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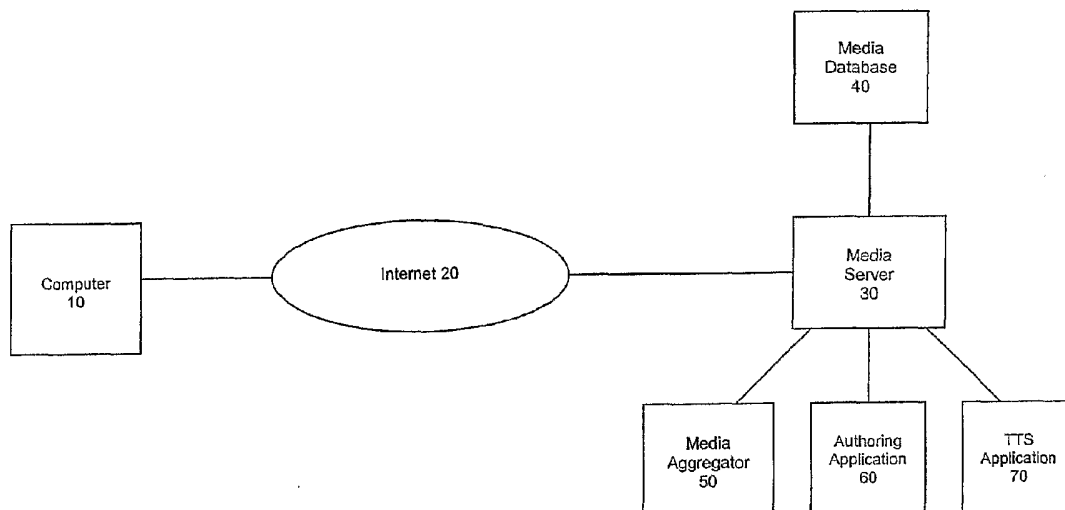
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(54) Title: METHOD AND APPARATUS FOR EDITING MEDIA



(57) Abstract: A system for editing a multi-media narrative is provided, including an authoring application for inserting a media element within the multi-media narrative; said authoring application executable within a browser; said media element stored within a cache of said browser, inaccessible to a user of said browser; a database on a server for storage of said media element and said multi-media narrative; and a text to speech converter for converting text input by the user into a media element.

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METHOD AND APPARATUS FOR EDITING MEDIA

This application claims the benefit of U.S. provisional applicaton No. 60/656,403 filed February 28, 2005.

FIELD OF THE INVENTION

5 This invention relates to the methods of editing multi-media narratives, such as films, and more particularly, to editing multi-media narratives stored remotely.

BACKGROUND OF THE INVENTION

Historically, film editing was completed by hand, and editors would literally cut and splice video and audiotape to form the completed product. Now, digital tools are used to complete film products and several software products such as AVID are available for such purposes.

10 These products allow users to select video and audio "media elements" for insertion into a finished multi-media narrative. A media element is a segment of media that can be included in the multi-media narrative, for example a visual media element may include a single take or shot of an event, or a still photograph. An audio media element may be a single sound, or maybe a word, or a conversation or music track. Media elements may be made of other media elements as well. A film is an example of a selection of visual and audio media elements ordered by the film editor into a final multi-media narrative.

20 The software available in the art allows a user to access locally stored media, such as video and audio media elements, to manipulate these media elements (for example, by shortening them) and selecting the order in which the media elements will be represented. Sound media elements may be added to or used in place of the default sound (if any) associated with a visual media element. A "drag and drop" system may be employed to allow users to place media elements in the desired order into the finished multi-media narrative.

25 A common lacking in such products is the ability to use media elements that are not stored locally. Current solutions use media elements that arrive with the product, or allow users to download media from the Internet or another source for insertion into the multi-media narrative. This results in loss

of control of the media elements, in that the audio and visual media elements are stored on the user's computer, allowing the user to access such files for other purposes. In these cases the provider of the media elements loses control of the media elements, and may find them spread over the Internet or otherwise used in an inappropriate manner.

