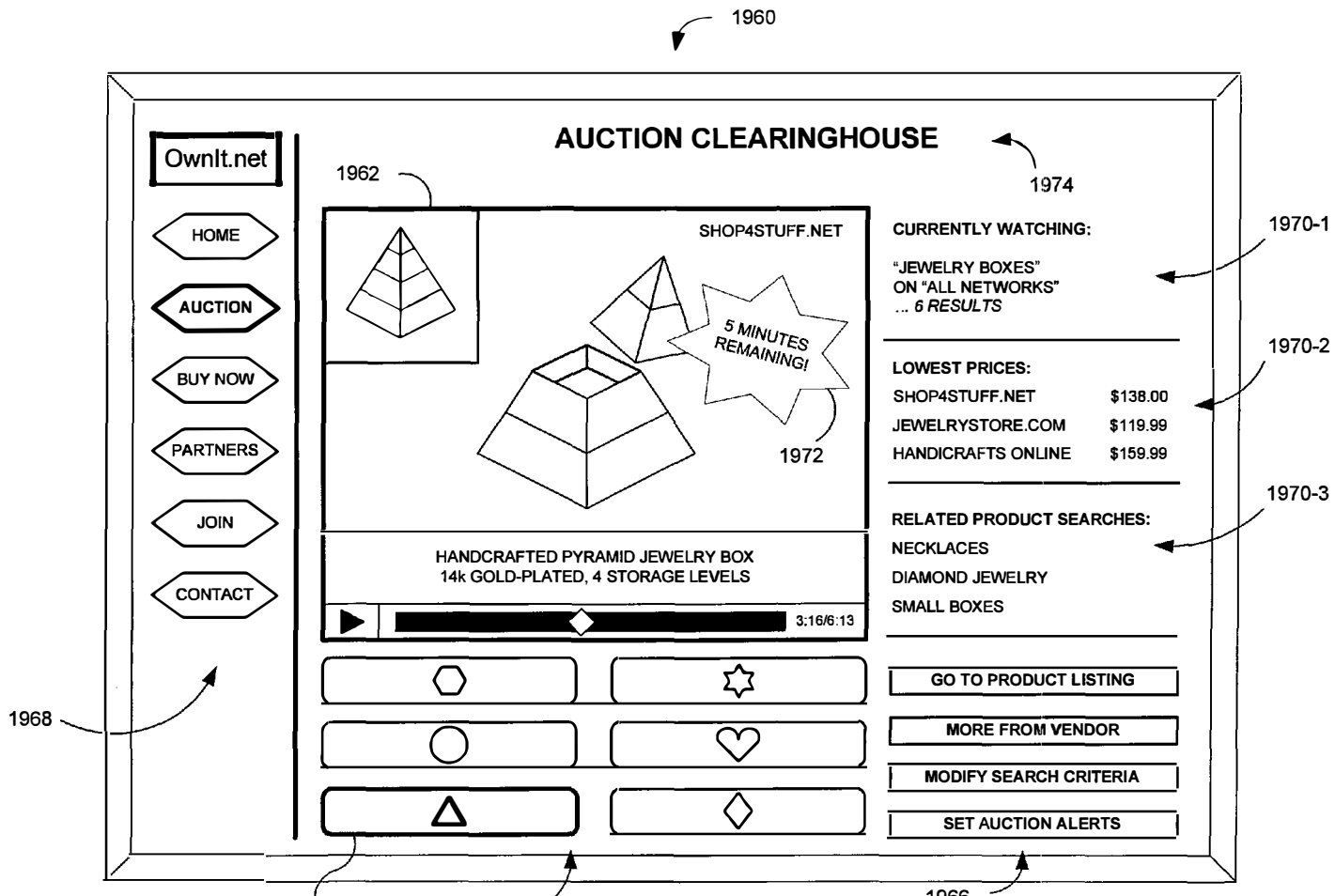

1960
OwnIt.net
HOME
AUCTION
BUY NOW
PARTNERS
JOIN
CONTACT
AUCTION CLEARINGHOUSE
1962
1974
SHOP4STUFF.NET
5 MINUTES REMAINING!
1972
HANDCRAFTED PYRAMID JEWELRY BOX
14k GOLD-PLATED, 4 STORAGE LEVELS
3:16/6:13
CURRENTLY WATCHING:
"JEWELRY BOXES"
ON "ALL NETWORKS"
... 6 RESULTS
1970-1
LOWEST PRICES:
SHOP4STUFF.NET $138.00
JEWELRYSTORE.COM $119.99
HANDICRAFTS ONLINE $159.99
1970-2
RELATED PRODUCT SEARCHES:
NECKLACES
DIAMOND JEWELRY
SMALL BOXES
1970-3
GO TO PRODUCT LISTING
MORE FROM VENDOR
MODIFY SEARCH CRITERIA
SET AUCTION ALERTS
1968
1980
1964
1966

Fig. 19C

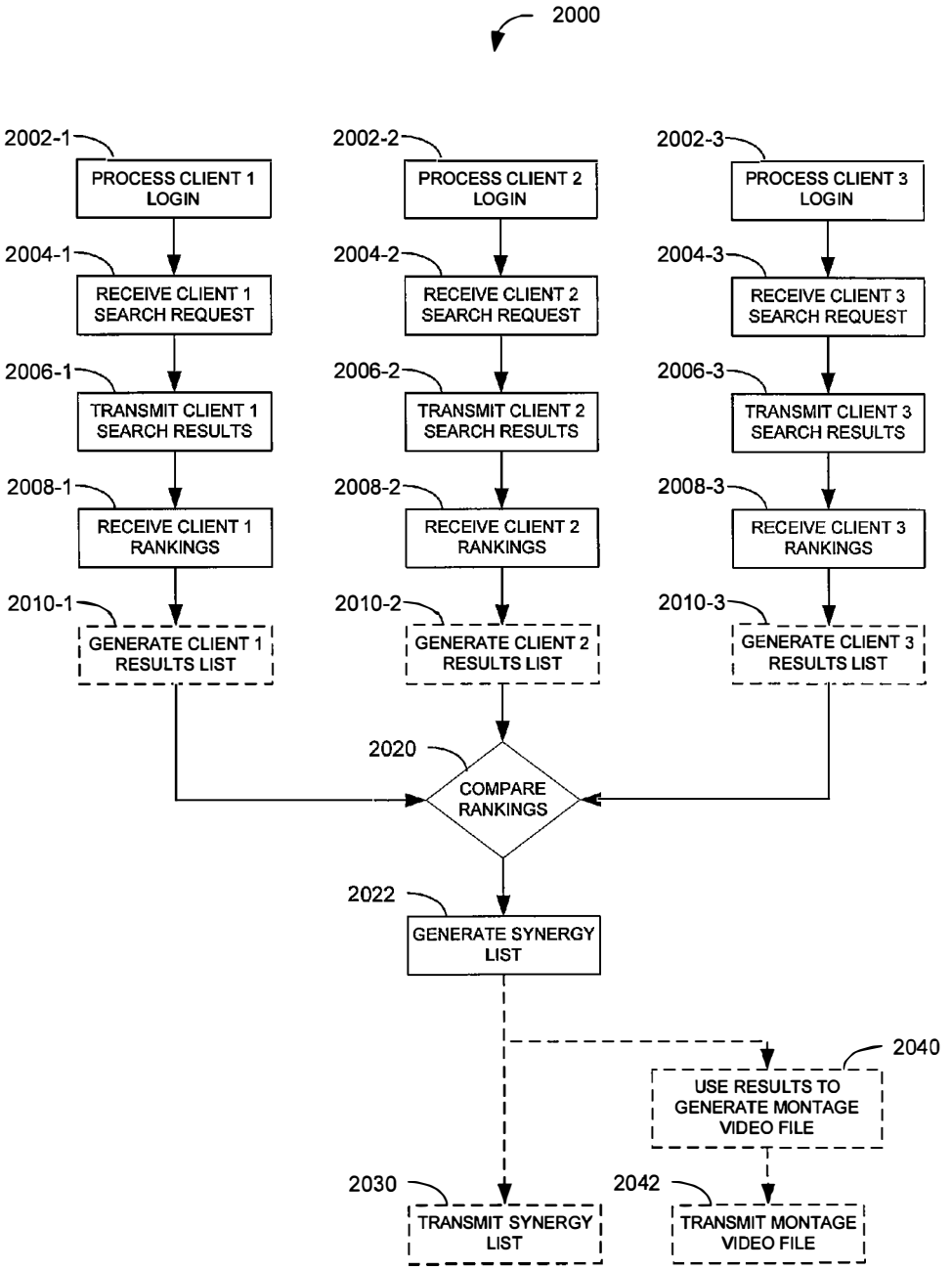

2000
2002-1
PROCESS CLIENT 1 LOGIN
2002-2
PROCESS CLIENT 2 LOGIN
2002-3
PROCESS CLIENT 3 LOGIN
2004-1
RECEIVE CLIENT 1 SEARCH REQUEST
2004-2
RECEIVE CLIENT 2 SEARCH REQUEST
2004-3
RECEIVE CLIENT 3 SEARCH REQUEST
2006-1
TRANSMIT CLIENT 1 SEARCH RESULTS
2006-2
TRANSMIT CLIENT 2 SEARCH RESULTS
2006-3
TRANSMIT CLIENT 3 SEARCH RESULTS
2008-1
RECEIVE CLIENT 1 RANKINGS
2008-2
RECEIVE CLIENT 2 RANKINGS
2008-3
RECEIVE CLIENT 3 RANKINGS
2010-1
GENERATE CLIENT 1 RESULTS LIST
2010-2
GENERATE CLIENT 2 RESULTS LIST
2010-3
GENERATE CLIENT 3 RESULTS LIST
2020
COMPARE RANKINGS
2022
GENERATE SYNERGY LIST
2040
USE RESULTS TO GENERATE MONTAGE VIDEO FILE
2030
TRANSMIT SYNERGY LIST
2042
TRANSMIT MONTAGE VIDEO FILE

Fig. 20

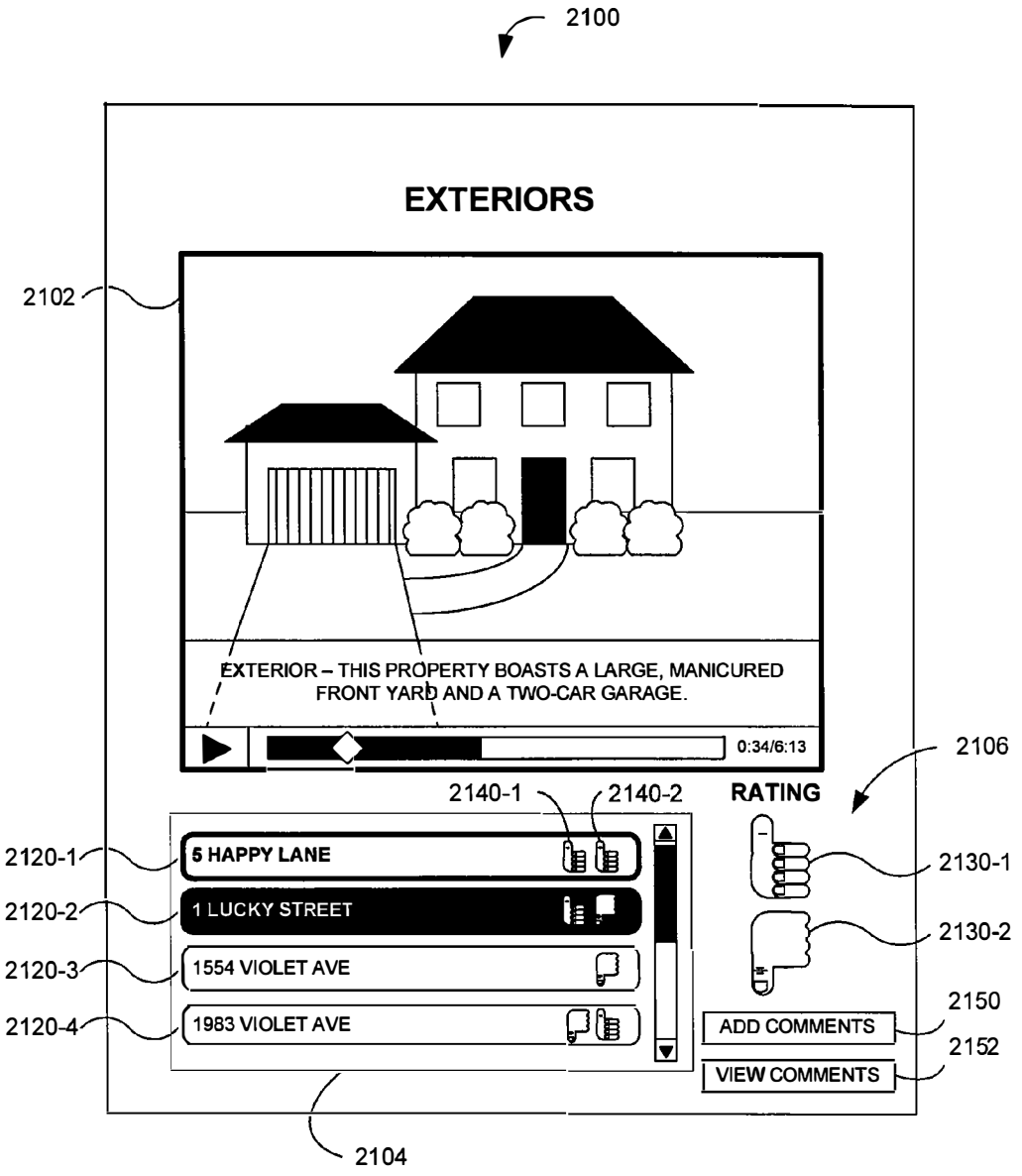

2100
EXTERIORS
2102
EXTERIOR – THIS PROPERTY BOASTS A LARGE, MANICURED FRONT YARD AND A TWO-CAR GARAGE.
0:34/6:13
2106
2140-1
2140-2
RATING
2120-1
5 HAPPY LANE
2120-2
1 LUCKY STREET
2120-3
1554 VIOLET AVE
2120-4
1983 VIOLET AVE
2130-1
2130-2
2150
ADD COMMENTS
2152
VIEW COMMENTS
2104

Fig. 21

METHODS AND SYSTEMS FOR HANDLING MONTAGE VIDEO DATA

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a nonprovisional claiming the benefits of U.S. Prov. App. No. 60/746,645, entitled "SYSTEM FOR ON-LINE VIDEO-BASED PROPERTY SALES AND MARKETING," filed May 7, 2006 by Christian A. Sterner et al. This application is also related to U.S. application Ser. No. 11/744,721, entitled "METHODS AND SYSTEMS FOR ONLINE VIDEO-ASED PROPERTY COMMERCE", filed on the same date as the current application by Christian A. Sterner et al. The entire disclosures of both related applications are herein incorporated by reference for all purposes.

BACKGROUND OF THE INVENTION

This invention relates generally to online video; and more particularly to methods and systems for handling online video for property commerce over the Internet.

The past decades have seen the tremendous growth of Internet traffic, and with it, the birth of a new world of global electronic commerce (e-commerce). E-commerce allows sellers to share their wares with consumers around the world in virtual marketplaces. Through these virtual marketplaces, sellers can open virtual storefronts with little to no capital, quickly and inexpensively distribute information about products and services to a global customer base, and collect payment through electronic fund transfers.

In exchange for these benefits, however, e-commerce drastically changes the relationships between buyers and sellers. One primary manifestation of this change is the difficulty with current technology to give consumers a feel for goods and services before they buy. In a virtual marketplace, a consumer has limited ability to experience a product—to try on clothing, to smell a chef's creation, or to walk through a neighborhood.

Still, as consumer high-speed data capability becomes increasingly ubiquitous, sellers are finding ways to combat those difficulties. The vast majority of e-commerce websites, for example, now use photos along with product descriptions to provide more information to consumers. Some progressive online retailers have even begun to use video, virtual reality applications, three-dimensional modeling, and other tools to create a greater sense of virtual interactivity between consumers and products.

One industry which has experienced this trend has been the real property marketing industry. For years, real estate marketers have experienced the difficulties inherent in dealing with large amounts of data from large numbers of sources. Services, such as the Multiple Listing Service (MLS) help provide some real property listings, but finding unlisted sellers and potential buyers often requires mass advertising and marketing. Traditionally, this includes expensive methods, such as creating full-color print advertisements, purchasing advertising space in multiple locations, planting "For Sale" signs and information at locations for potential drive-by buyers, holding open houses, and guiding personal walk-throughs.

The rise of the Internet has expanded the reach of advertising and has allowed for enhanced marketing capabilities at much lower cost. Still, real estate marketers and agents have found it difficult to communicate the feel of real property to prospective buyers in a virtual space. For example, while it is well accepted in the industry that property listings which include photos tend to be more successful at luring prospective buyers, it is often still difficult to relate the multiple image viewpoints together to convey a cohesive sense of the real property to a potential buyer.

To remedy that and other problems, the industry has begun to see benefits to video marketing. Through video media, potential buyers can take virtual tours of properties, and even listen to audio associated with the video. While this type of information used to be very expensive to distribute (e.g. through shipping video cassette tapes), the Internet provides an inexpensive and efficient video distribution medium. Further, newer video compression technologies and the prevalence of home broadband connections have made it practical to distribute audiovisual advertisements to potential buyers around the world.

There remain, however, significant disadvantages to video marketing. One disadvantage is the cost of producing a quality result. Though most home computers today come with user-friendly photo editing software, much of the video editing software and hardware is cumbersome, expensive, and difficult to learn. The result is that the average property seller or marketer must either spend a significant amount of money to hire a videographer to shoot and process video, or spend a significant amount of time learning to use a video editing system.

Another disadvantage is that, where photos often provide too little information to consumers, videos may provide too much to be useful. For example, say a consumer would like to find a house with a large kitchen. It may be easy to find photos of a kitchen, but difficult to really experience the size and utility of the kitchen from those photos. On the other hand, video of the kitchen may provide a much better representation of the space, but may be difficult to find within the footage of the entire house. Further, while it may be simple to compare photos of many kitchens, it may be cumbersome and time-consuming to find and compare video footage.

Similar difficulties arise in the vast majority of property marketing industries, whether the property is real estate, consumer goods, services, or any other community of buyers and sellers. Thus, though these industries understand the vast advantages of video marketing over photos or plain text, the transition has been slow. The industry has remained in need of simple methods and systems for handling online video for property marketing.

BRIEF SUMMARY OF THE INVENTION

Embodiments of the invention can address this condition in the art by providing methods and systems for handling montage video data using cue point information.

A first set of embodiments provides a system for generating video using cue point information. The system comprises a video server configured to serve a set of base video files indexable by a set of video identifiers; a cue point server configured to serve a set of cue point information; a cue point handler configured to generate a relational cue point dataset comprising a set of associations between at least a portion of the set of cue point information and at least a portion of the set of video identifiers; and a video generator configured to generate a video montage file based at least in part on the relational cue point dataset.

In other embodiments, the system further comprises a montage cue point generator configured to generate a set of montage cue points based at least in part on the relational cue point dataset. In certain of these embodiments, the system further comprises a video playback environment configured to transmit data readable by a client terminal to display the

video montage file, wherein the video playback environment is configured to transmit data readable by a client terminal to display the set of montage cue points.

In some embodiments, the system further comprises a video playback environment configured to transmit data readable by a client terminal to display the video montage file. In other embodiments, the cue point information substantially defines at least one of a metatag, a cue point name, a cue point time location, or a cue point hierarchy. In still other embodiments, the video generator is configured to concatenate a plurality of sets of base video data to generate at least a portion of the montage video file.

In yet other embodiments, the video generator is configured to extract a set of base video data beginning at a time location within one of the set of base video files. In certain of these embodiments, the time location is based at least in part on a portion of the set of cue point information.