- 5 What is needed is a solution that allows users to collect audio and visual media elements through an online experience and then assemble them into a multi-media narrative with an online media element collection and use system, preferably with a text-to-speech narration generator.

#### BRIEF SUMMARY OF THE INVENTION

10 The system and method according to the invention is a media editor that allows users to manipulate and edit visual and audio media elements that are stored on a server. Thus the user can select, alter and order the media elements, but does not download the media elements to the user's computer in a form that can be used independently of the authoring application.

15 A media aggregator and authoring application allows users to combine text, images and video into their own multi-media narratives. The system according to the invention includes the following components:

##### Media Aggregator

20 The media aggregator is a tool for users to collect text, sound, image, video and other media elements that they encounter on certain web sites. These media elements are not saved to the user's computer, but are flagged by the media aggregator and stored on the media server. This allows access to the media elements from any computer with access to the media server, and allows for protection of copyrights, as the media element does not leave its original server other than to the cache of the authoring application in user's browser. When the user exits their browser, the cache file containing the multi-media narrative or media elements is deleted.

##### Authoring Application

The authoring application is an application that enables users to build multi-media narratives, such as online movies. The authoring application runs entirely from a web page in the user's browser, as the media elements, and the finished multi-media narrative, are stored on a server.

#### Text-to-Speech Application

5 A feature of the system is the use of a text-to-speech (TTS) application that enables text to be converted to an audible speech file. A user types in narration into their web page using the authoring application which then uses the TTS application to convert the text into an audio media element (with optional subtitles) which can then be dragged and dropped into the multi-media narrative. As the TTS application is hosted on the media server, voices (male, female, etc.) can be  
10 added based on the user's needs and license requirements. The TTS application allows the audio media element to be stored on the media server and replayed as often as needed as different people can view the created multi-media narrative.

#### Ease of Use

To operate the authoring application, users need only the skill level to drag, drop and order media  
15 elements along a story line to make their own multi-media narrative. Without installing any software on their computer (except for perhaps plug-ins), or downloading any media element, users can access a movie creation system via a web browser, assemble movies from collected media elements, generate narrative audio and save a created multi-media narrative.

A method for a user to edit a multi-media narrative is provide, including the steps of using a  
20 browser, selecting a media element on a server for inclusion in the multi-media narrative; said media element stored in a cache of said browser, inaccessible to said user; selecting a position within said multi-media narrative to position said media element; and inserting said media element within said multi-media narrative. The multi-media narrative is stored on said server, and when displayed in said browser, is stored in said cache of said browser, inaccessible to said user. The  
25 media element may be an audio media element, generated from text provided by the user.

The multi-media application, including said media element, is displayed within said browser after  
said media element is inserted within said multi-media narrative. The media element is selected

from a list of media elements within said browser. The user selects a plurality of media elements for said list of media elements, at least a portion of said plurality of media elements stored on a second server.

5 A system for editing a multi-media narrative is provided, including an authoring application for inserting a media element within the multi-media narrative; said authoring application executable within a browser; said media element stored within a cache of said browser, inaccessible to a user of said browser; a database on a server for storage of said media element and said multi-media narrative; and a text to speech converter for converting text input by the user into a media element. Preferably a collection manager is used for managing a plurality of media elements, and the multi-  
10 media narrative, when played within said browser, is stored in a cache of said browser, inaccessible to the user.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of the overall system according to the invention;

15 Figure 2 is a block diagram showing the communications links between the media server and the user's computer;

Figure 3 is a block diagram showing an embodiment of the media server according to the invention

Figure 4 is a diagram showing the communications between the media aggregator and the authoring application;

Figure 5 is a view of an embodiment of the preview option as seen in the user's browser;

20 Figure 6 is a flow chart showing the process by which a user cuts a multi-media narrative;

Figure 7 is an embodiment of the appearance of the authoring application as seen by the user; and

Figure 8 is an embodiment of the appearance of the media aggregator as accessed by the user.

#### DETAILED DESCRIPTION OF THE INVENTION

In this document, the following terms have the following meanings:

“browser” means a computer program used for accessing sites or information on a network (such as the World Wide Web);

“computer” means a programmable electronic device that can store, retrieve, and process data, and  
5 communicate the data to other computers;

“Internet” means an electronic communications network that connects computer networks and organizational computer facilities around the world, and includes the world wide web;

“multi-media narrative” means an ordered sequence of media elements to generate a story or narrative; and

10 “server” means a computer in a network that is used to provide services to other computers in the network. A server may be software running on a computer.

As seen in Figures 1 and 2, in an embodiment of the invention, computer 10, operated by a user accesses the Internet 20, or another wide area network, using a software application running on computer 10, such as a browser 80. Computer 10, through the Internet, accesses media server 30.  
15 Media server 30 is a conventional server, and may be on or more computers, or software running on a computer. Media server 30 is in communication with media database 40, which is a database storing media elements, multi-media narratives and other information relating to authoring application 60 and the user.

As seen in Figure 1, three components of media server 30 include: media aggregator 50, authoring  
20 application 60, and text-to-speech application 70. Media aggregator 50, authoring application 60, and text-to-speech application 70 are each separate, stand alone computer programs which collaborate to provide the functionality of the system according to the invention. As seen in Figure 2, TTS application 70 may be run on a separate TTS server 100, in which case TTS queue 90 arranges for communication between media server 30 and TTS server 100. Media aggregator node  
25 110 communicates between media aggregator 50 and authoring application 60.

FIG. 1 is a block diagram of the system in more detail below.

## Authoring Application

Authoring application 60 is preferably a cross-platform application encoded using software such as Macromedia Director™ in an application such as Shockwave™. Authoring application 60 can be operated in any browser 80 (perhaps requiring a plug-in). If browser 80 does not have a necessary plug-in it may be automatically downloaded for the user's computer and authoring application 60, on supported computers, can be used immediately without restarting the browser. Alternatively, browser 80 may prompt the user using browser 80's standard plug-in detection code.

A feature of authoring application 60 is that it provides the functionality of a normal software program in a web deliverable component. Security available through browser 80 restricts which resources the embedded web components can access (i.e. the user can access). For example, most users should be unable to access media server 30's host file system or operating system. Therefore, all media element management, manipulation and generation is accomplished remotely from media server 30.

Authoring application 60 is preferably written in software such as Director™, with minimal necessary plug-ins. Authoring application 60 includes a configuration component, a communication component, a media element loading component and a user interface.

Authoring application 60 communicates with both browser 80, and media aggregator node 110 and TTS queue 90 in media server 30. In a preferred embodiment, authoring application 60 uses the internal HTTP loading abilities of a plug-in such as Shockwave™ to perform a remote procedure call communication to media aggregator 50 and TTS application 70, and to temporarily store media elements in its cache as it operates within browser 80. The loading of settings and content URLs is performed via HTTP POST upon startup of authoring application 60. Authentication is performed internally within the post. The returned media elements or multi-media narratives are parsed within authoring application 60 and seen by the user in browser 80.

Figure 4 shows the communication process between authoring application 60, media aggregator 50 and database 40. In the first step authoring application 60 sends a message to media aggregator 50 for a specific media element (step 1). Media aggregator 50 extracts the media element from media

aggregator then formats the media element (step 4) and returns it to authoring application 60 (step 5), which will parse the element (step 6).

In the case authoring application 60 requires a media element available to the user, but not stored on database 40 (i.e. the media element is on another server), the load request is sent to media aggregator 50 (step 7), where the media element is fetched from a local file system or website (step 8) and then returned to authoring application 60 (step 9).

The media elements are preferably loaded via the standard HTTP GET protocol. If narration is created by the user, the text is offloaded to TTS application 70 on TTS server 100 via an HTTP request. The URL of the generated audio is then returned to authoring application 60. The saving of a resulting multi-media narrative is sent via HTTP POST to the media aggregator 50.

The media element is encoded in the HTTP commands, as is metadata associated with the element (such as captions and icons) and a description as to how the media elements are to be used.