In certain embodiments, the video server is in operative communication with at least one of a network or the video generator. In other embodiments, the cue point server is in operative communication with at least one of the network, the video server, or the video generator. In still other embodiments, the set of associations comprises a representation of a subset of the set of video base files relating to the subset of cue point information substantially matching an association criterion. And in certain of these embodiments, the set of cue point information comprises a set of cue point names, and the association criterion comprises at least one of the set of cue point names.

In some embodiments, at least one base video file comprises footage relating to at least one of real property, personal property, or information property. And in other embodiments, at least a portion of the set of cue point information defines a set of metatags, and at least a portion of the set of metatags represent a subordinate category of a different portion of the set of metatags.

A second set of embodiments provides a method for generating video using cue point information. The method provides a computer system having at least one computer-readable medium comprising a video playback environment, and the computer system is in operative communication with a network. The method further receives over the network, using the computer system, a video montage request; analyzes the video montage request; generates a relational dataset based at least in part on the video montage request, a set of cue point information, and a set of video information; and generates a video montage file based at least in part on the relational dataset.

In some embodiments, the method further transmits data readable by a client terminal to display the video montage file. In other embodiments, the cue point information substantially defines at least one of a metatag, a cue point name, a cue point time location, or a cue point hierarchy.

Also, in certain embodiments, the at least one computer-readable medium further comprises a montage cue point generator configured to generate a set of montage cue points based at least in part on the relational dataset. In certain of these embodiments, the method further generates a set of montage cue points. Also in certain of these embodiments at least a portion of the set of montage cue points represents a set of metatags corresponding to a hierarchical categorization of at least a portion of the set of video information. Additionally, in certain of these embodiments, the method further transmits data readable by a client terminal to display the set of montage cue points.

In some embodiments, generating a video montage file comprises extracting a plurality of sets of base video data beginning at a set of time locations in a set of base video files, and concatenating at least a portion of the plurality of sets of base video data into a montage video file. In certain of these embodiments, the set of time locations is based at least in part on the set of cue point information.

In other embodiments, generating a video montage file comprises extracting a plurality of sets of base video data beginning at a set of time locations in a set of base video files, concatenating at least a portion of the plurality of sets of base video data into a montage video file, and generating a set of montage cue points corresponding to the set of time locations. In certain of these embodiments, the method further receives, over the network, a signal representing a request to view a select base video file, a time location of the select base video file corresponding to a select montage cue point; and transmits one of the select base video file or a pointer to the select base video file.

A third set of embodiments provides a method for generating video using cue point information. The system comprises a video generator operatively connected to a network. The video generator is configured to perform the steps of receiving, over the network, a video montage request; analyzing the video montage request; generating a relational dataset based at least in part on the video montage request, a set of cue point information, and a set of video information; and generating a video montage file based at least in part on the relational dataset.

In some embodiments, the video generator is further configured to generate a set of montage cue points based at least in part on the relational dataset.

This summary provides only a general outline of embodiments according to the present invention. Many other objects, features and advantages of the present invention will become more fully apparent from the following detailed description, the appended claims and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

A further understanding of the nature and advantages of the present invention may be realized by reference to the remaining portions of the specification and the drawings wherein like reference numerals are used throughout the several drawings to refer to similar components. In some instances, a sublabel is associated with a reference numeral and follows a hyphen to denote one of multiple similar components. When reference is made to a reference numeral without specification to an existing sublabel, it is intended to refer to all such multiple similar components.

FIG. **1**A provides an exemplary system diagram for handling video cue points for use with various embodiments of the invention.

FIG. **1**B provides another exemplary system diagram for handling video cue points for use with various embodiments of the invention.

FIG. **2** provides an exemplary flow diagram summarizing methods for determining access to video environments in various embodiments of the invention.

FIG. **3**A provides an exemplary flow diagram summarizing methods relating to video editor environments in various embodiments of the invention.

FIG. **3**B provides an exemplary flow diagram of video editor environment method embodiments according to the invention.

FIG. **3**C provides an exemplary flow diagram of cue point editor method embodiments according to the invention.

FIG. **4** provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of video editing environments.

FIG. **5** provides an exemplary flow diagram summarizing methods relating to client terminal interactions with video editor environments in various embodiments of the invention.

FIG. **6** provides an exemplary screen shot of an embodiment of a video editing environment as viewed by a client terminal according to the invention.

FIG. **7** provides an exemplary data structure for use with various embodiments of video editing environments according to the invention.

FIG. **8** provides an exemplary flow diagram summarizing methods relating to video playback environments in various embodiments of the invention.

FIG. **9**A provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of system-level video playback environments.

FIG. **9**B provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of system-level video playback environments.

FIG. **10** provides an exemplary flow diagram summarizing methods relating to client terminal interactions with video playback environments in various embodiments of the invention.

FIGS. **11**A-**11**C provide exemplary screen shots of various embodiments of a video playback environment as viewed by a client terminal according to the invention.

FIG. **12** provides an exemplary screen shot of a web-based environment in which an embodiment of a video playback environment is embedded according to the invention.

FIG. **13**A provides an exemplary system diagram for server-level generation and handling of montage video information for use with various embodiments of the invention.

FIG. **13**B provides an exemplary system diagram for integrated, server-level generation and handling of montage video information for use with various embodiments of the invention.

FIG. **13**C provides an exemplary system diagram for client-level generation and handling of montage video information for use with various embodiments of the invention.

FIG. **14** provides an exemplary flow diagram summarizing host-oriented methods for generating and handling montage video information in various embodiments of the invention.

FIG. **15** provides an exemplary flow diagram summarizing client-oriented methods for generating and handling montage video information in various embodiments of the invention.

FIG. **16** provides an exemplary set of data structures for use with generating embodiments of montage video data according to the invention.

FIGS. **17**A and **17**B provide exemplary screen shots of embodiments of montage video data being displayed in the context of video playback environments as viewed by client terminals according to the invention.

FIG. **18** provides an exemplary set of data structures for use with generating embodiments of montage video data from hierarchical montage requests according to the invention.

FIGS. **19**A-**19**C provide exemplary screen shots of embodiments of montage video data resulting from hierarchical montage requests being displayed in the context of video playback environments according to embodiments of the invention.

FIG. **20** provides an exemplary flow diagram summarizing methods for handling shared search environments according to embodiments of the invention.

FIG. **21** provides an exemplary screen shot of embodiments of shared search environments according to embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

Among other things, embodiments of the invention provide systems and methods for enhancing and handling online video data for use with property-related commerce and communication. Some embodiments may provide systems and methods for generating and handling video cue points. Other embodiments may provide systems and methods for using those cue points to generate video montage files and for handling video montage files. Still other embodiments may provide systems and methods for handling group search environments.

Cue Point Handling Systems

FIG. **1**A provides an exemplary system diagram for handling video cue points for use with various embodiments of the invention. The system **100** comprises an application server **110** configured to execute, and possibly store, one or more applications. The application server **110** may be accessible via a network **130**, like the Internet or any other public or private, wired or wireless network. The application server **110** may be a dedicated server computer, a set or network of computers, an runnable file, or any other component capable of serving the desired program functions to a client.

The application server **110** may be in communication with one or more video servers **112**, which may store and/or serve video files **113**, or pointers to video files **113**. It will be appreciated that the video files may be anything capable of storing or providing access to video data. Further, it will be appreciated that video data may include visual data, audio data, still frames, stop-time successions of images, virtual reality information (e.g. in Virtual Reality Markup Language (VRML)), three-dimensional modeling data, textual data, or any other information for displaying video images.

In one example, the video server **112** may be a dedicated computer or network of computers with the capability to store and index mass amounts of video data. In this example, to access a video file **113**, a command may be sent to the video server **112** with an identifier (e.g. retrieve('VID_0001')), the identifier being a unique file name or other identifier of a video file or set of video files.

In another example, the video server may comprise a list stored in one or more files which matches video identifiers with the location of respective videos. The videos may be located in the same data storage device as the video server, or in some other location, such as at some internet address, file transfer protocol (FTP) site, or some other protocol location (e.g. by hyper-text transfer protocol, HTTP). Similarly, one file may be found at multiple locations, for example at multiple mirror sites on the Internet; so one video file identifier may be stored in relation to multiple location pointers. In this example, to access a video file **113**, a command may be sent to the video server **112** with a video file identifier. Say the command, "RETRIEVE ('VID_0001')", is used to retrieve a video file identified as "VID_0001" from the video server **112**. When the video server **112** receives the "RETRIEVE" command, a relational database may be queried to find an entry for "VID_0001". This entry may be stored in relation to a list of URL and FTP destinations. The video server **112** may then use various algorithms to select a download location and download the file.

The application server **110** may also be in communication with one or more cue point servers **114**, which may store and/or serve cue point information **115**, or pointers to cue

point information **115**. In one example, the cue point server **112** may be a dedicated computer or network of computers with the capability to store and index sets of cue point information **115**.

Some or all of this cue point information may be related to some or all of the video files **113**. In some embodiments, cue points may refer to indexed time positions or tags anywhere within a video file. In these embodiments, multiple cue points may refer to multiple time positions within a video file. For example, say a video file contains video information about a hotel suite, in which there is one minute of video each relating to the bedroom, bathroom, living room, and kitchenette. In this example, four cue points may be associated with the video file, pointing to time positions at zero, one, two, and three minutes, and essentially providing chapter markers for the different sections of the video.

In other embodiments, cue points may refer to indexed locations or tags within a file, other than those based directly on time positions. For example, cue points may point to a specific number of bits of digital video data from the beginning or end of a video file, or from some other cue point location. For another example, using audio or image recognition, a cue point may represent the third time a specific word or image occurs within the video file. Audio recognition may detect and/or interpret, for instance, changes in audio level (e.g. to automatically create a cue point wherever there is more than one second of silence), certain sounds (e.g. a beep or other audio cue), or even more complex sound patterns (e.g. a word, a particular voice, etc.). Video recognition may detect and/or interpret, for example, particular images (e.g. the shape of a house, a predefined video cue, an icon, etc.), text information (e.g. a word, a character, etc.), changes in video (e.g. a scene change, a static frame for a given amount of time, etc.), or even complex image patterns (e.g. the movement of a character into a new environment, different types of lighting conditions, etc.).

In yet other embodiments, cue points may be video meta-tags. Meta-tags may describe the information in the video file, rather than pointing to specific data locations within the file. For example, video meta-tags for a video about a hotel suite in downtown Denver may include descriptive identifiers, like "hotel," "suite," "kitchenette," "luxury," "downtown," etc. It will be appreciated that many different types of cue points are possible, which may require that the system **100** can convert, interpret, or otherwise handle cue points of different types and/or from different domains.

In different embodiments of the invention, cue points may end in different ways. In some embodiments, the cue point refers only to a start or end time position of a particular video event. In other embodiments, a cue point may have a beginning and end. The end of the cue point may be determined or set in any useful way. In one example, the cue point may end at the time position of the cue point which follows it in time order (or at some time based on that time position, like one millisecond prior to the next cue point). In another example, the cue point may end at a designated time or bit location. In yet another example, the cue point may end based on some other condition, like detecting a change in comment, analyzing a pattern of user activity, detecting a video or audio pattern, etc.

Further, cue points may be stored in cue point banks, which may be served by a cue point server **112**. The cue point bank may be any useful type of data structure for storing cue points and related information, either in relation to or not in relation to video files. For example, a cue point bank may be used to rank the most popular cue point names in a particular category of video files. In some cases, it may be superfluous and require too much storage to relate the cue points in this ranking to their respective video files. In other cases, it may be desirable to establish the relationships so that, when a cue point name is located in the cue point bank, an application may be able to also locate the video files which contain a cue point with that name.

Cue points may be stored to a cue point bank in any useful way, including, for example, by being manually added to a cue point bank, being automatically added whenever a cue point is created or on some other condition, or being added en masse from an external list. Further, cue points entries in the list may not relate to actual cue points in video files. For example, lists may be created by scanning the Internet for key terms relating to a specific subject, by parsing key terms from an article relating to a specific subject, by scanning video data with various audio or textual recognition algorithms, or by using thesauruses to generate lists of similar terms. Even further, cue point banks may be modified in any useful way. For example, cue point banks which record cue point rankings may allow modification manually by accepting votes or rankings, or automatically by continually polling various applications and systems for relevant information.

It will be appreciated that the application server **110**, video server **112**, and cue point server **114** may communicate in various ways. In a first way, the components may all be part of one physical system, for example as multiple files on a computer, multiple storage devices associated with a single processor, etc. In a second way, the components may each exist as a separate physical system, for example as one or more dedicated server computers. In this second way, the server computers may be collocated or distributed, and may be in communication via any effective channel, including any type of wired or wireless, public or private network. Further, some or all of the server components may communicate with one another directly or indirectly. For example, the server components may all communicate through a central processor; or the video server **112** and the cue point server **114** may communicate only with the application server **110** and not to each other.

The application server **110** may be configured to handle various applications, including a Video Editing Environment (VEE) **116** and/or a Video Playback Environment (VPE) **118**. These programs may be stored on the application server **110**, runnable (able to be executed, performed, effectuated, etc.) by the application server **110**, or handled by the application server **110** in some other useful way. Either or both of the VEE **116** and the VPE **118** may also comprise or be in communication with a cue point handler **120**. Further, the VEE **116** and the VPE **118** may be part of the same application or separate applications. The VEE **116** may also comprise a video player.

The system **100** may also comprise various types of client terminals, including viewer terminals **132** and editor terminals **134**. These terminals may comprise any device or application capable of accessing the system **100** in a useful way. For example, viewer terminals **132** may include any device capable of playing video data from the VPE **118**, like desktop computers, laptop computers, cell phones, personal digital assistants (PDA's), dedicated viewers, etc. Editor terminals **134** may include any of these devices, as well. In certain embodiments, the VEE **116** and VPE **118** may require different system capabilities, thereby making certain types of devices capable or incapable of performing as either viewer terminals **132** or editor terminals **134**. For example, the video editing functionality of the VEE **116** may require extra processing power. Alternatively, the VPE **118** may require higher resolution capabilities, where the VEE **116** may allow low-resolution editing.

It will be appreciated that many types of applications are possible which may use video information and/or cue point information. In some embodiments, one or more applications may generate derivative information from cue point information, video information, VEE usage information, VPE usage information, or any other useful information. Derivative information may include any useful information which may be generated from these multiple information sources. In certain of these embodiments, derivative information may include marketing information generated from statistical processing of these various types and sources of data. For example, derivative information may include which videos, cue points, categories thereof, etc. were most visited by clients; which cue point names were most used in cue point editors; which geographic or socioeconomic groups of clients used various systems and methods in which ways, etc.

It will be appreciated that the derivative information may be independently valuable to a number of different types of entities. For example, a real estate agency may find value in marketing statistics relating to how their listings are being viewed and how their listings may be improved. As such, other applications may be desirable which may report, tailor, print, distribute, and perform other functions relating to the generated derivative data.

Viewer terminals **132** and editor terminals **134** may communicate with the application server **110** via a network **130**. The network **130** may be any public or private, wired or wireless network or set of networks. For example, a video cell phone may connect to the application server **110** through a wireless connection to its service provider's network, and then through a wired connection to the Internet address of the application server **110**. In some embodiments, the network **130** may comprise any number of computers, configured as centralized or decentralized peer-to-peer networks, ad hoc networks, mesh networks, or any other useful configuration. For example, the network **130** may comprise two terminals connected to one another by a Universal Serial Bus (USB) cable, each performing server functions for the other computer.

The application server **110** may also be in communication with an authorization server **122**. The authorization server may be configured to allow or deny access to all or part of the various applications handled by the application server **110**. For example, it may be desirable to allow free access to the VPE **118** so any client can watch video files, but limit access to the VEE **116** so only authorized clients may edit video files. In some embodiments, the authorization server **122** may be configured to provide other types of authorization and/or security. For example, the authorization server **122** may provide certain encryption or firewall capabilities.

Further, the system **100** may comprise a Video Authoring Environment (VAE) **136**. The VAE **136** may allow video authors to generate video data from a video creation device **138**. The video creation device **138** may be a video camera, a virtual reality environment creator (e.g. using virtual reality markup language (VRML)), three-dimensional modeling software, stop-time photography, image creation and editing devices (e.g. drawing tablets, photo editing software, still cameras, etc.), audio creation devices (e.g. microphones, audio processing software, etc.), text creation devices (e.g. keyboards, text editors, etc.), or any other device capable of creating data which may become part of a video file. The VAE **136** may be one of the applications handled by the application server **110** or a separate application which communicates with components of the system, for example, through the network **130**. The VAE **136** may alternatively be an application of or in communication with the video server **112**.

In some embodiments, certain components of the system **100** may be part of a subsystem **140**. The subsystem **140** may be owned, controlled, operated, maintained, or otherwise associated with a host party. For example, the network **130** may be an external network, and one company may own and operate all the system components on one side of the network. In the illustrated case, one company may own a subsystem **140** comprising the application server **110**, video server **112**, cue point server **114**, authorization server **122**, and all the applications associated with those servers, including the VEE **116** and VPE **118**. It will be appreciated that many types of ownership arrangements, system and subsystem configurations, and network arrangements are possible.

FIG. **1**B provides another exemplary system diagram for handling video cue points for use with various embodiments of the invention. The system **150** comprises an application server **160** configured to handle applications, including a VEE **166** and a VPE **168**, both of which may comprise or communicate with a cue point handler **170**. The application server **160** is in communication with a network **180**. The application server **160** is also in communication with video servers **162** and cue point servers **164** via the network **180**.

In this system **150**, viewer terminals **182** and editor terminals **184** may connect to the application server through the network **180**. The application server **160** may then communicate with multiple video servers **162** and cue point servers **164** also via the network **180**. Further, some video servers **162-1** may communicate directly with some cue point servers **164-1**.

For example, a viewer may wish to use a viewer terminal **182** to play "VID_0001.video," a video file. The viewer terminal **182** may contact the application server **160**, which may execute the VPE **168** application. The VPE **168** may then search for and locate both the "VID_0001.video" file and its associated cue point information on a video server **162-1** and cue point server **164-1**, respectively, both of which may be connected to the Internet **180**. Through the VPE **168** application, the viewer may be able to download the "VID_0001.video" file and its cue point information and play the file through the viewer terminal **182**.

As illustrated, the application server **160** and its associated applications are part of a subsystem **190** which may be owned or operated by one party. Whereas the host of the system **100** in FIG. **1**A may control a number of system components, including the video servers **112** and cue point servers **114**, the host of the system **150** in FIG. **1**B only controls the application level of the system. In these embodiments of the system **150**, the actual video and cue point data may be distributed widely across one or more networks **180**, with the subsystem **190** performing a more intermediary role.

It will be appreciated that the many embodiments of the present invention may be realized in the context of many different types and scopes of systems. As such, the systems described herein in reference to FIGS. **1**A and **1**B should be construed as only exemplary systems of the invention and the invention should be construed broadly to encompass all systems which may effectuate the invention.

Client Authorization Methods

Embodiments of the invention may load one or more applications relating to editing or playback of video data. Prior to loading any of these video environments, however, it may be desirable in some cases to determine whether a client has appropriate authorization to access an environment or application. In some embodiments, authorization relate, at least partly, to login information associated with the client attempting access.

FIG. **2** provides an exemplary flow diagram summarizing methods for determining access to video environments in various embodiments of the invention. The method **200** may begin by requesting login or client information **202** from the party requesting access to the video environment or application (the client). This information may be requested **202** from the client and/or from other systems or applications.

For example, the client may provide information like a login identifier and a password, or any other desired or required information for determining the client's level of authorization. If this is the client's first login (or if the client wishes to add or modify her information), the client may desire or be required to provide more profile information to help determine an appropriate level of access. In one example, the client may have to provide an association from or verification by an approved organization, like a business identifier for an approved real estate company. In another example, by uploading a video file, the method **200** may add that file to the client's list of files to which the client has editor permission.

Additionally, or alternatively, relevant information may be stored on one or more other system, file, application, etc. For instance, after providing a login name and password, an authentication server may check the login information against a database to determine certain authorization-related attributes associated with that client. These authorization attributes may include, for example, files to which the client has access, whether the client has editing (e.g. read, write, modify, delete, etc.) permissions on those files, or any other attributes useful to determining level or type of access.