### **Media Aggregator**

Media aggregator 50 is based on media server 30 and functions as a server for authoring application 60 and browser 80. It performs the following functions: it stores media links for a user; it adds, retrieves, updates and deletes media links for a given user; it stores multi-media narrative data files created by a user in authoring application 60; and it performs proxying services for media elements not directly accessible by authoring application 60.

Media aggregator 50 accesses media database 40. Media database 40 is a conventional database, for example, a MySQL database, running on media server 30 (which in a preferred embodiment is a Sun Solaris X1 server, but other servers may be used). Database 40 is accessed via two software components: a collection manager 120, which is a multi-user web page based manager for managing a user's collected media elements; and an RPC style access layer for authoring application 60 users. In a preferred embodiment of the invention, both components are written in PHP 4.3.2 using object oriented code, but could be written in other languages. The code is run in process (such as mod\_php4) in media server 30. Authoring application 60 stores and accesses links, text and authentication information (about a user) in database 40. Media elements are managed via



collection manager 120. Preferably collection manager 120 is run on media server 30, but alternatively another server could be used. Collection manager 120 has an administration level area for managing user media element collections and managing media element files that reside on media server 30. Collection manager 120 also has a user-level area for managing the user's  
5 collection of media elements.

In an alternative embodiment, media aggregator 50 uses links to media element files that are on media server 30. Collections of media elements are built up as links between a user's media element collection and the local media element identifications. In this embodiment, links to media elements are posted to database 40 by users as they traverse the content of another web site  
10 (presumably at a separate server). These posts are provided to database 40 via HTTP connections when the user presses a "collect" button (or uses a right click menu option) while at the web site containing the selected media element. In a preferred embodiment, the system according to the invention accepts links to external media elements that can be accessed via a proxy. This proxy is necessary as authoring application 60 is a web application. Collection manager 120 handles this  
15 process.

Typically, browser security constraints limit authoring application 60 to making connections back to the server from which the authoring application 60 was downloaded. Hence, in a preferred embodiment, media elements are proxied from other servers. This is accomplished by URL translation proxying, in which the URL to the media element is re-encoded to provide authoring  
20 application 60 a location that is based on the same base URL as the server the authoring application 60 was downloaded from.

### **The Text-To-Speech Application**

As seen in Figure 3, TTS application 70 is preferably a collection of software components, one of which is TTS speech generator 200, such as that provided under the trade-mark ElanSpeech's Sayso  
25 Telecom, but other TTS speech generators may be used. A feature of TTS application 70 is that it can disseminate generated speech to software clients, such as authoring application 60, using the Internet.

TTS speech generator 200 outputs raw pulse-code-modulated (PCM) data (typically meant for telephony cards). Such data is too large for Internet delivery, and is in an unusable format for most browsers. This data is returned to client 220, and the data is converted by format translator 210 from raw pulse-code audio data into a format usable by authoring application 60. This data is then  
5 processed via compressor application 230 to reduce the data size and preferably to convert the file into MP3 (MPEG-2 Layer 3) format or the like.

TTS generator 200 creates the raw PCM data at the speed it would be naturally be spoken. Therefore, threader 230 manages the conversion and storage of the data to MP3 format as it is  
10 created on TTS server 100. In a preferred embodiment, faster-than real-time audio is produced, converted and stored in database 40 on media server 30 for transfer to authoring application 60. The resultant media element from TTS application 70 is connected to media aggregator 50 for management in the collection manager 120.

Speech generator 200 is preferably decoupled from threader 230, and the audio translation and compression pipelines to provide scalability. More TTS speech generators may be needed than  
15 processing servers as users are added.

### **Uses of the System**

Figures 5 through 8 show the way in which a user can operate authoring application 60 to create a multi-media narrative. In the example shown in Figures 7 and 8, authoring application 60 is designed for use as an instructional tool, using the historical lessons about Samuel de Champlain  
20 and his first contact with the First Nations people of North America. Of course, this is purely an example and the system according to the invention can be used with media elements and multi-media narratives covering any topic.