It will be appreciated that login information may be requested **202** for various purposes, and that different types of information may be useful for these different purposes. In certain embodiments, for example, the login information may be used to determine which clients are logging in and how often, or which files or applications are accessed by those clients most often. In other embodiments, the information may be used to provide or limit access to all or part of various environments.

Once the login information has been requested **202**, the method **200** may assign a client identifier **204** to the client. Assigning this identifier **204** may involve assigning a login name, password, or other identification information to the client; and/or it may involve creating a unique identifier which can be used by various systems, applications, etc. for identifying that client.

Also, after a client has entered enough profile information, the method **200** may determine the client type **206**. In some embodiments, this will include a determination of whether the client is an editor or a viewer. It will be appreciated that many other client types may be desirable for different environments. For example, it may be desirable to determine whether the client is an advanced or novice client, whether the client is bound by certain contractual obligations, whether the client's use falls within certain payment plans, etc. Further, of course, the client may be a different type of client depending on the file or files to which she is attempting access. For example, the client may be an editor for all files which she uploaded to the system, a viewer to all files uploaded by others and marked as public, and neither a viewer nor an editor for any files marked private or not yet published.

If the client is determined to be an editor **206-1**, the method **200** may set certain editor permissions **210**. These permissions may allow or deny access to certain applications, files, controls, fields, menus, etc. At this point, the method **200** may determine whether the editor would like to (or is able to) enter the VEE **212**. If the editor will enter the VEE **212-1**, the method **200** may run the VEE **214**. If the editor will not (or cannot) enter the VEE **212-2**, the method **200** may terminate **230**. Terminating **230** may involve logging the client out of the method **200**, redirecting the client, or any other useful termination procedure.

If the client is determined to be a viewer **206-2**, the method **200** may set certain viewer permissions **220**. These permissions may allow or deny access to certain applications, files, controls, fields, menus, etc. At this point, the method **200** may determine whether the viewer would like to (or is able to) enter the Video Playback Environment (VPE) **222**. If the viewer will enter the VPE **222-1**, the method **200** may run the VPE **224**. If the viewer will not (or cannot) enter the VPE **222-2**, the method **200** may terminate **230**.

Video Editor Environments

FIG. **3**A provides an exemplary flow diagram summarizing methods relating to video editor environments in various embodiments of the invention. The method **300** may begin by loading a video editing environment (VEE) **310**. Loading the VEE **310** may involve executing an application invoking various software and/or hardware commands. It will be appreciated that the VEE may be loaded **310** in any useful way to provide the desired results. For example, the VEE may load as a script in the background of a webpage, as a server-level application, as a client-level application, or with various components of the application loading in different ways.

Prior to loading the VEE **310**, the method **300** may require certain set-up steps. For example, the method **300** may process login **302** of a client. In certain embodiments, the method may process the login **302** to maintain records of the clients of the method **300**. For example, it may be desirable to know who uses the method **300** and how often, or which files or applications are accessed most often.

In other embodiments, processing the login **302** may require that the client enters certain login information to determine the client's level of authorization. For example, it may be desirable to limit access to the VEE only to certain types of clients. Similarly, it may be desirable to open access to the VEE, but limit access to certain files. In the latter case, it may be necessary as part of processing the login **302** to acquire information from the client regarding which files the client intends to access. In these embodiments, the method **300** may determine based on the login information whether the client has permission **304** to access all or part of the VEE. For example, the system may deny access based on stored attributes associated with the client (e.g. a level of authority attribute), inferred attributes based on extrinsic information (e.g. time of day, geographic location associated with the client's Internet Protocol address, etc.), incorrect provided information (e.g. client name and password do not match those on file, etc.), technical information (e.g. client terminal does not meet the minimum system requirements), or any other information which may be used to determine level of access. If the client does not have permission **304-1** to access the VEE or the desired files, the method **300** may terminate **332**. If the client does have permission **304-2** to access the VEE or the desired files, the method **300** may continue to load the VEE **310**.

Once the VEE is loaded **310**, the method **300** may determine whether the client is attempting to use a new or existing video **312**. If the client is attempting to use a new video **312-1**, the method **300** may acquire the new video information **314-1**, for example by uploading, downloading, transferring, or compiling the video data. If the client is attempting to use an existing video **312-2**, the method **300** may acquire the existing video information **314-2** from wherever it is stored, for example from a video server.

The method **300** may then generate a VEE graphical user interface (GUI) **316**. This interface may comprise any graphical, textual, audio, or other data which is desirable or necessary for providing interface capabilities to a client. It will be appreciated that the GUI does not require any graphical interface elements. For example, it may be possible to create an interface which uses only text, sound, or some other interface capability. Say the client of the VEE is actually another computational system. In that case, the client system may interact with the VEE at the script (or other) level, making graphical controls superfluous.

It will be appreciated that the GUI may be generated **316** in any useful way for providing a useful interface to the VEE. For example, the GUI may be generated **316** as a webpage on a client's web browser, as a frame within a webpage, as a dedicated client-level application on the client's terminal (with the VEE itself running either at the client- or server-level), or as a background script to be executed by another application (e.g. as Visual Basic commands for an interpreter which may use those commands to generate the GUI).

The GUI may comprise such useful elements as a video frame for displaying video information (e.g. an imbedded video player), video controls (e.g. play, pause, fast forward, rewind, volume control, etc.), navigational buttons (e.g. an "Exit the VEE" button), or informational text fields. Further, the GUI may comprise any other desired elements, such as aesthetic components (e.g. borders, logos, images, etc.), or advertisements. In certain embodiments, the GUI elements will be embedded within the context of another environment (e.g. webpage, application, etc.). For example, an environment may be created and highly branded by a certain company which uses the method **300** to handle its video editing functionality. In that case, the environment may comprise many elements which are independent of the GUI, and the GUI may provide only a minimal number of controls, fields, etc. for editing a video file, when needed or desired.

It will be appreciated that the GUI elements may be dependent on or independent of aspects of the loaded VEE instance. In some embodiments, the VEE GUI may look identical, regardless of any external information being passed to it (except, of course, the actual video file being played, the specific cue point information, etc.). In other embodiments, the VEE GUI may adapt or modify based on extrinsic information, like attributes of the client, the video file, the cue point information, etc. In one example, if the client's name is John and the time of day is the afternoon, the GUI may modify a text field to state "Good Afternoon, John." In another example, if the video file relates to real estate, advertisements may appear within or along with the GUI relating also to real estate. In yet another example, the GUI may recognize the skill levels of clients, providing different types of controls and options to advanced clients than to novice clients. It will be appreciated that many types of tailored content are possible, based on the various types of information available to the VEE.

Either separately or as part of the GUI, the method **300** may generate a video frame **318** for displaying video information. Generating the video frame may **318** may utilize, comply with, or be compatible with a number of different technologies. For example, different video files may be encoded, transcoded, or stored in different formats or using different public or proprietary algorithms or standards. Further, video files may load in various ways, including as a complete file, streaming, or progressive. Progressive loading of video files, for example, allows the video frame to begin playing the portion of video data which has already loaded while the remainder of video data continues to load. Alternatively, video may load in a non-linear fashion. For example, different portions of the video may load from different servers, at different rates, etc, or a client may force a portion of the video to download out of order (e.g. by selecting a cue point location relating to video data which had not yet loaded).

The video frame may also comprise its own GUI elements, including video and audio controls, and text fields. For example, the video frame may generate **318** along with a virtual play/pause button, volume controller, equalizer, etc. Further, the video data may comprise and/or be associated with other data, including text descriptions, audio information, and cue point information. Some or all of this information may also be displayed within the video frame, or locations for displaying this information may be generated along with the video frame.

In one example, the video frame may comprise a field spanning a lower portion of the frame in which text information may appear (e.g. subtitles, captions, or comments). This field may be independently controllable or editable, for example to take up the lower fifth of the frame, to have a thirty-percent translucent grey background with black text, etc. This text information may also provide various amounts of functionality. For instance, the text information may be indexable, searchable, or selectable (e.g. able to be copied to a text file); it may be related to video data, cue point information, or user data; it may be auto-generated based on audio or video recognition, patterns of user activity; it may be generated by acquiring from external sources, like Really Simple Syndication (RSS) feeds, or web logs (blogs); etc.

In another example, the video data may be associated with a set of cue point data relating to a set of cue points. Either as part of the GUI generation **316** or the video frame generation **318**, cue point navigation buttons may be generated for each cue point. Further, these cue point buttons may load progressively along with the video data, so that cue points become visible or active only after all or part of their respective portion of the video data has loaded. Additionally or alternatively, cue points may be made active before the respective video data downloads. For example, when a cue point button is selected, video data may begin to download from the associated cue point location. When the desired video data has loaded, other video data may continue to load in any desirable order (e.g. continue from that time position forward, continue from the beginning of the video file, etc.).

As the elements load (or in some embodiments, after the elements have loaded), the VEE may provide interactive editing capability. As part of this interactivity, the method **300** may have to poll for interactivity. It will be appreciated that in some embodiments, cue point edit mode will always be available, while other embodiments may require active entry into that mode, for example by polling for input. Polling may require, for example, waiting for a particular event from an input device, like a mouse or keyboard. Specifically, the method **300** may poll for entry into cue point edit mode **320**. While polling for entry into cue point edit mode **320**, the method **300** may continually determine whether the cue point edit mode has been entered **322**. If the cue point edit mode has not been entered **322-1**, the method **300** may continue to poll for entry into cue point edit mode **320**.

If the cue point edit mode has been entered **322-2**, the method **300** may proceed by receiving cue point data **324**. Different data may be received **324** from different locations. For example, cue point data may be received **324** from the client by entry from an input device (e.g. keyboard, mouse, voice input, etc.), from a cue point database containing related attributes, by contextual inference (e.g. audio or image recognition from the video file, time or date informa-

tion from the computer's Basic Input Output System (BIOS), etc.), or from any other useful source.

Further, depending on the type of cue point editing, different types or amounts of cue point data may be desired or required. In one example, if a client wishes to insert a new cue point, she may pause the video at a given playback location (e.g. by clicking a pause button or by beginning cue point entry in some other way) to assign the cue point a location, enter characters to assign the cue point a name, and submit or save the cue point data to a file. In another example, a client may enter a screen which may allow entry of different types of cue point data. Also in some examples, the video may continue to play while the cue point editing proceeds.

Even further, the cue point editor may be configured to receive information relating to multiple cue points. In one example, before entering the cue point editor, the client may flag a number of cue point locations. The cue point editor may then allow the client to enter information for each of the cue points in series, for all of the cue points in parallel, or in any other useful way. In another example, before entering the cue point editor, the client may flag a number of cue points for editing. The cue point editor may then allow the client to enter information which relates to multiple cue points simultaneously.

Any or all cue point information may be entered for new cue points and or for modifying existing cue points. Further, receipt of cue point data **324** may involve receipt of a request to remove certain data or an entire cue point reference. Clients may have the same or different authorization within the VEE to add, modify, and/or delete cue point information.

During or after cue point information is received **324**, the method **300** may update cue point associations **326**. Updating cue point associations **326** may comprise storing, modifying, removing, or otherwise processing information stored in relation to cue points, video files, or other data. In one example, a client may choose to save new cue point information, at which point the method **300** may save the information to a relational database stored on a cue point server with an attribute pointing to the loaded video file. In another example, the name of the cue point may be saved to a database which records cue point names and the number of times those (or similar) names occur within a set of video files.

Further, cue point associations may be updated **326** in any useful way, including after submission, after exit from the VEE, or substantially in real time. In some embodiments, the information may be maintained within files on a server. These files may be continually or periodically updated during the cue point editing process. In other embodiments, the client may be working with very large files, large numbers of cue points, limited bandwidth, limited network reliability, or other technological limitations. In these environments, or for other reasons, it may be desirable or necessary to temporarily store all information affected by the editor in local files. These local files may reside in one or more locations, including as temporary files on the client's terminal or in temporary files on the server computer. The final updated information may then be saved to databases or other, more permanent, storage locations when the client uploads the information or exits the VEE.

Even further, the client may be able to edit multiple cue points at once. This may involve receiving cue point data **324** and updating cue point associations **326** for multiple cue point files either in series or in parallel.

When the cue point edit mode has received cue point data **324** and updated cue point associations **326**, the method **300** may determine whether the client wishes to exit the cue point edit mode **328**. If the client doe not wish to exit the cue point edit mode **328-1** (e.g. the client wished to continue editing the cue point or cue points), the method **300** may continue to receive cue point data **324**.

If the client wishes to exit the cue point edit mode **328-2**, the method **300** may then determine whether the client wishes to exit the VEE **330**. If the client does not wish to exit the VEE **330-1**, the method **300** may return to polling for re-entry into the cue point edit mode **320**. If the client wishes to exit the VEE **330-2**, the method may terminate **332**.

FIG. **3**B provides an exemplary flow diagram of video editor environment method embodiments according to the invention. The method **340** begins by generating an upload form **342** for uploading a new video. The upload form may be a standard for stored as part of the VEE application or stored in a different location. Alternatively, the upload form may be dynamically generated **342** from one or more scripts. The scripts may acquire information used to generate the form **342** from one or more sources, including from the client, the host, a database, etc. The upload form may comprise one or more fields for receiving data relevant to uploading a file, for example a video file.

After the upload file has been generated **342**, the method **340** may process the upload file **344**. Depending on the type of upload file, there may be various ways to process the upload file **344**. In one example, if the upload file is a formatted form viewable to a client, processing the upload file **344** may require processing the information within the form (e.g. by parsing, concatenating, searching, sorting, etc.). In another example the upload file may comprise various file fields which may be interpreted by one or more scripted algorithms (e.g. by a Common Gateway Interface (CGI) script) in the background of the method **340**.

Using information from the upload form, and possibly also other information, the method **340** may then upload the video file **346**. Uploading the video file **346** may transfer the video data and/or any related information from any useful location to any useful location. For example, the video data may be uploaded from the client's computer to a video server, from one video server to another video server, or from a video server to an application server where the VEE resides. Uploading the video file **346** may comprise any number of useful data processing algorithms, in addition to storing the video file. For example, during uploading **346**, the method **340** may also create one or more video identifiers (e.g. a unique video identification number), convert the video data (e.g. translate the data to a given file format, encode or transcode the video file, down-sample the video file to lower the file size or resolution, split the video file into separate packets, normalize the audio volume, etc.), infer related data (e.g. use various video or audio processing algorithms to identify certain types of data within the file), associate data to the video (e.g. store the client's name, create a timestamp for the video, etc.), or perform any other useful function.

During or after uploading the video file **346**, the client may be redirected to a VEE **348**. As part of redirecting the client to the VEE **348**, the method **340** may associate the VEE to information relevant to editing the video file. In one example, the method **340** may redirect the client to the VEE **348** through a function call that loads the VEE application with variables, such as the video file name. In another example, the VEE application may load along with files (or pointers to files) containing video data, cue point data, GUI data, and any other relevant data.

In some embodiments, the method **340** may begin dynamic (or progressive) loading of the video data **350**. Dynamic loading of the video data **350** may allow the client to play downloaded portions of the video while remaining portions of

the video continue to download. This dynamic loading of the video data **350** may be represented on the VEE GUI as a progress bar or any other useful technique.

Further, in some embodiments, the method **340** may load associated cue point information **352**. Loading associated cue point information **352** may involve loading pointers to locations within a cue point file or database, loading cue points with related data, or any other useful loading method. Additionally, loading associated cue point information **352** may be executed dynamically, so that cue points become visible or interactive only as certain information becomes available. For example, if the cue points relate to specific time positions within a video file, it may be desirable to activate cue points only after the related time positions of the video file load. Say a cue point refers to a location three minutes into a video file. It may be desirable in this case to load that cue point (or to make the cue point active for interaction by the client) only after the first three minutes of the video file have loaded.

Alternatively, cue points may be activated before their respective video data loads. For example, cue points may load when the video data begins to download. When a client selects a cue point before its respective video data has loaded, the video data may begin to progressively download from that cue point time position. When the video data for that cue point has finished loading, other video data may continue to load in any desirable order.

It will be appreciated that there are many ways to store and load this data within the context of the invention, and these ways may differ depending on the type of data being loaded. For example, the VEE GUI may load using function calls within the VEE application, the video may load **350** along with a video player application (like Adobe❍ Flash❍) embedded in the VEE GUI, and cue point information may load **352** by executing scripts on one or more servers (e.g. CGI scripts, Structured Query Language (SQL) queries, etc.).

Once various interactive elements of the VEE have loaded, the method **340** may poll for interactivity **354**. Polling for interactivity **354** may involve waiting for the client or some other interactor to interact with a GUI control, VEE elements, or any other method of receiving interactivity. For example, the GUI may comprise certain controls, like virtual buttons and knobs. The method **340** may poll for interactivity **354** by waiting for the client to interact with one of those GUI controls.

In some embodiments, the client may enter the cue point edit mode by pausing the video file at the location where she desires to insert a cue point. In these embodiments, the method **340** may determine whether the play button is active **356**. For example, the VEE GUI may provide the client with a virtual play/pause toggle button, and determining whether the play button is active **356** may involve determining whether the toggle button is in "play" mode. If the play mode is active **356-1**, the method **340** may play (or continue to play) the video file **358**. It will be understood that, if the video is still being streamed or progressively downloaded, the method **340** may have to stop or pause video file playback while more video data loads. While the video continues to play and/or load, the method **340** may continue to poll for interactivity **354**.

Of course, the client may enter the cue point edit mode in any useful way. For example, the client may click on a video image in the video frame to enter a cue point edit mode. For another example, the client may select a GUI control dedicated to providing entry into the cue point edit mode. For yet another example, the client may select a portion of the video progress bar to set a cue point entry location and enter the cue point edit mode. Further, the video may or may not pause upon entry into the cue point edit mode.

If the play mode is not active **356-2**, the method **340** may determine whether the pause mode is active **360**. If the pause mode is active **360-1**, the method **340** may pause the video file and run the cue point handler **362**. Pausing the video file and running the cue point handler **362** may allow the client to add or edit the cue point information associated with the video file. The method **340** may allow the client to exit the cue point handler in any effective way, including, for example, by activating the play control or by selecting a submit control. When the client exits the cue point handler, the method **340** may continue to poll for interactivity **354**.

If the play mode is not active **356-2**, and the pause mode is not active **360-2**, the method **340** may determine whether the exit mode is active **364**. If the exit mode is not active **364-1** (e.g. there is no interactivity, according to the illustrated embodiments), the method **340** may continue to poll for interactivity **354**. If the exit mode is active **364-2**, the method **340** may determine whether the client would like to save **366** what she edited. If the method **340** determines that the client would like to save **366-1**, the method **340** may save and exit **368-1**. If the method **340** determines that the client would not like to save **366-2**, the method **340** may exit **368-2** without saving.

FIG. **3**C provides an exemplary flow diagram of cue point editor method embodiments according to the invention. The method **370** begins by loading a cue point editor **372**. The cue point editor may be loaded **372** by loading a separate application, loading a function or process within another application, or in any other useful way. Further, the cue point editor may have been loaded previously such that loading the cue point editor **372** merely reactivates the process. For example, the cue point editor may be running as a background process, and loading the cue point editor **372** may move the process to the foreground.

Additionally, it will be appreciated that loading the cue point editor **372** may manifest to a client in any way which provides access to the client. In some embodiments, the cue point editor may load **372** into a separate window, a separate GUI, a separate frame within an existing window or GUI. In some other embodiments, the cue point editor may load **372** by making new GUI controls and/or fields appear, by activating existing GUI controls and/or fields, or by modifying an existing GUI or display to allow for client interactivity.

Either before, during, or after the loading of the cue point editor **372**, the method **370** may determine the editing type **374** which is desired. Cue point editing types may include, for example, adding, modifying, or deleting cue point information. The method **370** may determine the editing type **374** in any effective way. In one example, loading the cue point editor **372** may include passing a variable to represent the editing type. In another example, sometime after loading the cue point editor **372**, the client may provide the cue point editing type, e.g. through some input device.

When the method **370** determines that the client desires to delete cue point information **374-1**, the method **370** may detect or load relevant cue point properties **380**. It will be appreciated that many types of cue point information may be possible, including textual information (e.g. name, description, etc.), time information (e.g. time position within the video file, time range associated with the video file, etc.), aesthetic information (e.g. font size, font color, icon, associated image, thumbnail information, etc.), hierarchical information (e.g. whether the cue point is the parent or child of another cue point), GUI information (e.g. cue point button size, physical location related to video frame, etc.), or any other useful information. The availability of these types of

cue point information may depend on the client's authorization level, type of cue point, available information, and other parameters. Further, even where these types of information are available, they may or may not be accessible or editable to any or all clients.

Cue point information may also be loaded or detected **380** in any effective way. In some embodiments, some information may be stored along with a cue point identifier. For example, cue point "CP_0001" may be stored as an entry in a relational database along with various related attributes. Those attributes may include some or all of the various types of cue point information. In other embodiments, information may be detected from one or more contexts. In one example, say a client paused playback of a video file before entering the cue point editor. The method **370** may be able to use the currently loaded video file name and the current time position of the video playback to determine which cue point is being edited and other related information. In another example, the method **370** may be able to use video, audio, text, or other recognition algorithms to infer content-related information. In yet another example, the video file may contain certain header information which provides cue point information to the method **370**.

When loading or detecting cue point information for deletion **380-1**, the information may be retrieved from any useful location. When a cue point is selected for deletion, the method **370** may set up a pointer to or may download information associated with that cue point (e.g. stored in relation to that cue point). Depending on certain parameters, the client may delete some or all of the information associated with the cue point, or the cue point itself.

Additionally, the information for deletion may load into any useful environment. In some embodiments, the client may not be able to delete certain information without deleting the entire cue point. In these embodiments, the client may only have access to some interface element which allows deletion, without having access to further options. In one example, a GUI may provide a virtual "delete" button next to a cue point access button, which deletes the adjacent cue point when pressed (e.g. clicked with a mouse). In another example, after selecting a cue point, the client may be able to press the "delete" button on her keyboard to delete the selected cue point. In other embodiments, the client may be able to delete certain cue point information without deleting the entire cue point record. In those embodiments, it may be necessary or desirable to provide the client with a way to access that information. For example, a new GUI, window, or frame, or new elements in existing display elements may be required.

Once the cue point information is ready to be deleted, the method **370** may delete the information **390**. It will be appreciated that many types of deletes may be desirable. In some embodiments, the client will delete all or part of the cue point information, and the method **370** may remove the information from the location where it is stored. In other embodiments, other deletes may be possible. In one example, it may be desirable to delete some information specifically relating to a cue point, while retaining certain template information. In a second example, a client may keep the name of the cue point as part of a list, but remove all the other information associated with the cue point. In a third example, a client may retain the information associated with a cue point, but delete the pointer or association between the cue point and the video file or other cue points.

Before deleting the information **390**, the method **370** may ask for verification from the client. In some embodiments, the method **370** may prompt the client to take multiple steps before effectuating the delete. For example, after clicking a "delete" button, a dialog box may appear on the screen, asking "Are you sure you want to delete the cue point?"; and the client may be required to click a "Yes" button before the method **370** will delete the cue point. In other embodiments, the method **370** may determine whether the client has sufficient authority to delete the cue point information before effectuating the deletion. In other embodiments, the method **370** may temporarily place deleted files into a temporary file, deleting the files permanently only after the occurrence of some other event. For example, deleted files may be placed in a "trash can" file until an authorized client empties the "trash can" file.

After the cue point information is deleted **390**, the method **370** may terminate **398**. Termination **398** may involve a number of steps. For example, the method **370** may exit the client from the cue point editor. Additionally, the method **370** may terminate the process which is running the cue point editor. Alternatively, the method **370** may close the application, but keep the process running in the background.

In many cases, the method **370** may determine that the client desires to add or modify cue point information **374-2**. There may exist may types of addition or modification of cue point information. Adding cue point information may include such cases as creating a new cue point, copying or saving an existing cue point's information into a new cue point entry, duplicating an existing cue point and associating the duplicate either with a new time position or another video file, creating a new cue point from a template or default, creating a new cue point within a hierarchical structure, or any useful type of creation of cue point information. Modifying cue point information may include such cases as changing various attributes of an existing cue point (e.g. the cue point's name or time position), changing the associations between an existing cue point and either a video file or other cue point information, or any other useful type of modification to existing cue point information.

When the method **370** determines that the client desires to add or modify cue point information **374-2**, the method **370** may determine the level of client interactivity **376**. In various embodiments, levels of client interaction may include no interactivity, full interactivity, and one or more levels of partial interactivity in-between. The method may determine the level of interactivity **376** in different ways. In one example, the client may dictate the level of interactivity by providing that level to the method **370** from some input device. In another example, different levels of client may automatically be provided with different levels of interactivity (e.g. novice clients may be provided with no interactivity, while advanced clients may be provided with full interactivity). In yet another example, the level may be determined **376** based on available information, or the ability of the method **370** to provide the interactivity desired.

In the illustrated embodiments, there are three levels of interactivity: none **376-1**, full **376-2**, and partial **376-3**. In some cases, the method **370** may determine that no interactivity will be provided **376-1**. In these cases, the method **370** may detect and/or load all desired or required cue point properties **380-2** in any effective way from any useful source. In some embodiments, when a cue point is modified, the method **370** may search for attribute information in a relational database which is stored in relation to an identifier associated with the cue point to be modified.

In other embodiments, information may be inferred or detected from various types of contextual information. For example, before loading the cue point editor **372**, a different method may have paused the video file at two minutes. The

method **370** may then be able to infer that the time position for a new cue point should be two minutes, and the new cue point should be associated with the video file which was being played. In another example, the method **370** may attribute the new cue point with a time and date of creation, which it may be able to infer based on the system clock of a computer performing the method **370**. In yet another example, the method **370** may be able to associate certain permissions and a creator name with the new cue point based on the login information of the client using the method **370**. In still another example, one or more cue point locations may automatically be identified (e.g. by audio or video recognition).

When the method **370** determines that full interactivity will be provided **376-2**, the method **370** may generate a cue point information form **382**. Generating the cue point information form **382** may involve any process by which the method **370** may solicit the desired or required cue point data from a client. It will be appreciated that in different cases, different types of cue point information may be desired or required as part of the cue point creation or modification.

In some embodiments, the method **370** may open a new window, frame, or portion of the GUI which may provide various fields and/or controls relating to different types of cue point information. The client would then be able to input cue point information into the form by using some or all of these fields and/or controls. Further, the fields and/or controls may be tailored or may have restrictions based on the associated type of cue point information. In one example, a client may enter the cue point name in a text string field which allows a maximum length of thirty characters. In another example, a client may select a cue point name from a list of common or acceptable cue point names provided in a drop-down list. In yet another example, the client may provide the cue point name by saying the name into a microphone (after which point the method **370** may use various voice-recognition algorithms to convert the audio into a textual representation of the cue point name).

In some cases, the method **370** may determine that partial interactivity will be provided **376-3**. In these cases, the method **370** may detect and/or load some of the desired or required cue point properties **380-2** in any effective way from any useful source. After detecting or loading some cue point properties **380-2**, the method **370** may generate a cue point information form **384** to solicit the remaining desired or required cue point information from a client.

Whether the method **370** generates a full cue point information form **382** (the method **370** determines that full interactivity will be provided **376-2**) or a partial cue point information form **384** (the method **370** determines that partial interactivity will be provided **376-2**), the method may then receive cue point information from a client. The client may be any effective provider of the desired or required cue point information, including a human client of a client terminal, a computer (e.g. automated or artificial intelligence) client of a client terminal, an application running compatible and interfacing processes or functions, or any other information provider.

It will be appreciated that there are many ways to solicit input from the client for this purpose. For example, there are many types of GUI fields and controls (e.g. text fields, radio buttons, sliders, check boxes, drop-down menus, etc.), many types of input devices (e.g. keyboard, mouse, microphone, scanner, optical character recognition system, writing tablet, computer script, etc.), and many types of potentially editable cue point information. Some or all of these options may be provided or limited, possibly based on various factors, including a component's technical capabilities, a client's permissions, or a cue point's type.

It will further be appreciated that the level of interactivity determination **376** may occur multiple times and for various reasons, and that the result may change over time. In some embodiments, the method **370** may initially determine that full interactivity will be provided **376-2** and generate a cue point information form **382**. At some later time, the method **370** may determine that certain information will be provided automatically through detection or loading from another source. For example, as the client enters cue point information into a cue point information form, the method **370** may determine that certain other information may be automatically generated. For another example, after providing the cue point information form to the client, the client may select a button which automatically fills in certain fields of the form.

After cue point information is received from the client **386**, the method may process some or all of the cue point information **388**. In some embodiments, audio inputs may have to be converted into a text format for storage in a relational database. In other embodiments, sets of data may be encrypted, encoded, transcoded, or condensed (either be removing information, by down-sampling, by using a codec to reduce the file size, or in some other way) before storage. In yet other embodiments, portions of the received data may affect the way cue point data is stored, manipulated, interpreted, or otherwise handled by other methods or systems. For example, some of the cue point information may require new associations to be created in a relational database, new GUI elements to be generated or displayed, etc.

After the method **370** receives all the desired or required cue point properties, the method **370** may generate and save the cue point **392**. In some embodiments, the method may ask for verification from a client before generating and/or saving the cue point **392**. In other embodiments, the method **370** may only generate and/or save the cue point after the client submits the information. For example, the cue point information form may be displayed on a client terminal while the cue point editor resides on a server terminal. In this example, the client may be required to submit the form over a network to the server computer before the cue point editor has the information it needs to generate the cue point.

Further, the method **370** may save the cue point in any effective way in any location. For example, the method **370** may perform a database insert function to insert the new or modified cue point information into an existing cue point database, which may be stored on a server. Alternately, the method **370** may write the information to the associated video file in a way which may be interpreted by another application.

After generating and saving the cue point **392**, the method **370** may determine whether or not the client would like to continue **396**. This determination **396** may be performed, for example, by transmitting or displaying a prompt for the client to select whether or not to continue. If the method **370** determines that the client would like to continue **396-1**, the method **370** may return to any useful step.

In some embodiments, the method **370** may continue to allow editing of the cue point information, or renew editing access to the cue point information. In other embodiments, the method may re-determine how much interactivity to provide **376** and proceed from there. In yet other embodiments, the method **370** may re-open certain cue point information for editing and keep other information closed to editing. For example, the method **370** may provide a "clear form" GUI element which allows the client to clear the information provided in the cue point information form. In some cases, the

"clear form" element may protect certain fields, like the name and time position of the cue point, and clear only other information. Of course, in yet other embodiments, the method **370** may default to either continuing in editing mode or not continuing unless the client selects otherwise.

If the method **370** determines that the client would like to continue **396-2**, the method **370** may then exit the cue point editor **398**. It will be appreciated that there are many ways to exit an application. In one example, the application may close completely, and processes associated with the application may terminate. In another example, the application may close as viewed by the client, but the processes associated with the application may continue to run on a server computer and/or in the background of the client terminal. It will also be appreciated that the method **370** may wait to generate or save a cue point or cue point information until the cue point editor exits **398**.

In some embodiments of the invention, a client may use an embodiment of a video editing environment. The client may access and use the video editing environments in any effective way, including by way of a client terminal. FIG. **4** provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of video editing environments.

The system **400** comprises a client terminal **410** with various components. These components may include a central processor **420**. The central processor **420** may include one or more microprocessors or any other effective element for controlling the various components of the client terminal **410** and for processing client terminal data. Components of the client terminal **410** may include network devices **422**, input devices **424**, output devices **426**, data stores **428**, or any other useful components.

Network devices **422** may include wired or wireless transceivers, encoders or decoders, network ports, antennae, or any other devices which facilitate network communications. Input devices **424** may include keyboards, mouse peripherals, track balls, touch pads, microphones, optical recognition devices, input ports, or any other devices which facilitate input from a client. Output devices **426** may include display screens, light emitting diodes (LED's), output ports, printers, or any other devices which facilitate outputting information to a client. Data stores **428** may include hard drives, random access memory (RAM), memory cards, magnetic or optical disks, or any other devices which facilitate the storage of data.

It will be appreciated that many types of client terminals **410** exist, and the components and client of the client terminal **410** may differ depending on the type. For example, if the client terminal **410** is a laptop computer, the client is likely a human client who interfaces with the terminal via various types of input devices **424** and output devices **426**. In another example, if the client terminal **410** is an automated computer system, the client may be a computer process which in interfaces with the terminal via various scripts, functions, algorithms, etc. In this example, it would be unnecessary in some cases to provide human-usable input devices **424** and output devices **426**, but may remain necessary to provide other types of input devices **424** and output devices **426**, like ports, processors, etc.

The client terminal **410** may interface at least through its network device **422** to a network **430**. The network **430** may be one or more of any type of wired or wireless, public or private, encrypted or unencrypted network. In one example, the network **430** may comprise the Internet. In another example, the network **430** may comprise a set of data transmission channels, like a cable. In yet other examples, the network **430** may comprise any number of computers, configured as centralized or decentralized peer-to-peer networks, ad hoc networks, mesh networks, or any other useful configuration. For instance, the network **430** may comprise two terminals connected to one another by a Universal Serial Bus (USB) cable, each performing server functions for the other computer. Using the network **430**, the client terminal **410** may interact with a video editing environment **440**.

FIG. **5** provides an exemplary flow diagram summarizing methods relating to client terminal interactions with video editor environments in various embodiments of the invention. The method **500** may begin when a client enters a VEE **510**. The client may enter the VEE **510** by executing an application invoking various software and/or hardware commands, accessing a webpage, or in any other useful way.

Prior to entering the VEE **510**, the method **500** may require certain set-up steps. For example, the client may access a login environment **502**. In certain embodiments, the client may access a login environment **502** to provide login information **504** to the method **500**. In some of these embodiments, providing the login information **504** assists the method **500** in determining the level of access of the client.

For example, the method **500** may determine based on the login information whether the client has permission **504** to access all or part of the VEE. If the client does not have permission **504-1** to access the VEE or desired files, the method **500** may terminate **532** (e.g. the login may be denied). If the client does have permission **504-2** to access the VEE or the desired files, the method **500** may continue to load the VEE **510**.

Once the VEE is loaded **510**, the method **500** may determine whether the client is attempting to use a new or existing video **512**. If the client is attempting to use a new video **512-1**, the method **500** may have the client provide the new video information **514-1**, for example by uploading, downloading, transferring, or compiling the video data. If the client is attempting to use existing video **512-2**, the method **500** may acquire or load the existing video information **514-2** from wherever it is stored, for example from a video server.

The method **500** may then allow the client to view the video data **520** in any useful way. In some embodiments, the method **500** may generate a video frame either along with or as part of a VEE GUI. The client may use these video elements (e.g. the video frame and various GUI controls) to view or manipulate the video data.

Further, the method may provide the client with a cue point edit mode. At any point, the method may determine whether the client is entering the cue point edit mode **522**. It will be appreciated that in some embodiments, the cue point edit mode will always be available, while other embodiments may require active entry into that mode. For example, in some embodiments, the client may enter the cue point edit mode by using cue point edit mode functions (e.g. by beginning to type information into a cue point edit field), while in other embodiments, the client may enter the cue point edit mode by selecting a navigational control which directs the client specifically to that mode.

If the cue point edit mode has not been entered **522-1**, the method **500** may continue to allow the client to view video data **520** and determine whether the client is entering the cue point edit mode **522**.

If the cue point edit mode has been entered **522-2**, the method **500** may have the client provide cue point data **524**. Different data may be provided **524** in different ways, for example via a client terminal. The method **500** may then have the client submit the cue point information **526**. After (or while) cue point information is provided **524** or submitted

526, the method 500 may have to process the cue point information, update cue point associations, or perform other steps.

When the client has provided 524 and submitted 526 cue point information, the method 500 may determine whether the client wishes to exit the cue point edit mode 528. If the client does not wish to exit the cue point edit mode 528-1 (e.g. the client wished to continue editing the cue point information or cue points), the method 500 may allow the client to continue to provide cue point information 524.

If the client wishes to exit the cue point edit mode 528-2, the method 500 may then determine whether the client wishes to exit the VEE 530. If the client does not wish to exit the VEE 530-1, the method 500 may allow the client to return to any useful step, for example to viewing the video data 520. If the client wishes to exit the VEE 530-2, the method may terminate 532.

FIG. 6 provides an exemplary screen shot of an embodiment of a video editing environment as viewed by a client terminal according to the invention. The cue point editor screen 600 may comprise a number of elements for different purposes. It will be appreciated that many types of cue point editor screens are possible within the embodiments of the invention. As such, the cue point editor screen 600 illustrated in FIG. 6 is for illustrative purposes only and should not be construed to limit the scope of the invention.

The cue point editor screen 600 comprises a video frame 602. The video frame 602 may be configured to display video data and to allow for interactive video manipulation. The video frame 602 may comprise a video footage area 604, a comment area 606, a navigation area 608, and any other useful areas.

The comment area 606 may display text, images, videos, or other information describing or adding to the footage seen in the video footage area 604. As illustrated, the comment area 606 may span the full width and some percentage of the height of the video frame 602. Further, as illustrated, the comment area 606 may be overlaid on the video footage with a semi-transparent background, so the video footage is not totally obscured by the comment area 606. Of course, the comment area 606 may have any size, shape, color, transparency, or other useful characteristic.

Additionally, the comment area 606 may respond to interaction by a client or other function. In one example, the comment area 606 may normally be hidden, minimized, or otherwise obscured in the GUI. The comment area 606 may then appear (e.g. "pop up") on the screen when a client places a mouse pointer over a cue point location indicator 616. In other examples, the text information in or associated with the comment area 606 may be indexable, searchable, or selectable (e.g. able to be copied to a text file); it may be related to video data, cue point information, or user data; it may be auto-generated based on audio or video recognition, patterns of user activity; it may be generated by acquiring from external sources, like Really Simple Syndication (RSS) feeds, or web logs (blogs); etc. In yet other examples, the comment area 606 may comprise interactive elements, like hyperlinks or GUI elements, which allow the client to interact with the comment area 606 (e.g. to navigate to a different location, to open the information into a new frame, to acquire related information (like other users' comments about the comment), etc.).

The navigation area 608 may comprise any number of navigation controls for navigating, processing, manipulating, or otherwise affecting video or audio elements. As illustrated, the navigation area 608 may comprise virtual buttons, like a "pause" button 610. Further, the navigation area 608 may comprise a video progress bar 612 which may show various information relating to the progress of the video, e.g. loading or playback. The video progress bar 612 may comprise other elements relating to video progress, time positions, or other useful information. For example, the video progress bar 612 may comprise a playback progress indicator 614, representing the current time position of the video playback. As illustrated, the time position is about nine percent through the video footage (0:34 out of 6:13), so the playback progress indicator 614 is about nine percent of the distance from the beginning of the video progress bar 612 to the end. The video progress bar 612 may also show various cue point location indicators 616. As illustrated, three cue point location indicators 616 are shown representing the three cue points already created (see below). The navigation area 608 may also comprise informational elements, such as a time indicator 618. The time indicator 618 may display the current time position in the video footage, the total time of video footage in the video file, time remaining for playback, or other useful information.

In some embodiments, these other elements may be used as interactive controls. For example, it may be possible to drag the playback progress indicator 614 to change the current time position of video footage being displayed in the video footage area 604. Similarly, it may be possible to drag cue point location indicators 616 to change the time positions associated with their respective cue points. Further, it may be possible to lock various controls to prevent their adjustment in certain environments. For example, it may be desirable to lock the cue point location indicators 616 for all cue points except the one currently being edited.