Figure 7 displays an embodiment of a window 300 showing the authoring application as seen by the user in their browser 80. Title bar 310 shows the trade-mark associated with the product (in the  
25 example "MovieStudio") and the title of the particular tool for which authoring application 60 is being used (in this example, "First Contact"). This user interface can be easily "re-skinned" to provide a look-and-feel that matches the content's theme.

Visual bar 320, audio bar 330 and music bar 340 show the media elements of the multi-media narrative already selected in the order in which they will be presented. Each media element is represented graphically using an image which displays the time taken by such element. Media elements may be dragged to this bar from the “Clip Bin” 350 above, and may be dragged and  
5 dropped to reorder or remove media elements from the multi-media narrative. The bars 320, 330, 340 graphically show the overlap between visual media elements (moving images or stills) and audio or music media elements (which may overlap). Audio media elements may include sound effects or narration (possibly provided from TTS application 70).

TTS application 70 is accessed through the “Speechalizer” 360. Text may be entered by the user in  
10 space 380, who may then select the “Convert text to Speech” button 370. This causes an audio media element file to be placed adjacent to the space 380, which can then be “dragged” to clip bin 350 or audio bar 330.

Clip bin 350 is where media elements are shown in a graphical format so that they can be accessed by a user to add to the multi-media narrative. In a preferred embodiment of the invention, when the  
15 user first operates authoring application 60, clip bin 350 will already contain several media elements. The user can add media elements to the clip bin before loading the authoring application 60 by clicking on buttons or text links stating “Collect Item” when browsing a web page. These collected media elements are added to the user’s list of media elements in media aggregator 50 which are stored in database 40. Upon loading the authoring application 60 an HTTP GET call is  
20 sent to the Media Aggregator 50 to determine if any additional media elements are to be added to the clip bin on initial loading of the authoring application 60.

Display tool 390 is used to show the multi-media narrative. While the media elements can be previewed in clip bin 350, the entire multi-media narrative is viewed in display tool 390. Furthermore, options may be available in display tool 390 to pause, stop and play the multi-media  
25 narrative, to show subtitles generated by the TTS application, and to adjust the volume of the narrative. Also, the user may add text here that will be displayed over the video media element.

Other features available include an options menu and a help menu. The user may save a completed multi-media narrative (it will be saved in database 40), and send a link to such multi-media

narrative to others (if access is granted by the user), so that, for example, in an educational context, the multi-media narrative can be graded, or can be used in a presentation.

In an alternative embodiment, modification of media elements is possible using media editors. In this way media elements may be shortened, slowed down, or certain visual effects added. For example, Figure 6 shows the schematic of a system allowing parsing of media elements. A media element is imported and a user can flag in and out points for the media element from within that imported media element, load the amended media element into the clip bin and then select the media element for use in the multi-media narrative.

From window 300, users can access the collection manager 120 using window 400. Window 400 allows the user to see all of the media elements they have collected and are available in the clip bin 350. Each media element is listed in media element list 420 showing the name of each of media element, the type of the media element (text, image, video, audio), and administrative actions, such as 'View', 'Delete', and 'Download'.

A user, by selecting the name of the object, or the 'View' option displays the media element below in viewing space 440. When the user selects 'Delete' the media element is removed from clip bin 350. If enabled by the content provider, selecting 'Download' provides the user a downloadable version of the media element for storage on the user's hard drive. In the example shown in Figure 8, none of the listed media elements are available for download.

Typically, media elements are downloaded to the user's computer when displayed, but are stored in the caching system of authoring application 60, which is inaccessible to the user and which is automatically deleted upon exiting of browser 80 on computer 10. Therefore, media elements are not permanently stored on computer 10, but are stored in the cache as needed in order to play the media element or multi-media narrative in a real-time manner on computer 10. These media elements stored in the cache are not extractable. As such, if a content provider does wish to make it's media elements available for download by the user, such as graphics or text for a student's report or movies for a PowerPoint presentation, that content provider may flag the media elements on its server as downloadable and the user may activate the downloading of such media elements using collection manager 120.