It will be appreciated that many types of areas, controls, and other elements are possible. For example, the navigation area 608 may also comprise other video controls (e.g. stop, fast forward, rewind, rotate, zoom, etc.), audio controls (e.g. volume, pan, fade, equalizer controls, audio level indicators, etc.), etc. Further, it may be possible to add or modify the elements of the video frame 602. For example, it may be possible to drag the comment area 606 to other locations, change its size, etc.

The cue point editor screen 600 may also comprise a cue point listing area 620. The cue point listing area 620 may list cue points which are existing, currently being added, or any other useful information. For example, as illustrated, the cue point listing area 620 lists three existing cue points 622, and one cue point currently being inserted 624 ("EXTER_"). The cue point listing area 620 may also comprise navigation controls or other elements. For example, if more existing cue points 622 are listed than fit within the cue point listing area 620, a scroll bar 626 may be provided to allow the client to scroll through the entire list.

The cue point editor screen 600 may also comprise a cue point parameters area 630. The cue point parameters area 630 may comprise any number of interactive and/or informational controls and/or fields, which are useful for viewing and editing cue point information. As illustrated, the cue point parameters area 630 comprises a cue point name field 632 for entering the cue point name, a time position field 634 for entering the cue point time position, and a comment text field 636 for entering comment text. Additionally, as illustrated, various virtual buttons are provided, including a "Lookup Name from DB" button for allowing a client to look up an appropriate cue point name from a list of cue point names stored in a database; an "Associate Cue Point" button for allowing a client to associate the cue point being edited with another video file or another cue point (e.g. in a hierarchy); a "Format Text Box" button for allowing a client to view more options for formatting the text and other attributes of the

comment area **606**; an "Advanced Options" button for allowing a client to view advanced options for cue point editing, GUI display, etc. (e.g. for changing the icon associated with a viewpoint, changing a thumbnail associated with a cue point or video file, changing the size and shape of cue point editing screen **600** elements, etc.); a "Cancel" button for allowing a client to cancel the current cue point editing; and a "Save" button for allowing a client to save the current cue point editing and possibly submit the cue point information. It will be appreciated that any number and type of fields and controls are possible.

The cue point editor screen **600** may also comprise other areas, like a cue point tools area **640**. The cue point tools area **640** may comprise various fields and controls for editing cue points. For example, as illustrated, the cue point tools area **640** comprises virtual buttons for inserting, modifying, and deleting cue points. Additionally, as illustrated, the cue point tools area **640** comprises virtual buttons for sorting cue points and for toggling cue point hierarchies. As shown, there may also be informational fields which show information, like the current status associated with a control. For example, the cue point tools area **640** shows that the cue points listed in the cue point listing area **620** are currently sorted by their associated time positions within the video file and that cue point hierarchies are turned off.

Other controls may also be part of the cue point editor screen **600**. For example, there may be other navigational controls for allowing the client to move between applications, between screens of applications, or to exit the cue point editor. As illustrated, there is a "Go to Cue Point Bank" button for allowing the client to navigate to (e.g. to open a new window with) a listing of entries from a cue point bank database; a "Go to Viewer Mode" button for allowing the client to navigate to a video playback environment (e.g. simulated or real) to be able to preview the effects of the current cue point editing; and a "Save and Exit" button for allowing the client to save changes made in the cue point editor and exit the application.

In the illustrative case, a client is editing a video file containing footage of a house for sale. The client desires to add cue points at strategic locations within the video file to allow a potential buyer to be able to more easily navigate the playback of the video file. Previously, the client had inserted cue points at three locations within the video file. These locations correspond to time positions in the video file where the video information related to the neighborhood, foyer, and living room, respectively. The client named these cue points "NEIGHBORHOOD," "FOYER," and "LIVING ROOM," respectively.

Now, the client wishes to insert a cue point at 34 seconds, where the video footage begins to describe the exterior of the house (see the illustrative footage in the video footage area **604**). The client used a client terminal to view the video file in a video editing environment, and entered the cue point editor mode by pausing playback of the video file at 34.03 seconds (see the video progress indicator **614** and the time indicator **618**, showing the current elapsed playback time rounded to 34 seconds). As illustrated, the cue point editor automatically generated a portion of the cue point information needed to create the cue point. For example, the cue point editor recorded the time position where the video was paused and is automatically displaying that information in the "Time" field **634**. Further, since the cue point listing area **620** is currently sorting the listed cue points by time position (see the information field next to the "Sort" button in the cue point tools area **640**), the cue point editor has created a placeholder for the cue point to be inserted in the correct sort position within the cue point list.

The client then began entering information into the cue point editor. As shown, the client has already entered the comment text associated with the cue point (see the "Text" field **636** and the comment area **606**). The client is currently in the middle of entering the cue point name "EXTERIOR," such that it currently reads "EXTER_" (the "_" representing a cursor location for the next character to be entered) (see the "Name" field **632**). Also, as shown, the name of the cue point in the cue point listing area **620** is being automatically updated substantially in real time to match the name being entered in the "Name" field **632**.

When cue point information is received, it may be stored in a data structure. FIG. **7** provides an exemplary data structure for use with various embodiments of video editing environments according to the invention. The data structure **700** may be any type of data structure useful for storing cue point information.a relational database comprising various attributes related to various entries in the database.

In the illustrated embodiment, the data structure **700** a relational database comprising various attributes related to various entries in the database. Each row **710** may represent a video identifier. The video identifier may be any data element capable of representing the identity of video data or a video file. In some embodiments, the first row **710-1** refers to a video file identified by the video identifier "VID_0001" **730**.

Each column **720** in the illustrative database may represent a cue point associated with the video file identified in a corresponding row **710**. In some embodiments, the first column **720-1** refers to a first cue point associated with respective video identifiers (e.g. the cue point with the time position closest to the beginning of the video data). For example, for the video identifier "VID_0001" **730**, the first cue point is "EXTERIOR" **740**.

It will be appreciated that many data structures are possible within the scope of the invention. Further, it is clear that many types of cue point information may be associated with a cue point. As such, it may be necessary to provide one or more data structures which allow cue point information to be associated with its associated cue point. For example, the cue point "EXTERIOR" **740** refers to a specific time position in a video file. Additionally, it may be necessary to differentiate between the cue points "EXTERIOR" **740** (associated with video identifier "VID_0001" **730**) and "EXTERIOR" **750** (associated with video identifier "VID_0002" **760**). As such, it may be necessary to associate those two cue points with unique identifiers.

It will be appreciated that many types video editing environments are possible for handling the many types of video information and many types of cue point information, all within the scope of the invention. As such, the above descriptions of embodiments relating to video editing environments in FIGS. **3-7** should not be construed as limiting the scope of the invention.

Video Playback Environments

FIG. **8**A provides an exemplary flow diagram summarizing methods relating to video playback environments in various embodiments of the invention. The method **800** may begin by loading a video playback environment (VPE) **810**. Loading the VPE **810** may involve executing an application invoking various software and/or hardware commands. It will be appreciated that the VPE may be loaded **810** in any useful way to provide the desired results. For example, the VPE may load as a script in the background of a webpage, as a server-level application, as a client-level application, or with various components of the application loading in different ways.

Prior to loading the VPE **810**, the method **800** may require certain set-up steps. For example, the method **800** may pro-

cess login **802** of a client. In certain embodiments, the method may process the login **802** to maintain records of the clients of the method **800**. For example, it may be desirable to know who uses the method **800** and how often, or which files or applications are accessed most often.

In other embodiments, processing the login **802** may require that the client enters certain login information to determine the client's level of authorization. For example, it may be desirable to limit access to the VPE only to certain types of clients. Similarly, it may be desirable to open access to the VPE, but limit access to certain files. In the latter case, it may be necessary as part of processing the login **802** to acquire information from the client regarding which files the client intends to access. In these embodiments, the method **800** may determine based on the login information whether the client has permission **804** to access all or part of the VPE. For example, the system may deny access based on stored attributes associated with the client (e.g. a level of authority attribute), inferred attributes based on extrinsic information (e.g. time of day, geographic location associated with the client's Internet Protocol address, etc.), incorrect provided information (e.g. client name and password do not match those on file, etc.), technical information (e.g. client terminal does not meet the minimum system requirements), or any other information which may be used to determine level of access.

If the client does not have permission **804-1** to access the VPE or the desired files, the method **800** may terminate **832**. If the client does have permission **804-2** to access the VPE or the desired files, the method **800** may continue to load the VPE **810**.

Once the VPE is loaded **810**, the method **800** may load video data **812** for viewing. Video data may be loaded **812** in any useful way and from any source where video data may be located. In some embodiments, video data may exist in a data store, like a database or video file. In these embodiments, the method **800** may download the data from one or more of those locations. In these and other embodiments, video data may be resident in the same location as the VPE or previously loaded. The method **800** may prepare the video for playback in any useful way, including reloading video data, loading additional video data, compiling loaded video data, or translating video data.

The method **800** may then generate a VPE GUI **814**. This interface may comprise any graphical, textual, audio, or other data which is desirable or necessary for providing interface capabilities to a client. It will be appreciated that the GUI does not require any graphical interface elements. For example, it may be possible to create an interface which uses only text, sound, or some other interface capability.

It will be appreciated that the GUI may be generated **814** in any useful way for providing a useful interface to the VPE. For example, the GUI may be generated **814** as a webpage on a client's web browser, as a frame within a webpage, as a dedicated client-level application on the client's terminal (with the VPE itself running either at the client- or server-level), or as a background script to be executed by another application (e.g. as Visual Basic commands for an interpreter which may use those commands to generate the GUI).

The GUI may comprise such useful elements as a video frame for displaying video information (e.g. an imbedded video player), video controls (e.g. play, pause, fast forward, rewind, volume control, etc.), navigational buttons (e.g. an "Exit the VPE" button), or informational text fields. Further, the GUI may comprise any other desired elements, such as aesthetic components (e.g. borders, logos, images, etc.), or advertisements. In certain embodiments, the GUI elements will be embedded within the context of another environment (e.g. webpage, application, etc.).

It will be appreciated that the GUI elements may be dependent on or independent of aspects of the loaded VPE instance. In some embodiments, the VPE GUI may look identical, regardless of any external information being passed to it (except, of course, the actual video file being played, the specific cue point information, etc.). In other embodiments, the VPE GUI may adapt or modify based on extrinsic information, like attributes of the client, the video file, the cue point information, etc. For example, the VPE may display tailored advertisements to the client based on any useful type of information accessible to the VPE (e.g. client data, video information, cue point information, comment information, algorithm results, patterns of client activity, etc.).

Either separately or as part of the GUI, the method **800** may generate a video frame **816** for displaying video information. Generating the video frame **816** may utilize, comply with, or be compatible with a number of different technologies. For example, different video files may be encoded or transcoded or stored in different formats or using different public or proprietary algorithms or standards. Further, video files may load in various ways, including as a complete file, streaming, or progressive. Progressive loading of video files, for example, allows the video frame to begin playing the portion of video data which has already loaded while the remainder of video data continues to load.

The video frame may also comprise its own GUI elements, including video and audio controls, and text fields. For example, the video frame may generate **816** along with a virtual play/pause button, volume controller, equalizer, etc. Further, the video data may comprise and/or be associated with other data, including text descriptions, audio information, and cue point information. Some or all of this information may also be displayed within the video frame, or locations for displaying this information may be generated along with the video frame.

In some embodiments, the video frame may comprise a field spanning a lower portion of the frame in which text information may appear (e.g. subtitles, captions, or comments). This field may be independently controllable or editable, for example to take up the lower fifth of the frame, to have a thirty-percent translucent grey background with black text, etc. The field may display text, images, videos, or other information describing or adding to the footage seen in the video frame. Additionally, the field may respond to interaction by a client or other function. In one example, the field may normally be hidden, minimized, or otherwise obscured in the GUI; and may then appear (e.g. "pop up") on the screen when a client places a mouse pointer over some GUI control. In other examples, the text information in or associated with the field may be indexable, searchable, or selectable (e.g. able to be copied to a text file); it may be related to video data, cue point information, or user data; it may be auto-generated based on audio or video recognition, or patterns of user activity; it may be generated by acquiring from external sources, like Really Simple Syndication (RSS) feeds, or web logs (blogs); etc. In yet other examples, the field may comprise interactive elements, like hyperlinks or GUI elements, which allow the client to interact with the field (e.g. to navigate to a different location, to open the information into a new frame, to acquire related information (like other users' comments about the comment), etc.).

In some embodiments, the video data may be associated with a set of cue point data relating to a set of cue points. Either as part of the VPE GUI generation **814** or the video frame generation **816**, cue point navigation buttons may be

generated for each cue point. Further, these cue point buttons may load progressively along with the video data, so that cue points become visible or active only after their respective portion of the video data has loaded. Alternatively, cue points may be activated before their respective video data loads. For example, cue points may load when the video data begins to download. When a client selects a cue point before its respective video data has loaded, the video data may begin to progressively download from that cue point time position. When the video data for that cue point has finished loading, other video data may continue to load in any desirable order.

As the elements load (or in some embodiments, after the elements have loaded), the VPE may provide interactive video control capability. As part of this interactivity, the method **800** may have to poll for interactivity **818**. For example, the method **800** may continually determine whether one or more of various GUI controls or other interactive elements are being interacted with. This interaction may occur in any useful way. For example, a client may interact be using a mouse to click on a virtual GUI button.

In the illustrated embodiments, the method **800** may determine whether a "play" control (e.g. a virtual "play" button) is active **820**. For example, the VPE GUI may provide the client with a virtual play/pause toggle button, and determining whether the play button is active **820** may involve determining whether the toggle button is in "play" mode. If the play mode is active **820-1**, the method **800** may play (or continue to play) the video file **822**. It will be understood that, if the video is still being streamed or progressively downloaded, the method **800** may have to stop or pause video file playback while more video data loads. While the video continues to play and/or load **822**, the method **800** may continue to poll for interactivity **818**.

If the play mode is not active **820-2**, the method **800** may determine whether a cue point is active **824**. For example, the GUI may provide a set of cue point navigation buttons which may be activated by clicking on them using a mouse or other input device. If the cue point is active **824-1**, the method **800** may jump to a time position in the video file **826** associated with the active cue point. After the method **800** jumps to the time position in the video file **826**, the method may continue to play the video file **822** from that time position. While the video continues to play **822**, the method **800** may continue to poll for interactivity **818**.

It will be understood that, if the video is still being streamed or progressively downloaded, the method **800** may be affected. In some embodiments, the method **800** may have to stop or pause video file playback while more video data loads before it may jump to the time position in the video file **826**. In other embodiments, if a cue point becomes active **824-1** before its respective video data downloads, the method **800** may still jump to the associated time position in the video file **826** and continue to download video data from that time position. When the video data for that cue point has finished loading, other video data may continue to load in any desirable order.

If the play mode is not active **820-2**, and a cue point is not active **824-2**, the method **800** may determine whether the exit mode is active **828**. If the exit mode is active **828-1**, the method **800** may terminate **830**.

If the exit mode is not active **828-2**, the method **800** may determine whether another command is active **832**. It will be appreciated that many types of commands are possible. For example, the VPE may provide interactivity with the video data (e.g. by providing GUI controls like pan, fast forward, rewind, pause, stop, etc.), with the audio data (e.g. by providing GUI controls like volume controls, equalizer controls, balance or fader controls, etc.), or any other desirable client interactivity. If the method **800** determines that another command is active **832-1**, the method **800** may respond to the command **834**. For example, if the command is the result of interactivity with a volume control, the response to the command may be to increase the volume of the audio output associated with the video data. If the method **800** determines that no other command is active **832-2** (e.g. the client is not interacting with the VPE), the method **800** may continue to poll for interactivity **818**.

In some embodiments of the invention, a client may use an embodiment of a video playback environment. The client may access and use the video editing environments in any effective way, including by way of a client terminal. FIGS. **9**A and **9**B provide exemplary system diagrams illustrating embodiments of client terminals for use with various embodiments of video playback environments.

FIG. **9**A provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of system-level video playback environments. The system **900** comprises a client terminal **910** with various components. These components may include a central processor **920**. The central processor **920** may include one or more microprocessors or any other effective element for controlling the various components of the client terminal **910** and for processing client terminal data. Components of the client terminal **910** may include network devices **922**, input devices **924**, output devices **926**, data stores **928**, or any other useful components.

Network devices **922** may include wired or wireless transceivers, encoders or decoders, network ports, antennae, or any other devices which facilitate network communications. Input devices **924** may include keyboards, mouse peripherals, track balls, touch pads, microphones, optical recognition devices, input ports, or any other devices which facilitate input from a client. Output devices **926** may include display screens, light emitting diodes (LED's), output ports, printers, or any other devices which facilitate outputting information to a client. Data stores **928** may include hard drives, random access memory (RAM), memory cards, magnetic or optical disks, or any other devices which facilitate the storage of data. It will be appreciated that many types of client terminals **910** exist, and the components and client of the client terminal **910** may differ depending on the type.

The client terminal **910** may interface at least through its network device **922** to a network **930**. The network **930** may be one or more of any type of wired or wireless, public or private, encrypted or unencrypted network. In one example, the network **930** may comprise the Internet. In another example, the network **930** may comprise a set of data transmission channels, like a cable. In yet other examples, the network **930** may comprise any number of computers, configured as centralized or decentralized peer-to-peer networks, ad hoc networks, mesh networks, or any other useful configuration. For instance, the network **930** may comprise two terminals connected to one another by a Universal Serial Bus (USB) cable, each performing server functions for the other computer. Using the network **930**, the client terminal **910** may interact with a video playback environment **940**.

FIG. **9**B provides an exemplary system diagram illustrating embodiments of client terminals for use with various embodiments of system-level video playback environments. The system **950** comprises a client terminal **960** with various components, including a central processor **970**, network devices **972**, input devices **974**, output devices **976**, data stores **978**, or any other useful components.

The client terminal **960** may have a VPE **990** stored as an application on a data store **978**. The client-level application may be runnable by the processor **970**. Additionally, the client terminal **960** may interface at least through its network device **972** to a network **980**. Using the network **980**, the client terminal **910** may access information it requires or desires for use with or by the VPE **990**. This information may be accessed through (and in some cases stored on) a host system **992**. The host system **992** may be one or more of any type of system component capable of providing and/or storing data and/or applications required or desired for use with or by the VPE **990**.

FIG. **10** provides an exemplary flow diagram summarizing methods relating to client terminal interactions with video playback environments in various embodiments of the invention. The method **1000** may begin when a client enters a VPE **1010**. The client may enter the VEE **1010** by executing an application invoking various software and/or hardware commands, accessing a webpage, or in any other useful way.

Prior to entering the VPE **1010**, the method **1000** may require certain set-up steps. For example, the client may access a login environment **1002**. In certain embodiments, the client may access a login environment **1002** to provide login information **1004** to the method **1000**. In some of these embodiments, providing the login information **1004** assists the method **1000** in determining the level of access of the client.

For example, the method **1000** may determine based on the login information whether the client has permission **1004** to access all or part of the VPE. If the client does not have permission **1004-1** to access the VPE or desired files, the method **1000** may terminate **1030** (e.g. the login may be denied). If the client does have permission **1004-2** to access the VPE or the desired files, the client **1000** may continue to access the VPE **1010**.

Once the VPE is loaded **1010**, the client may use the VPE to view video information **1012** (e.g. in a video frame). The method **1000** may allow the client to view the video data **1012** in any useful way. In some embodiments, the method **1000** may generate a video frame either along with or as part of a VPE GUI. The client may use these video elements (e.g. the video frame and various GUI controls) to view or manipulate the video data.

As the elements load (or in some embodiments, after the elements have loaded), the VPE may provide interactive capability, and the client may interact with these capabilities. In the illustrated embodiments, the client may activate a "play" control **1020** (e.g. use a mouse to click on a virtual "play" button). If the play button is active **1020-1**, the method **1000** may play (or continue to play) the video file **1022**, and the client may continue to view the video file **1012**.