Below each listing are two additional action buttons: 'Delete All,' and 'Download All' (if enabled by the content provider). Selecting 'Delete All' deletes all of the objects in the clip bin, and 'Download All' downloads everything.

5 The media server will allow users to collect media elements for use in their multi-media narratives. Such elements may be marked, for example with a button beside them having a Collector Icon and text that indicates the element is downloadable, for example by saying 'Collect this Item,' or 'Collect Movie'.

10 Once a media element is “collected” by the user, it is displayed, after the next launching of the authoring application 60, in clip bin 350, where the media element can be placed into the multi-media narrative by the user. In a preferred embodiment only users offering proper credentials (for example user ID and password) are able to collect media elements. In such an embodiment, users must login with a user ID in order to obtain a collection of media elements. Collected media elements are stored in database 40 in association with the user’s profile. If authoring application 60 does not require a user ID, it is preferably usable only with pre-populated media elements, and the  
15 collection option may not be available.

Figures 5 and 6 show how a user can edit a multi-media narrative (in this example a movie) using authoring application 60. Users can load the server 30 based narratives into authoring application 60 through media aggregator 50 and then to clip bin 350, or alternatively directly to clip bin 350. As seen in Figure 5, the user is presented a list of multi-media narratives 510 (referred to as  
20 “Movies” in this example). These multi-media narratives can be viewed in viewer 530. The user can then flag in and out points within that multi-media narrative for insertion of a media element, loads the the media element into a viewer and then saves the media element to collection for use in the multi-media narrative. Preferably, this can be done with any multi-media narrative found on the Internet.

25 Figure 6 shows an embodiment of the process from the user’s perspective. In step 1, the user begins the cutting process. In step 2, the user’s list 510 contains multi-media narratives for selection by the user (step 3). In step 2a the selected multi-media narrative is loaded into the viewer 530. In the example shown, the user has selected a multi-media narrative entitled “Wildlife: Gators”. The user

then selects in and out points (step 3a) for a new media element using authoring system 60 and a media element for placement. The new multi-media narrative (referred to as a "cut clip") is loaded into the "preview cut" viewer 550 (step 3b). The user can then view the new multi-media narrative (step 4) and confirm acceptance or rejection of the new cut of the multi-media narrative (step 5). If the new cut is rejected, the user can repeat the process by selecting new in and out points (step 3).

If the new multi-media narrative is confirmed, the narrative is saved to the user's collection (step 6), which replaces the previous multi-media narrative with the new. The user can then restart the process at his or her leisure (step 7).

The user can also use the preceding process to delete media elements (or portions thereof) from multi-media narratives.

Therefore, the system according to the invention allows users to make the following actions:

1. Users can access a web page and start creating their own multi-media narratives, such as movies.
2. Users can collect media elements from web sites and use those media element in their multi-media narratives, without using computer 10's hard-drive.
3. The authoring application 60 allows narrative text, either typed in, or collected as text from a website, be converted into audible speech and used in a multi-media narrative.

Furthermore, preferably TTS application 70 is a general system that can be used to provide narrative audio to software agents on the Internet.

The method or system described above may be implemented by a computer-readable medium having recorded thereon statements and instructions for execution by a computer to carry out the method. Furthermore, the method may be implemented by a computer program product, comprising a memory having computer readable code embodied therein for execution by a CPU. In yet another embodiment, the method according to the invention may be implemented as a carrier wave embodying a computer data signal representing sequences of statements and instructions which, when executed by a processor cause the processor to perform the method.

Although the particular preferred embodiments of the invention have been disclosed in detail for illustrative purposes, it will be recognized that variations or modifications of the disclosed apparatus lie within the scope of the present invention.