If the client is not activating a play control **1020-2**, the method **1000** may determine whether the client is activating a cue point control **1024** (e.g. a virtual cue point navigation button). If the cue point button is active **1024-1**, the method **1000** may jump to a time position in the video file **1026** associated with the active cue point. After the method **1000** jumps to the time position in the video file **1026**, the method may continue to play the video file **1022** from that time position, and the client may continue to view the video file **1012**.

If the client is not activating a play control **1020-2**, and the client is not activating a cue point control **1024-2**, the method may determine whether the client is activating an exit control **1028**. If the exit control is active **1028-1**, the method **1000** may terminate **1030**.

If the client is not activating an exit control **1028-2**, the method **1000** may determine whether the client is activating another command **1032**. If the method **1000** determines that another command is active **1032-1**, the method **1000** may respond to the command **1034**. If the method **1000** determines that no other command is active **1032-2** (e.g. the client is not interacting with the VPE), the method **1000** may allow the client to continue viewing the video data **1012**.

FIG. **11**A provides an exemplary screen shot of an embodiment of a video playback environment as viewed by a client terminal according to the invention. The video playback screen **1100** may comprise various elements which may be useful for viewing, navigating, processing, manipulating, and performing other functions relating to video and associated information. It will be appreciated that many types of video playback screens **1100** are possible within the embodiments of the invention. As such, the video playback screen **1100** illustrated in FIG. **11** is for illustrative purposes only and should not be construed to limit the scope of the invention.

The video playback screen **1100** comprises a video frame **1102**. The video frame **1102** may be configured to display video data and to allow for interactive video manipulation. The video frame **1102** may comprise a video footage area **1104**, a comment area **1106**, a navigation area **1108**, and any other useful areas.

The comment area **1106** may display text, images, or other information describing or adding to the footage seen in the video footage area **1104**. As illustrated, the comment area **1106** may span the full width and some percentage of the height of the video frame **1102**. Further, as illustrated, the comment area **1106** may be overlaid on the video footage with a semi-transparent background, so the video footage is not totally obscured by the comment area **1106**. Of course, the comment area **1106** may have any size, shape, color, transparency, or other useful characteristic.

The navigation area **1108** may comprise any number of navigation controls for navigating, processing, manipulating, or otherwise affecting video elements. As illustrated, the navigation area **1108** may comprise virtual buttons, like a "pause" button **1110**. Further, the navigation area **1108** may comprise a video progress bar **1112** which may show various information relating to the progress of the video, e.g. loading or playback. The video progress bar **1112** may comprise other elements relating to video progress, time positions, or other useful information. For example, as illustrated, the video progress bar **1112** may change color to show progress with the video loading. Here, the video progress bar **1112** is half filled in, representing that the video is half-way through with its progressive downloading.

In some embodiments, video may load in a non-linear fashion. For example, different portions of the video may load from different servers, at different rates, etc. In another example, a client may force a portion of the video to download out of order (e.g. by selecting a cue point location relating to video data which had not yet loaded). In these non-linear download situations, or in any other useful situation, the video progress bar **1112** may be configured to display the non-linear progress. For example, different portions of the video progress bar **1112** may fill in to represent the different portions which have downloaded.

Further, the video progress bar **1112** may comprise a playback progress indicator **1114**, representing the current time position of the video playback. As illustrated, the time position is about nine percent through the video footage (0:34 out of 11:13), so the playback progress indicator **1114** is about nine percent of the distance from the beginning of the video progress bar **1112** to the end. The navigation area **1108** may

also comprise informational elements, such as a time indicator **1118**. The time indicator **1118** may display the current time position in the video footage, the total time of video footage in the video file, time remaining for playback, or other useful information. In some embodiments, these other elements may be used as interactive controls. For example, it may be possible to drag the playback progress indicator **1114** to change the current time position of video footage being displayed in the video footage area **1104**.

It will be appreciated that many types of areas, controls, and other elements are possible. For example, the navigation area **1108** may also comprise other video controls (e.g. stop, fast forward, rewind, rotate, zoom, etc.), audio controls (e.g. volume, pan, fade, equalizer controls, etc.), etc. Further, it may be possible to add or modify the elements of the video frame **1102**. For example, it may be possible to drag the comment area **1106** to other locations, change its size, etc.

The video playback screen **1100** may also comprise a cue point control area **1120**. The cue point control area **1120** may list available cue points associated with the video being played in the video frame **1102**. In some embodiments, as video data progressively downloads, so does cue point information. For example, if half the video has loaded, only those cue points associated with time positions in the first half of the video will have loaded.

In some of these embodiments, the cue point controls **1122** may load, but may become active (e.g. capable of being interacted with) after the corresponding video data loads. For example, as illustrated, the cue point control area **1120** lists eight cue points **1122**, three of which are active ("NEIGHBORHOOD," "EXTERIOR," and "FOYER"). In this example, a client would be able to click on any of the three active cue point controls (**1122-1**, **1122-2**, and **1122-3**) to navigate to those corresponding locations in the video. However, a client would not be able to click on the other five cue point controls (**1122-4** through **1112-8**), as the corresponding video has not yet loaded.

In an alternate embodiment, the cue point controls **1122** may become active before the corresponding video data loads. Here, all eight cue points **1122** in the cue point control area **1120** would be active, even though only a portion of the video data has loaded. If a client, for example, clicked on the fifth cue point **1122-5**, the corresponding video would begin to load and playback would continue from that associated time position.

In the illustrative case, a client is viewing a video file containing footage of a house for sale. The client may desire to navigate through the video information using the cue point controls **1122**. Currently, the client is watching the portion of the video data in the video footage area **1104** corresponding with the "EXTERIOR" cue point **1122-2**. Further, the client may view additional information associated with the cue point (i.e. the exterior of the house, in this case) by reading the informational text displayed in the comment area **1106**.

FIG. **11**B provides an exemplary screen shot of another embodiment of a video playback environment as viewed by a client terminal according to the invention. The video playback screen **1150** comprises substantially the same elements as those in the video playback screen **1100** of FIG. **11**A. However, in the cue point control area **1170**, the cue point controls **1170** may be displayed as image, rather than text, identifiers. It will be appreciated that these images may be acquired and/or associated with the cue points in various ways. For example, the images may be selected by a client within a cue point editor, or the images may be automatically generated from the video data (e.g. by generating a still image from the frame of video data being played at the time position associated with the cue point). Here, in the illustrated embodiment, the cue point control area **1170** lists five cue points **1172**, three of which are active (**1172-1**, **1172-2**, and **1172-3**) and two of which are inactive (**1172-4** and **1172-5**).

FIG. **11**C provides an exemplary screen shot of yet another embodiment of a video playback environment as viewed by a client terminal according to the invention. The video playback screen **1180** may comprise various elements which may be useful for viewing, navigating, processing, manipulating, and performing other functions relating to video and associated information. As illustrated, the video playback screen **1180** comprises a video frame **1182**. The video frame **1182** may be configured to display video data and to allow for interactive video manipulation. The video frame **1182** may comprise a video footage area **1184**, a comment area **1186**, a navigation area **1188**, and any other useful areas.

The comment area **1186** may display text, images, video, or other information describing or adding to the footage seen in the video footage area **1184**. Further, the comment area **1186** may have any useful aesthetic or functional characteristics, including any size, shape, color, transparency, or other useful characteristic. As illustrated, the comment area **1186** may be a "pop-up" field which appears in any part of the video playback screen **1180** for any desirable reason. In some embodiments, the comment area **1186** may appear when a client interacts with a cue point location identifier **1192**. For example, the client may cause the comment area **1186** to appear by mousing over (e.g. placing the mouse pointer over), right-clicking, selecting, or otherwise interacting with a cue point location identifier **1192**. In other embodiments, the comment area **1186** may appear whenever a cue point location is reached. For example, when the video playback reaches the time position associated with a given cue point, the comment area **1186** may appear, showing comment information relating to the associated cue point. The comment area **1186** may continue to display on the video playback screen **1180** for any desirable duration, including until the client closes the comment area **1186** (e.g. by clicking a "close" GUI control or by moving the mouse pointer off the cue point location identifier **1192**), for some predetermined duration (e.g. until the end of the cue point or for twenty seconds), or for some other useful duration.

Even further, the client may be able to interact with the comment area **1186** in any useful or desirable way. In some embodiments, the comment area **1186** may comprise GUI controls, hyperlinks, or other modes of interactivity, allowing a client to comment on the comment. For example, a client may be able to use the comment area **1186** to view and/or add a stream of comments about a given cue point location. The client's comments may relate to the video, the cue point, another user's comments, or any other useful information. Further, the client's comment may comprise textual, audio, video, or any other information. For example, the client may add a video comment recorded by his cell phone video camera. In another example, the client may add an audio comment with appended text information and a link to a related file. In some of these embodiments, the ability to comment may be determined by the client's level of authority. Further, in some of these embodiments, the VPE may be configured to allow a client to add cue points from the VPE by commenting on the video. This may be accomplished in any useful way, including, but not limited to the ways illustrated with respect to embodiments of the VEE.

The navigation area **1188** may comprise any number of navigation controls for navigating, processing, manipulating, or otherwise affecting video elements. The navigation area **1188** may comprise a set of cue point location identifiers

1192. These cue point location identifiers **1192** graphically indicate the time positions associated with each cue point. Different identifiers may be used to indicate different types of cue points. For example, as illustrated, cue point location identifiers **1192-1** through **1192-4** represent time positions of cue points added through a VEE by a client editor, while cue point location identifier **1192-5** represents a cue point added from within a VPE (e.g. a comment) by the same or another client.

The navigation area **1188** may also comprise a video download progress bar **1196** which may show how much and what parts of the video data have been downloaded. As illustrated, the video download progress bar **1196** may be split where portions of the video are loading in a non-linear fashion. For example, here, roughly the first half of the video has downloaded, as well as some of the video data starting from the fourth cue point location indicator **1192-4** (as indicated by the two shaded areas of the video download progress bar **1196**).

Further, the navigation area **1188** may comprise a playback progress indicator **1194**, representing the current time position of the video playback. In some embodiments, any of the elements of the navigation area **1188** may be used as interactive controls. For example, it may be possible to drag the playback progress indicator **1194** to change the current time position of video footage being displayed in the video footage area **1184**, or to drag a cue point location identifier **1192**.

The video playback screen **1180** may also comprise a cue point control area **1190**. The cue point control area **1190** may list available cue points associated with the video being played in the video frame **1182**. As illustrated, four cue point controls are available in the cue point control area **1190**. These controls correspond to four time positions within the video file, represented by four cue point location indicators (**1192-1** through **1192-4**).

It will be appreciated that there are many types of environments in which the client may access these and other embodiments of the VPE. FIG. **12** provides an exemplary screen shot of a web-based environment in which an embodiment of a video playback environment is embedded according to the invention. The webpage **1200** may comprise an embedded VPE **1210**. The VPE **1210** may be embedded in any useful way, including as a separate frame within the webpage **1200**, as a separate window overlaid on the webpage **1200**, or as embedded elements within the webpage **1200**.

Further, the webpage **1200** may comprise any other elements which may be useful for viewing, navigating, and performing other functions separate from or relating to the VPE. It will be appreciated that many types of webpages **1200** are possible with almost any type of webpage elements, all capable of actively or passively interacting with embodiments of the invention. As such, the webpage **1200** illustrated in FIG. **12** is for illustrative purposes only and should not be construed to limit the scope of the invention.

The illustrated embodiment of the webpage **1200** comprises various areas which may or may not be related to the embedded VPE **1210**. The webpage **1200** comprises a master frame area **1220**. The master frame area **1220** in this embodiment comprises various elements relating to the website owner. The master frame area **1220** comprises an informative field (here, the logo for "Property Listings, Inc."); a "Home" button for allowing a client to navigate to the Property Listings, Inc. homepage; a "MLS" button for allowing a client to navigate to a Multiple Listing Service (MLS) search page; a "Map" button for allowing a client to navigate to a map of the location of the currently displayed property listing; and a "Contact" button for allowing a client to navigate to a page with contact information for both Property Listings, Inc. and the currently displayed property listing.

The webpage **1200** also comprises a title area **1230**. The title area **1230** in this embodiment comprises various elements intended to set the context of the currently displayed property listing. Here, the title area **1230** displays the address and list price of the listed property. Additionally, the webpage **1200** comprises other types of information relating to the listed property, including various images of the property **1240** and one or more property information fields **1250**. The property information field **1250** may give the client more information about the listed property, such as information found in the property's MLS listing.

In some embodiments, any or all of these fields and controls may be informational or interactive for various purposes and to various types of clients. Further, in certain embodiments, the webpage **1200** may adapt to various types of information, types of clients, etc. For example, various elements on the webpage **1200** may be associated with other information from other sources (e.g. with the client's login information or preferences, a property's listing agency, etc.), or may be inferred from other sources (e.g. from a client's search history, from the time of day, from the geographic origin of the client's request, etc.).

It will be appreciated that, while the illustrative embodiments have been shown in the context of homes for sale, many other types of property commerce are possible within the various embodiments of the invention. One category of property commerce may include other types of real estate. This category may include, for example, any type of residential or commercial real estate; and level of development (e.g. unimproved, zoned, farmland, improved, etc.); real estate being offered for purchase, rental, timeshare, swap, or any other type of commerce; or even temporary accommodations, such as hotel rooms and amenities (e.g. guest rooms, suites, pools, gyms, etc.), and business or event accommodations (e.g. conference rooms, receptions halls, amphitheaters, etc). Another category of property may include any types of products in commerce. These products may include, for example, any types of goods or services (e.g. clothing, automobiles, cleaning services, massage, etc.); any product listing types (e.g. classifieds, want ads, etc.); any types of product commerce (e.g. barter, rent, purchase, borrow, lend, auction, etc.); and any type of product commerce-related information (e.g. showroom, three-dimensional imaging, exploded views, etc.). A third category of property may include any type of informational property. This informational property may include, for example, news footage (e.g. world news, sports highlights, etc.); business or service information (e.g. restaurant listings, company profiles, stockholder information, service options); product information (e.g. product manuals); or reference information (e.g. encyclopedic information, educational video, etc.).

It will be further appreciated that many types video playback environments are possible for handling the many types of video information and many types of cue point information, all within the scope of the invention. Even further, video playback environments may be configured to perform any or all the functionality of a video editing environment. As such, the above descriptions of embodiments relating to video playback environments in FIGS. **8-12** should not be construed as limiting the scope of the invention.

Montage Video Generation

Embodiments of the invention provide systems and methods for montage video generation and handling using cue point information. FIGS. **13**A-C provide exemplary system diagrams for generating and handling montage video infor-

mation for use with various embodiments of the invention. The components and system arrangements are shown for illustrative purposes only and should not be construed as limiting the invention.

FIG. **13**A provides an exemplary system diagram for server-level generation and handling of montage video information for use with various embodiments of the invention. The system **1300** comprises a video generator **1312**, configured to generate montage video data. The video generator **1312** may comprise one or more computer systems, applications, processes, or any other useful component for generating montage video information.

The video generator **1312** may also be in operative communication with a cue point handler **1314**, configured to handle cue point information relating to, among other things, the generation and handling of montage video information. The video generator **1312** and cue point handler **1314** may be part of a subsystem **1310**. The subsystem **1310** may be owned, operated, controlled, or otherwise associated with a host party.

The subsystem **1310** or the video generator **1312** may be in operative communication with a network **1320**. The network **1320** may be any public or private, secure or insecure, wired or wireless network (e.g. the Internet). In some embodiments, the network **1320** may comprise any number of computers, configured as centralized or decentralized peer-to-peer networks, ad hoc networks, mesh networks, or any other useful configuration. For example, the network **1320** may comprise two terminals connected to one another by a Universal Serial Bus (USB) cable, each performing server functions for the other computer.

Through the network **1320**, the video generator **1312** or subsystem **1310** may be able to access required or desired information from various locations. For example, video information may be accessed over the network **1320** from one or more video servers **1330**, and cue point information may be accessed over the network **1320** from one or more cue point servers **1340**. Further, clients my access the video generator **1312** or subsystem **1310** vie the network **1320** by using one or more client terminals **1350**.

FIG. **13**B provides an exemplary system diagram for integrated, server-level generation and handling of montage video information for use with various embodiments of the invention. The system **1360** comprises components which are substantially similar to those in the system **1300** of FIG. **13**A. However, the subsystem **1370** integrates some or all of the servers (e.g. the video servers **1330** and cue point servers **1340**) which provide information to the video generator **1312** or cue point handler **1314**.

FIG. **13**C provides an exemplary system diagram for client-level generation and handling of montage video information for use with various embodiments of the invention. The system **1380** comprises components which are substantially similar to those in the systems **1300** and **1360** of FIGS. **13**A and **13**B, respectively. However, the system **1380** is arranged so that the subsystem **1390** (possibly the video generator **1312** and/or cue point handler **1314**) comprises client-level applications (e.g. resident applications on a client terminal).

The client terminals **1390** may then be in operative communication with the network **1320**. Through the client terminal **1390** and the network **1320**, the video generator **1312** or subsystem **1390** may be able to access required or desired information from various locations (e.g. video information from one or more video servers **1330** and cue point information from one or more cue point servers **1340**).

FIG. **14** provides an exemplary flow diagram summarizing host-oriented methods for generating and handling montage video information in various embodiments of the invention. The method **1400** begins by receiving a montage request **1402**. The montage request may comprise any information useful for generating a montage video file. In some embodiments, the montage request may comprise query terms representing the type of information a client wishes to view in a montage file. Further, in certain of these embodiments, the query terms may be similar or identical to cue point names, such that portions of video files associated with cue points matching those names may be selected as part of a montage video file.

Further, the montage request may be received **1402** in any useful way. In some embodiments, the montage request may be received **1402** over the internet as a transmission of montage request data. For example, the montage request may be received **1402** as part of a file which is interpreted by one or more scripts, processes, or algorithms. In another example, the montage request may be received **1402** as a function call from another system or application.

In many cases, the montage request will be received **1402** in a form which requires further processing. The method **1400** may analyze the montage request **1404** for this or other reasons. In some examples, analyzing the montage request **1404** may comprise converting the montage request to a useful format; adding, removing, or modifying data in the montage request; or inferring information from the data provided. In other examples, the data in the montage request may be analyzed **1404** against extrinsic information for other useful results. For instance, a query term may be compared to a thesaurus to generate a list of substantially similar query terms for improved query results. It will be appreciated that many different types of analysis may be possible or desired for various reasons.

Using information from the montage request, the method **1400** may generate a relational dataset **1406**. The relational dataset **1406** may comprise any type of data structure useful for storing data elements in relation to one another, like a relational, multi-dimensional database. Further, the relational dataset may be generated from any useful data sources, including one or more other relational datasets.

For example, there may exist a video server, which stores and indexes video files by unique video identifiers, using a flat (or sequential) data structure; and a cue point server, which stores a network of cue point attributes in relation to a set of cue point identifiers, using a multi-dimensional relational data structure. Say a montage request represents a query for all video files associated with a query term. The method **1400** may search through the cue point server to find all cue points with names which match the query term. Using the relational data structure, the method **1400** may then be able to generate a dataset listing all those cue points in relation to useful information, like pointers to their associated video files and specific time positions within those video files where information relating to the cue point is located.

After generating the dataset **1406**, the method **1400** may use the relational dataset to build a montage video file **1408**. The montage video file may be generated **1408** in any useful form. In some embodiments, the montage video file may be generated **1408** as a list of pointers or other information which may be interpretable by a video playback application or system. In other embodiments, the montage video file may be generated **1408** as a video file in a playable format. For example, the generated montage video file may comprise a concatenation of video data from other video files. After (or while) the montage video file is generated **1408**, the method

1400 may transmit the montage video file and any associated cue point information to a video playback application or system 1410.

FIG. 15 provides an exemplary flow diagram summarizing client-oriented methods for generating and handling montage video information in various embodiments of the invention. The method 1500 begins when the client generates a montage request 1502. The client may generate a montage request 1502 in any useful way. In one embodiment, the client may enter query terms into a field on a client terminal using some input device. In another embodiment, an automated client (e.g. an application or computer system) may automatically generate a montage request 1502. For example, an application may generate a montage request 1502 by inferring query terms which may be desirable to an end user from a previous pattern of search conduct.

The client may then transmit the montage request 1504 in any useful way. In some embodiments, the montage request may be transmitted 1504 over the internet as part of a file which is interpreted by one or more scripts, processes, or algorithms. In other embodiments, the montage request may be transmitted 1504 as one or more function calls from other systems or applications.

Sometime after transmitting the montage request 1504, the client may receive a montage video file and associated cue point information 1506. The montage video file and cue point information may be received 1506 in any useful form. For example, the montage video file may be received 1506 as a video file in a playable format, and the cue point information my be received 1506 as functions which generate cue point GUI controls. In some embodiments, after (or while) the montage video file and cue point information is being received 1506, the client may play the montage video file 1508 on a video playback application or system. Additionally, in some embodiments, the client may navigate playback of the montage video file using the cue point information 1510 (e.g. by interacting with a cue point GUI control).

FIG. 16 provides an exemplary set of data structures for use with generating embodiments of montage video data according to the invention. It will be appreciated that many data structures are possible for storing and handling information relating to raw video, montage video, and cue points. As such, the illustrated data structures are purely exemplary and should not be construed as limiting the invention.

Say a cue point dataset 1600 is provided, which is substantially the same as the dataset illustrated in and described in reference to FIG. 7. As illustrated, the cue point dataset 1600 stores cue point names in relation to associated video identifiers. Though not shown, the cue point dataset 1600 also stores various types of cue point information in relation to each cue point entry. For example, each cue point entry may be stored in relation to a specific time position within a video file.

Further, say a client wishes to generate a montage video file of all home exteriors. In the illustrated embodiment, each video file with video data related to home exteriors is related to a cue point with the name "Exterior". This cue point was associated with the video information at some point, for example, by some client using a video editing environment with a cue point handler and a cue point editing mode. The cue point "Exterior" in each video file represents the time position identified as where the footage begins to refer to the home's exterior.

A command 1640 may be generated (e.g. transmitted by a client, received by a host or application, etc.), requesting that a dataset is built for all "Exterior" cue points. The result of this build command 1640 is a generated dataset 1650. The generated dataset 1650 may comprise any useful attributes for generating a montage video file of all footage relating to home exteriors. In some embodiments, the generated montage video file will be displayed along with a generated set of cue points representing the source of that section of montage video data. Therefore, it may be necessary to generate information as part of the generated dataset 1650 to facilitate the generation of the new cue point set.

In the illustrated embodiment, the generated dataset 1650 comprises a list of video identifiers 1652 which matched the build command 1640 (e.g. which comprise home exterior footage). The generated dataset 1650 further comprises a set of related attributes to facilitate the generation of the new set of cue points for the video montage file. These attributes include "CUE_LOCATION" 1654, an ordinal identifier representing which of the cue points associated with the video file is the "Exterior" cue point; "CUE_TITLE" 1656, a text field representing the text which will be displayed within a GUI control representing each new cue point; and "TIME_POSITION" 1658, a field representing the time position within the video file where the footage associated with the cue point begins.

The listed video files 1652 each relate to a cue point with a name which exactly matches the criteria passed with the build command 1640 (i.e. "Exterior"). It may be desirable in some cases, however, to include video files in the results list when an associated cue point name is similar (or meets some sort of algorithmic result). For example, the first cue point in the video file associated with identifier "VID_0004" 1660 is named "Outside". Based on some algorithm (e.g. a comparison to a thesaurus entry), it may be determined that "Outside" is similar enough to "Exterior" to include "VID_0004" in the generated list of results 1652. It will be appreciated that many different types of algorithms may be used for different purposes. For one example, the algorithm may check for cue points with similar spelling or phonetics. For another example, the algorithm may keep track of statistics (or databases) allowing it to infer (or look up) that when clients search for X, they tend to also want to find Y. For instance, the algorithm may determine that clients searching for homes for sale and looking at "Master Bedroom" cue points would typically be interested in "Master Suite" cue points, as well.

It will be appreciated that other algorithms, functions, processes, etc. may be used to affect the generated montage video file. In some embodiments, the order of the video footage used to generate the montage video file may be determined in some desirable way. For example, the order of footage may be determined by the order in which the footage is located by a video generator, by how closely the video footage matches the montage request, by a ranking of the video files (e.g. by associating client rankings with the video files, by allowing parties to pay for higher rankings, etc.), by geographic distance from the client, or by any other algorithm or process.

FIGS. 17A and 17B provide exemplary screen shots of embodiments of montage video data being displayed in the context of video playback environments as viewed by client terminals according to the invention. FIG. 17A provides a video playback environment 1700 which is substantially identical in form and function to the webpage 1200 of FIG. 12, except for the cue point control area 1710.

The cue point control area 1710 comprises a set of cue point GUI controls 1712. Each GUI control 1712 is configured to allow the client to navigate to the portion of the video footage corresponding to the property listing matching the cue point name. As illustrated, the video file being played is a montage video file generated from the set of video files containing an "Exterior" cue point. Therefore, if the client views

the video file in its entirety, she will see all video footage relating to home exteriors. By interacting with the GUI controls **1712**, she may jump to exterior footage relating to a specific property listing.

The exemplary video playback environment **1750** of FIG. **17**B is substantially identical to the video playback environment **1700** of FIG. **17**A, except that the cue point GUI controls **1760** comprise image identifiers **1762**, rather than text identifiers. It will be appreciated that these image identifiers **1762** may be generated and displayed in any useful way. For example, the images may be selected and uploaded by a client in a video editing environment, stored in relation to the cue point in a cue point server, and retrieved for display from the cue point server by the video playback environment **1750**.

FIG. **18** provides an exemplary set of data structures for use with generating embodiments of montage video data from hierarchical montage requests according to the invention. In the illustrated embodiment, a cue point dataset **1800** is provided, comprising a list of video identifiers **1802**, and a set of associated cue points **1804** for each video identifier **1802**.

The set of cue points **1804** represent hierarchical cue points, such that cue points in the CP**1** column **1804-1** represent a metatag describing the major category into which the video represented by the video identifier **1802** falls. Cue points in the CP**2** column **1804-2**, then, represent a metatag describing the sub-category into which the video represented by the video identifier **1802** falls. For example, looking at the video identified by the first video identifier **1810-1**, the CP**1** cue point **1804-1** is named "Hotel", and the CP**2** cue point **1804-2** is named "Downtown". Therefore, the video represented by "VID_0001" **1810-1** is presumably a video about a downtown hotel.

The remaining cue points (e.g. **1804-3** and **1804-4**) relating to each video identifier **1802** may represent either time positions or meta-tags of further subordinate categories. For example, looking again at the video identified by "VID_0001" **1810-1**, the CP**3** cue point **1804-3** is named "Swimming Pool", and the CP**4** cue point **1804-4** is named "Roof Top". In this example, the CP**3** cue point **1804-3** ("Swimming Pool") represents a time position within the video file "VID_0001" where the footage begins to relate to the hotel's swimming pool. The CP**4** cue point **1804-4** ("Roof Top") may either represent a metatag further describing the subcategory of swimming pools (e.g. for narrowing search queries), or the CP**4** cue point **1804-4** may represent the time position of video footage relating to the hotel's roof top pool, as opposed to the footage beginning at the CP**3** cue point **1804-3** which may relate to the hotel's other pool.

In a second example, looking at the video identified by "VID_0002" **1810-2**, the CP**1** cue point **1804-1** is named "Sports", and the CP**2** cue point **1804-2** is named "Basketball". In this example, both cue points (CP**1** **1804-1** and CP**2** **1804-2**) represent meta-tags describing the category and subcategory into which the video file "VID_0002" falls. In this example, the video file "VID_0002" may be a basketball highlight reel pulled from or uploaded by a sports network, with no additional cue points added.

In a third example, looking at the video identified by "VID_0005" **1810-5**, the CP**1** cue point **1804-1** is named "News", the CP**2** cue point **1804-2** is named "World", the CP**3** cue point **1804-3** is named "Asia", the CP**4** cue point **1804-4** is named "China", and the CP**5** cue point **1804-5** is named "04/02/2006". In this example, all five cue points (CP**1** **1804-1**, CP**2** **1804-2**, CP**3** **1804-3**, CP**4** **1804-4**, and CP**5** **1804-5**) represent meta-tags describing progressively subordinate categories into which the video file "VID_0005" falls. In this example, the video file "VID_0005" may be a news reel stored on a video server owned and operated by a news website. The video file "VID_0005" may comprise footage relating to headline news in China on Apr. 2, 2006.

As part of a query, a query command **1840** may be executed. This query may be the result of any effective type of query from any source. For example, a client may type a set of search terms into a text field on a website. The website may then execute a script which uses text processing algorithms, like Boolean logic, to analyze the query request and generate a query command **1840**. In another example, a computer system may be configured to periodically scan the Internet for video footage relating to a specific subject and store the results. The computer system may generate a query command **1840** to effectuate its Internet search.

In the illustrated embodiment, the query command **1840** represents a query to generate a montage video file of all video footage relating to all downtown hotels. One step in the query command **1840** may be a pivot command **1842**, which effectively re-sorts the cue point dataset **1800**, first by CP**1** **1804-1** and then by CP**2** **1804-2**. The generated dataset **1850** is the result of that pivot command **1842**. Using the generated dataset **1850**, the query command **1840** may return the subset of video identifiers **1852** for which CP**1** **1854-1** is named "Hotel" and CP**2** **1854-2** is named "Downtown". As illustrated, this results subset **1860** would comprise "VID_0001" and VID_0004". Of course, additional logic and/or data processing may reveal that, in this context, "Airport" is substantially similar to "Downtown" (e.g. the airport is in the downtown area). In that case, the query may be configured to also return "VID_0003" as part of the results subset **1860**.

FIGS. **19**A-**19**C provide exemplary screen shots of embodiments of montage video data resulting from hierarchical montage requests being displayed in the context of video playback environments according to embodiments of the invention. Each of FIGS. **19**A-**19**C are intended for illustrative purposes only, and should not be construed to limit the invention.

FIG. **19**A provides a screenshot **1900** of a search result being displayed by a video playback environment on a client terminal. The client in this exemplary case submitted a query for video footage relating to roof-top swimming pools in downtown hotels. The client's search returned a montage video file comprising video relating to four results, represented by the four result cue point controls **1920-1**, **1920-2**, **1920-3**, and **1920-4**. As illustrated, each result cue point control **1920** represents a time position in the video montage file relating to footage of a particular hotel's roof-top swimming pool.

The screenshot **1900** comprises several GUI elements, including a video frame **1902**, a search results area **1904**, and a control panel area **1906**. The video frame **1902** is configured to play the montage video file, related information (e.g. comment information, elapsed time, etc.) and to allow for client interactivity with the video data (e.g. by providing navigational GUI controls, like a "pause" button and a playback position slider). Further, the video frame **1902** is configured to progressively download the video data, so that the client may play video data as it loads. In this case, a download progress indicator **1908** indicates that the video file is less than half way through downloading (the shaded area takes up less than half the total area allotted for the download progress indicator **1908**); and a playback progress indicator **1910** indicates that playback is around nine percent of the way through the total video data.

In some embodiments, video may load or be played back in a non-linear fashions. For example, different portions of the video may load from different servers, at different rates, etc.

In another example, a client may force a portion of the video to download out of order (e.g. by selecting a cue point location relating to video data which had not yet loaded). In these non-linear download situations, or in any other useful situation, the download progress indicator **1908** may be configured to display the non-linear progress. For example, different portions of the download progress indicator **1908** may fill in to represent the different portions which have downloaded.

The search results area **1904** is configured to display search results in a useful way. As illustrated, the search results area **1904** may display both the result cue point controls **1920** and other hierarchical data relating to the search results. For example, here, the client searched on a website devoted to hotels, so the broadest category of the client's query is implicitly video footage about hotels (or alternately, the query may search video footage on a video server devoted exclusively to hotel footage). The sub-categories or the query are downtown, then swimming pools, then roof-top, yielding roof-top swimming pools in downtown hotels.

Each criterion may be represented by a criterion control **1922**. Further, those criterion controls **1922** may allow for certain types of interactivity. In some embodiments, a client may be able to click and/or drag the criterion controls to potentially adjust the query results by reordering query criteria. Additionally, the criterion controls **1922** may comprise or be associated with other controls, like delete controls **1924**. A delete control **1924** may be configured to remove a query criterion and re-run the query. Say, for example, the client clicks the second-level delete control **1924-2**, effectively removing the "Swimming Pools" criterion from the query. The GUI may remove the "Swimming Pools" criterion control **1922-2**, and the query may re-run with the remaining criteria, "Hotels," "Downtown," and "Roof-Top." The query may then return footage of all roof-tops of downtown hotels, regardless of whether the roof-top has a swimming pool.

The search results area **1904** may also comprise various result cue point controls **1920**, each representing a time position in the video montage file. By interacting with a cue point control **1920**, a client may jump to the associated location within the montage video file. For example, as illustrated, the client has selected the "Hotel Opulence" cue point control **1920-2** (represented by the inverted coloration), representing footage of the roof-top swimming pool at the Hotel Opulence. The footage begins 34 seconds into the montage video file. Therefore, the montage video file is playing in the video frame **1902** from the time position of 34 seconds.

In some embodiments, the cue points may load progressively along with the montage video data. In some cases, cue points may become active (e.g. available for interaction) only after their respective video data loads. For example, in the illustrated embodiment, the third and fourth cue points ("L'Magnifique" and Conference Center", respectively) represent time positions at 3:30 and 5:00 in the montage video file, but only the first three minutes of video data have loaded. Therefore, the third and fourth cue points may remain active until more video data loads. This inactive status may be represented in some useful way by the GUI, for example by changing the weight of the lines and text associated with the third and fourth cue point controls (**1920-3** and **1920-4**, respectively).

Alternatively, cue points may be activated before their respective video data loads. For example, cue points may load when the video data begins to download. When a client selects a cue point before its respective video data has loaded, the video data may begin to progressively download from that cue point time position. When the video data for that cue point has finished loading, other video data may continue to load in any desirable order.

The control panel area **1906** may comprise any number of useful controls. In the illustrated embodiment, the control panel area **1906** comprises eight GUI controls. The first four relate to the current listing (e.g. the hotel currently being displayed in the video frame **1902**, the Hotel Opulence, in the illustrative case). These first four controls include a "Go To Hotel Listing" button for allowing a client to load the full listing of (and possibly the full video footage relating to) the current hotel listing; a "Show Ratings" button for allowing a client to view ratings associated with the current hotel listing; a "Map Hotel Listing" button for allowing a client to view a map of the geographic location of the current hotel listing; and a "Contact Property" button for allowing a client to view contact information or to contact (e.g. provide the client with an email form, place a voice-over-internet-protocol (VoIP) phone call, etc.) the current hotel listing. The remaining four controls in the control panel area **1906** relate to the search results. These four controls include a "Resort Results" button for allowing a client to change the sorting criteria (e.g. distance from a geographic location, alphabetical, average room price, closest match to query criteria, etc.) and reorder the search results accordingly; a "Show Results Details" button for allowing a client to view detailed information relating to the search results (e.g. a side-by-side comparison of the results, a new frame with important additional information on each listing, etc.); a "Map Search Results" button for allowing a client to view a map of the geographic locations of all the hotels in the results list; and a "Modify Search Criteria" button for allowing a client to adjust the query criteria in any useful way.

FIG. **19**B provides a screenshot **1930** of another illustrative embodiment of the invention. The screenshot **1930** comprises several GUI elements, including a video frame **1932**, a search results area **1934**, a control panel area **1936**, a global navigation area **1938**, a title area **1944**, and various informational areas **1940**. The video frame **1932** is configured to play the montage video file and related information, and to allow for client interactivity with the video data.

The search results area **1934** is configured to display result cue point controls **1950**. For example, here, the screenshot **1930** represents a scenario in which a client is searching for news feeds on a fictional website which provides access to news feeds relating to many diverse subjects from sources all over the Internet, called "NewsFeed". Specifically, the client has searched for footage relating to the National Collegiate Athletic Association's (NCAA) Final Four competition, by providing the Boolean search criteria, "NCAA+'Final Four'" (i.e. video footage relating to cue points with both names). The query resulted in three results, represented in the search results area **1934** as three result cue point controls **1950**. In some embodiments, as in this illustrative case, the context from which the query was run may provide additional query terms. For example, the client in this case is on a news feeds site, on a section of the site devoted to sports (see the active global navigation control "Sports" **1942**), and in a section of the sports site devoted to "Today's Sports Highlights" (see the title area **1944**). As such, the query may actually comprise a Boolean search for "'News Feed'+Sports+Highlights+[Today's Date]+NCAA+'Final Four'" (where [Today's Date] represents the date of the search). By interacting with the result cue point controls **1950**, a client may jump to the associated location within the montage video file. For example, as illustrated, the client has selected the "Sports-News.com" cue point control **1950-2** (represented by the

inverted coloration), representing news feed footage relating to the Final Four from the fictional website, SportsNews.com. The footage begins 3:16 into the montage video file. Therefore, the montage video file is playing in the video frame **1932** from the time position of 3:16.

The control panel area **1936** may comprise any number of useful controls. In the illustrated embodiment, the control panel area **1936** comprises four GUI controls, including a "Follow the Feeder" button for allowing a client to load the full video footage relating to the Final Four from the currently playing news feed source (e.g. clicking the button may take the client to SportsNews.com, and/or show the client the full NCAA footage from that site); a "Modify Search Criteria" button for allowing a client to adjust the query criteria in any useful way; a "Save Search Criteria" button for allowing a client to save the current search criteria (e.g. to further allow the client to perform the same search again at another time); and a "Download Feed" button for allowing a client to download and/or save the current montage video file to the client's terminal.

The global navigation area **1938** may comprise any number of useful controls for navigation around the host site. In the illustrated embodiment, the host site provides navigational controls to categories of information, including "World," "Local," "Financial," "Sports," "Gossip," "Leisure," and "Tech," news. Additionally, the host site provides navigational controls for access to the host's home page and various archives.

The informational areas **1940** may comprise any number of informational fields, which may or may not be interactive. In the illustrated embodiment, the informational areas **1940** comprise three informational fields, including a "Currently Watching" field **1940-1** configured to display the current query criteria and results which generated the currently displayed montage video file and cue points; a "Today's Most Popular Feeds" field **1940-2** configured to display the most watched (or possibly the highest rated) news feeds from across the host site (or possibly from other areas, like from across a section of the site or from the entire Internet); and a "Related Headlines" field **1940-3** configured to display headlines from various sources which are related to the results of the query (e.g. by some algorithm, like a key word search). It will be appreciated that many types of informational fields are possible for various purposes.

FIG. **19**C provides a screenshot **1960** of yet another illustrative embodiment of the invention. The screenshot **1960** comprises several GUI elements, including a video frame **1962**, a search results area **1964**, a control panel area **1966**, a global navigation area **1968**, a title area **1974**, and various informational areas **1970**.

The search results area **1964** is configured to display result cue point controls (e.g. **1980**). For example, here, the screenshot **1960** represents a scenario in which a client is searching for consumer products on a fictional website which consolidates information from various shopping and auction sites across the Internet, called "Ownlt.net". Specifically, the client has searched for auctions relating to jewelry boxes on all auction networks supported by the host site, by providing the Boolean search criteria, "'Jewelry Boxes'+'All Networks'" (and possibly implied cue point criteria, like "Auction"). The query resulted in six results, represented in the search results area **1964** as six result cue point controls (e.g. **1980**). By interacting with the result cue point controls (e.g. **1980**), a client may jump to the associated location within the montage video file. For example, as illustrated, the client has selected the triangle cue point control **1980** (represented by the heavier line weight), representing footage of a jewelry box auction from the fictional website, Shop4Stuff.net. Here, each cue point control (e.g. **1980**) is identified by an illustration of the auctioned product, rather than a textual identifier. The footage begins 3:16 into the montage video file. Therefore, the montage video file is playing in the video frame **1932** from the time position of 3:16.

The video frame **1962** is configured to play the montage video file and related information, and to allow for client interactivity with the video data. It will be appreciated that in some cases, it is desirable for a client to receive substantially real-time footage. For example, in this embodiment, auction footage may be more useful when it is as current as possible. Therefore, the environment may be configured to continually reload all or part of the montage video file to remain substantially current. Additionally, the video frame **1962** may be configured to display other video elements to augment the video data. For example, here, the video frame **1962** is configured to display a star **1972** which warns the client of the remaining time in the auction represented by the auction footage in the corresponding portion of the montage video.

The control panel area **1966** may comprise any number of useful controls. In the illustrated embodiment, the control panel area **1966** comprises four GUI controls, including a "Go To Product Listing" button for allowing a client to navigate to the auction listing currently being displayed in the video frame **1962**; a "More From Vendor" button for allowing a client to view more product listings being offered by the same vendor as the auction listing currently being displayed in the video frame **1962**; a "Modify Search Criteria" button for allowing a client to adjust the query criteria in any useful way; and a "Set Auction Alerts" button for allowing a client to set various useful alerts relating to this or other auctions (e.g. having an application send a text message to the client's phone or an email to the client's email address whenever certain auction conditions occur).

The global navigation area **1968** may comprise any number of useful controls for navigation around the host site. In the illustrated embodiment, the host site provides navigational controls to categories of information, including "Auction," and "Buy Now."Additionally, the host site provides navigational controls for access to the host's home page, partners of the host site, contact information, and information on joining the Ownlt.net team.

The informational areas **1970** may comprise any number of informational fields, which may or may not be interactive. In the illustrated embodiment, the informational areas **1970** comprise three informational fields, including a "Currently Watching" field **1970-1** configured to display the current query criteria and results which generated the currently displayed montage video file and cue points; a "Lowest Prices" field **1970-2** configured to display the lowest prices found on various Internet stores for the product currently being displayed in the video frame **1962**; and a "Related Product Searches" field **1970-3** configured to display common related queries. It will be appreciated that many types of informational fields are possible for various purposes.

It will be appreciated that many controls, fields, and other elements are possible for various purposes. Further, it will be appreciated that the environment, and its areas and elements, may change in many different ways, depending on the type of property listings, the needs or desires of the host or client, technological capabilities or constraints, or for any other reasons. As such, the embodiments of FIGS. **19**A-**19**C and their related descriptions are intended for illustrative purposes only and should not be construed to limit the invention.

Even further, it will be appreciated that many types of montage requests are possible relating to the many types of

video information and cue point information according to embodiments of the invention. Additionally, it will be appreciated that many types of video montage datasets and files may result from the many types of montage requests possible within the scope of the invention. As such, the embodiments described herein in reference to FIGS. **13-19** should not be construed as limiting the scope of the invention.

Group Search Environments

In some embodiments of the invention, multiple clients may be jointly searching for information from different terminals. For example, a husband and wife may jointly search for a new house at different times and on different computers. The two searchers may be looking for identical, similar, or divergent characteristics. It may be desirable in these environments to generate search results based on group search habits.

FIG. **20** provides an exemplary flow diagram summarizing methods for handling shared search environments according to embodiments of the invention. The method **2000** is illustrated with respect to three searchers participating in a group search. It will be appreciated that any number of searchers is possible within the scope of the invention.

The method **2000** may begin by processing client login **2002**. Client login may be processed **2002** in any useful way to receive any useful login information. Because the group search may use information from multiple clients, it may be desirable or necessary for the method **2000** to know which client (or at least which group) is currently searching. As such, the client login may be processed **2002** to receive information, such as an identifier for the client (e.g. a user name and password), and an identifier for the client's group (or the group association may be stored in relation to the client's identifier).

It will be appreciated that in different contexts, various searchers may search simultaneously or at different times, and from the same or different locations. In some embodiments, one searcher may perform a search one day, and a second searcher may perform a different search the next day. In some other embodiments, the first and second searchers may both search at the same time, but from different terminals. For example, a wife may search from her laptop computer while her husband searches from his laptop computer. In still other embodiments, multiple searchers may search in parallel on the same terminal. For example, a husband and wife may jointly view search results, but rate them differently as they proceed. It will be further appreciated that one individual or entity may act as multiple searchers. For example, a person may search for one criterion one day and for a second criterion the next day.

After processing the client login **2002**, the method **2000** may receive the client's search request **2004**. For example, Client **1** may search for footage of kitchens in homes for sale in Boulder, Colo. Client **2** may also be searching for homes for sale in Boulder, Colo., but may be interested in footage of master bathrooms. Further, the client's search request may be received **2004** in any useful way. For example, the method **2000** may receive a function with a set of Boolean variables and operators representing the search request.

After receiving the search request **2004**, the method **2000** may transmit the client's search results **2006**. The search results may be transmitted **2006** using any useful channels and in any useful form. In some embodiments, the set of search results may be transmitted **2006** over the Internet in the form of a montage video file with cue points for each search result in the set. For example, say again that Client **1** is searching for footage of kitchens in homes for sale in Boulder, Colo. The search results may be transmitted **2006** as a montage video file of all kitchens, with cue point locations at the start of each property's footage in the montage video file.

After the search results are transmitted **2006**, the method may receive the client's rankings **2008**. The client may rank footage in any useful way, and the client's rankings may be received **2008** in any useful way. In some embodiments, the method **2000** may provide GUI controls or other interactive elements for receiving client rankings. In other embodiments, the method **2000** may infer rankings from client activity or other information. For example, after viewing a portion of a montage video file, a particular client may click through to the full source video (e.g. a client looking at a montage video of all house exteriors may click through to the full property listing for one of the displayed exteriors). From this type of activity, the method **2000** may infer that the client likes that particular house exterior.

Further, in some embodiments, the method **2000** will be configured to allow the client to rank each search result. For example, if the set of search results is transmitted **2006** as a montage video file with cue points representing each search result in the set, the method **2000** may be configured to allow the client to rank the footage at each cue point. Additionally, rankings may comprise any indicator of preference. For example, a ranking may comprise only a positive or negative indication (e.g. a "thumb's up"). It will be appreciated that many ranking methods are possible within the scope of the invention.

In some embodiments, either after or while the client rankings are received **2008**, the method **2000** may generate a results dataset **2010** for each client. The results dataset may be generated **2010** in any useful way to record the rankings of the client. For example, the results dataset may be a list of results, sorted by ranking. In another example, the results dataset may be a multi-dimensional relational dataset, comprising the rankings as attributes of the cue points in the montage video file.

Either after or while client rankings are received **2008** (or after or while the results dataset is generated **2010**), the method **2000** may compare rankings **2020** from different clients in the group. This rankings comparison **2020** may be performed using any useful process or algorithm. For example, rankings may be compared **2020** using data processing algorithms or Boolean operations.

Say John, Sally, and Steve are looking for a house where they can live as roommates. John wants a large kitchen, so he searches for footage of kitchens in homes for sale in Boulder, Colo. His search yields five results: Home1, Home2, Home3, Home4, and Home5. After watching a montage video file of kitchen footage, John gives a positive ranking to Home1, Home4, and Home2; and a negative ranking to Home3 and Home5. Sally is also searching for homes for sale in Boulder, Colo., but is interested in a luxurious master bathroom. Sally's search generates only four results: Home1, Home3, Home4, and Home5 (i.e. all the homes listings for sale in Boulder, Colo. contain footage of both the kitchen and the master bathroom, except the listing for Home2). After watching a montage video file of master bathroom footage, Sally gives a positive ranking to Home1, Home4, and Home3; and a negative ranking to Home5. Comparing John's and Sally's rankings yields two homes (Home1 and Home4) which received positive rankings from both John and Sally. Now, say Steve only cares about the "curb appeal" of the house, and wants to look at exterior footage. His search for footage of exteriors yields the same five results as John's search (i.e. all the homes listings for sale in Boulder, Colo. contain footage of both the kitchen and the exterior). After watching a montage video file of exterior footage, Steve gives a positive

ranking only to Home4. Comparing the rankings with Steve's rankings included yields only one house (Home4) which received positive rankings from all three roommates.

After comparing the rankings **2020**, a synergy list may be generated **2022**, representing the results of the rankings comparison **2020**. In some embodiments, the synergy list may be transmitted **2030** to some other location in some useful format. For example, the synergy list may be transmitted **2030** as a dataset to be stored in a database. In some other embodiments, the synergy list may be used to generate a montage video file **2040** comprising footage of the results in the synergy list. For example, montage video file may comprise the full footage of all property listings which received positive rankings from all searchers, with cue point locations representing each individual listing within the montage video. Further, in some embodiments, the montage video file may be transmitted **2042** to a useful location, like a video server or a video playback environment.

FIG. **21** provides an exemplary screen shot of embodiments of shared search environments according to embodiments of the invention. It will be appreciated that many types of shared search environments are possible, and that those many types may be viewed in any effective way. As such, the screenshot **2100** of FIG. **21** is intended for illustrative purposes and should not be construed to limit the invention.

The client in this exemplary search environment submitted a query for video footage relating to exteriors of homes for sale in a certain area. The client's search returned a montage video file comprising video relating to four results, represented by the four result cue point controls **2120-1**, **2120-2**, **2120-3**, and **2120-4**. As illustrated, each result cue point control **2120** represents a time position in the video montage file relating to footage of a particular home exterior.

The screenshot **2100** comprises several GUI elements, including a video frame **2102**, a search results area **2104**, and a rating area **2106**. The video frame **2102** is configured to play video data (e.g. the montage video file) and related information (e.g. comment information, elapsed time, etc.), and to allow for client interactivity with the video data (e.g. by providing navigational GUI controls, like a "pause" button and a playback position slider). Further, the video frame **2102** is configured to progressively download the video data, so that the client may play video data as it loads.

The search results area **2104** is configured to display search results in a useful way. As illustrated, the search results area **2104** may display both the result cue point controls **2120** and ratings indicators **2140** relating to the search results. The result cue point controls **2120** may each represent a time position in a video montage file. By interacting with a cue point control **2120**, a client may jump to the associated location within the montage video file. For example, as illustrated, the client has selected the "1 Lucky Street" cue point control **2120-2** (represented by the inverted coloration), representing footage of the exterior of the house at 1 Lucky Street. The footage begins 34 seconds into the montage video file. Therefore, the montage video file is playing in the video frame **2102** from the time position of 34 seconds.

The search results area **2104** may also provide ratings indicators **2140** relating to the search results. For example, here, the client is the third searcher in a search group. For each result cue point control **2120**, the client can see the ratings from each other searcher, if any, given to the listing represented by each cue point. These ratings are represented as the ratings indicators **2140** within each result cue point control **2120**. For example, the first property listing at 5 Happy Lane (represented by the cue point control **2120-1**) has been positively rated (indicated by a "thumb's up" icon) by the other two raters (see **2140-1** and **2140-2**).

It will be appreciated that various types of ratings information from other searchers may be available in different ways. For example, the ratings indicators **2140** may be positioned, colored, or otherwise differentiated to represent which rater provided each rating. In another example, ratings of some or all other raters may be hidden from one or all other raters. In a third example, ratings may be available from all raters, not just those within the client's search group. In a fourth example, derivative information, like statistics, suggestions, etc. may be provided based on various data (e.g. the client's search or rating patterns, the behaviors of the search group, the behaviors of larger populations of searchers, etc.).

In some embodiments, the cue points may load progressively along with the montage video data. In some cases, cue points may become active (e.g. available for interaction) only after their respective video data loads. For example, in the illustrated embodiment, the third and fourth cue points ("1554 Violet Ave" and "1983 Violet Ave", respectively) represent time positions at 3:30 and 5:00 in the montage video file, but only the first three minutes of video data have loaded. Therefore, the third and fourth cue points may remain active until more video data loads. This inactive status may be represented in some useful way by the GUI, for example by changing the weight of the lines and text associated with the third and fourth cue point controls (see **2120-3** and **2120-4**, respectively).

In other embodiments, cue points may be activated before their respective video data loads. For example, cue points may load when the video data begins to download. When a client selects a cue point before its respective video data has loaded, the video data may begin to progressively download from that cue point time position. When the video data for that cue point has finished loading, other video data may continue to load in any desirable order.

The ratings area **2106** may comprise any number of useful rating elements. In the illustrated embodiment, the ratings area **2106** comprises four GUI controls. The first two (**2130-1** and **2130-2**) provide the client with a way to interactively rate each listing. As illustrated, the client may interact with either the "thumbs up" button **2130-1** or the "thumbs down" button **2130-2** to positively or negatively rate the current listing (e.g. the property currently being displayed in the video frame **2102**). The remaining two controls (**2150-1** and **2150-2**) allow the client to add comments associated with the listings or the ratings by interacting with the "Add Comments" button **2150-1**; or to view comments associated with the listings or the ratings from any set of raters by interacting with the "View Comments" button **2150-2**.

It will be appreciated that there are many different types of scenarios in which group searching would be desirable or necessary. Further, the many types of video information, cue point information, montage video files, video environments, property listings, clients, hosts and other entities may yield many varying types of group search environments with varying characteristics. As such the invention should be construed broadly to encompass these many embodiments, and should not be limited by the described embodiments herein.

Thus, having described several embodiments, it will be recognized and appreciated that various modifications, alternative constructions, and equivalents may be used without departing from the spirit of the invention. Additionally, system components may be arranged differently and process steps may be performed in different orders within the scope of the invention. Accordingly, the above description should not

be taken as limiting the scope of the invention, which is defined in the following claims.

What is claimed is:

1. A system for generating video using cue point information, the system comprising:

a video server configured to serve a set of base video files indexable by a set of video identifiers,

a cue point server configured to serve a relational cue point dataset of cue points, wherein each cue point is associated with a set of cue point information and with at least a portion of a base video file according to a respective video identifier and a cue point playback location, the cue point information defining a cue point hierarchy, such that each of a portion of the cue points is hierarchically subordinate to at least one other cue point of the cue point dataset that is associated with the same base video file, and

a video generator configured to:

identify a subset of cue points from the relational cue point dataset in response to a request;

for each identified cue point of the subset of cue points:

determine at least one dominant cue point to which the identified cue point is hierarchically subordinate according to its cue point information, wherein both the identified cue point and the dominant cue point are associated with the same base video file;

determine a relevance of the identified cue point as a function of how closely the request is satisfied by the cue point information of both the identified cue point and the dominant cue point; and

generate a video montage result according to the identified subset of cue points according to each cue point's respective relevance and configured to provide playback of the portions of the base video files associated with the identified subset of cue points by playing back video data from the base video files served by the video server in accordance with each cue point's respective video identifier and cue point playback location.

2. The system of claim **1**, further comprising a video playback environment configured to transmit data readable by a client terminal to display the video montage file.

3. The system of claim **1**, further comprising a montage cue point generator configured to generate a set of montage cue points based at least in part on the relational cue point dataset.

4. The system of claim **3**, further comprising a video playback environment configured to transmit data readable by a client terminal to display the video montage file, wherein the video playback environment is configured to transmit data readable by a client terminal to display the set of montage cue points.

5. The system of claim **1**, wherein the cue point information substantially defines at least one of a metatag, a cue point name, or a cue point time location.

6. The system of claim **1**, wherein the cue point playback location corresponds to a time location within the associated base video file at which the associated portion begins.

7. The system of claim **1**, wherein the video generator is configured to concatenate playback of the portions of the base video files associated with the subset of cue points.

8. The system of claim **1**, wherein the video server is in operative communication with at least one of a network or the video generator.

9. The system of claim **1**, wherein the cue point server is in operative communication with at least one of the network, the video server, or the video generator.

10. The system of claim **1**, wherein:

at least some of the cue point information for each cue point indicates content of the portion of the base video file associated with that cue point; and

identifying the subset of cue points from the relational cue point dataset in response to the request comprises determining which cue points satisfy the request according to their respective content as indicated by their associated cue point information.

11. The system of claim **10**, wherein at least some of the cue point information for each cue point indicates content of the portion of the base video file associated with that cue point using one or more cue point names, and the request comprises at least one of the cue point names.

12. The system of claim **1**, wherein at least one base video file comprises footage relating to at least one of real property, personal property, or information property.

13. The system of claim **1**, wherein at least a portion of the set of cue point information defines a set of metatags, and at least a portion of the set of metatags represent a subordinate category of a different portion of the set of metatags.

14. The system of claim **1**, wherein the video montage file is configured to provide playback of the portions of the base video files associated with the identified subset of cue points without extracting the portions of the base video files from their respective base video files.

15. The system of claim **1**, wherein the video montage file is further configured to provide playback of a selected portion of the base video file associated with a selected cue point.

16. A method for generating video using cue point information, the method comprising:

providing a computer system having at least one computer-readable medium comprising a video playback environment, and in operative communication with a network;

receiving over the network, using the computer system, a video montage request;

analyzing the video montage request;

generating a relational dataset based at least in part on the video montage request and comprising a set of cue points, each cue point associated with a set of cue point information and a set of video information locatable according to an associated video identifier of a base video file and a cue point playback location within the base video file, the cue point information defining a cue point hierarchy, such that each of a portion of the cue points is hierarchically subordinate to at least one other of the cue points that is associated with the same base video file, the relational dataset generated by:

identifying a subset of cue points from the relational dataset having cue point information that substantially satisfies the video montage request;

determining at least one dominant cue point to which each identified cue point is hierarchically subordinate according to its cue point information, wherein both the identified cue point and the dominant cue point are associated with the same base video file; and

determining a relevance of the identified cue point according to how closely the request is satisfied by the cue point information of both the identified cue point and the dominant cue point; and

generating a video montage result based at least in part on the relational dataset according to each cue point's respective relevance and configured to provide playback of at least some of the set of video information by playing back corresponding portions of the base video files in accordance with each cue point's respective video identifier and cue point playback location.

17. The method of claim **16**, further comprising transmitting data readable by a client terminal to display the video montage file.

18. The method of claim **16**, wherein the cue point information substantially defines at least one of a metatag, a cue point name, or a cue point time location.

19. The method of claim **16**, wherein the at least one computer-readable medium further comprises a montage cue point generator configured to generate a set of montage cue points based at least in part on the relational dataset.

20. The method of claim **19**, further comprising generating a set of montage cue points.

21. The method of claim **20**, wherein at least a portion of the set of montage cue points represents a set of metatags corresponding to a hierarchical categorization of at least a portion of the set of video information.

22. The method of claim **20**, further comprising transmitting data readable by a client terminal to display the set of montage cue points.

23. The method of claim **16**, further comprising:

receiving, over the network, a selection of a selected cue point of the set of cue points; and

transmitting, in response to the selection, at least a portion of the set of video information from the cue point playback location within the base video file locatable according to the video identifier associated with the selected cue point.

24. A system for generating video using cue point information, the system comprising a video generator operatively connected to a network and configured to perform the steps of:

receiving, over the network, a video montage request;

analyzing the video montage request to identify a set of matching cue points, each matching cue point associated with a set of cue point information, a video identifier of a base video file, and a cue point playback location within the base video file, each matching cue point being hierarchically subordinate to at least one dominant cue point according to its cue point information, wherein both the identified cue point and the dominant cue point are associated with the same base video file, and each matching cue point being associated with a relevance determined according to how closely the request is satisfied by the cue point information of both the matching cue point and the dominant cue point; and

generating a video montage result comprising the set of matching cue points according to each cue point's respective relevance and configured to provide playback of video information by playing back corresponding portions of the base video files in accordance with each cue point's respective video identifier and cue point playback location.

25. The system of claim **24**, wherein the video montage file is configured to provide playback of a select portion of a base video file in response to a selection of one of the set of matching cue point points by playing back video information from the cue point playback location of the base video file locatable according to the video identifier associated with the selected one of the set of matching cue point points.

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