## CLAIMS

The invention claimed is:

1. A method for a user to edit a multi-media narrative, comprising:
  - (a) using a browser, selecting a media element on a server for inclusion in the multi-media narrative; said media element stored in a cache of said browser, inaccessible to said user;
  - (b) selecting a position within said multi-media narrative to position said media element; and
  - (c) inserting said media element within said multi-media narrative.
2. The method of claim 1 wherein said multi-media narrative is stored on said server, and when displayed in said browser, is stored in said cache of said browser, inaccessible to said user.
3. The method of claim 2 wherein said media element is an audio media element, generated from text provided by the user.
4. The method of claim 3 wherein said multi-media application, including said media element, is displayed within said browser after said media element is inserted within said multi-media narrative.
5. The method of claim 4 wherein said media element is selected from a list of media elements within said browser.
6. The method of claim 5 wherein said user selects a plurality of media elements for said list of media elements, at least a portion of said plurality of media elements stored on a second server.
7. A system for editing a multi-media narrative comprising:
  - (a) an authoring application for inserting a media element within the multi-media narrative; said authoring application executable within a browser; said media element stored within a cache of said browser, inaccessible to a user of said browser;



(b) a database on a server for storage of said media element and said multi-media narrative;

(c) a text to speech converter for converting text input by the user into a media element.

8. The system of claim 7 further comprising a collection manager for managing a plurality of  
5 media elements.

9. The system of claim 8 wherein the multi-media narrative, when played within said browser, is stored in a cache of said browser, inaccessible to the user.

FIG. 1

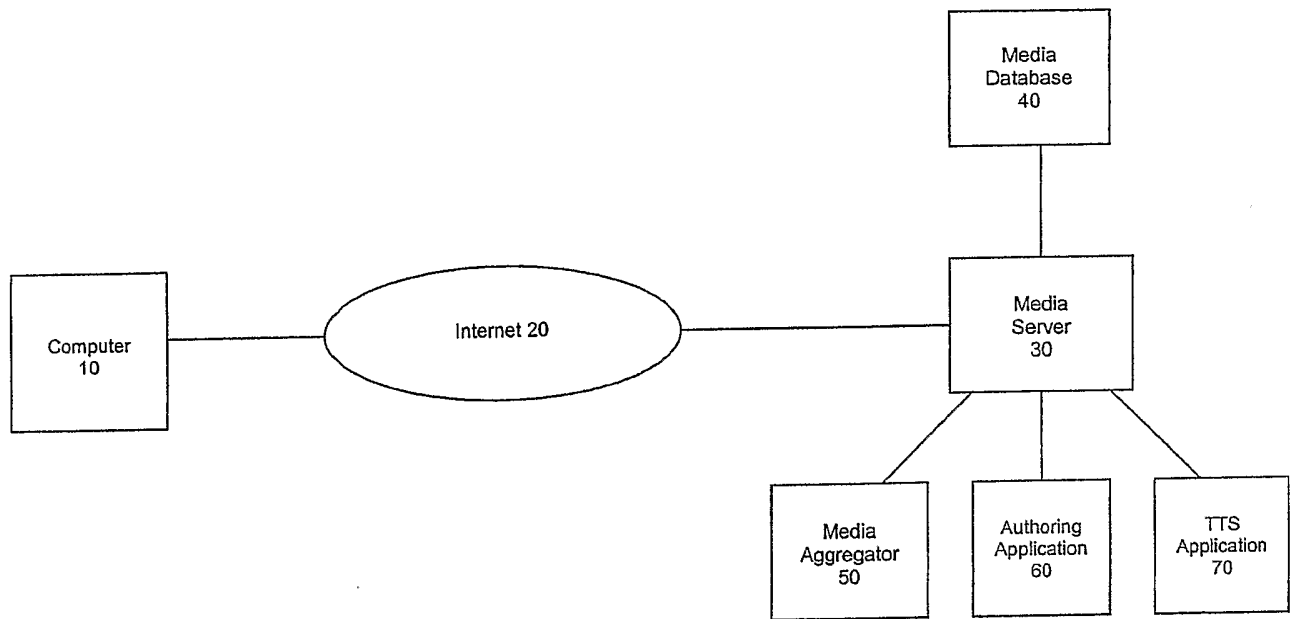


FIG. 2

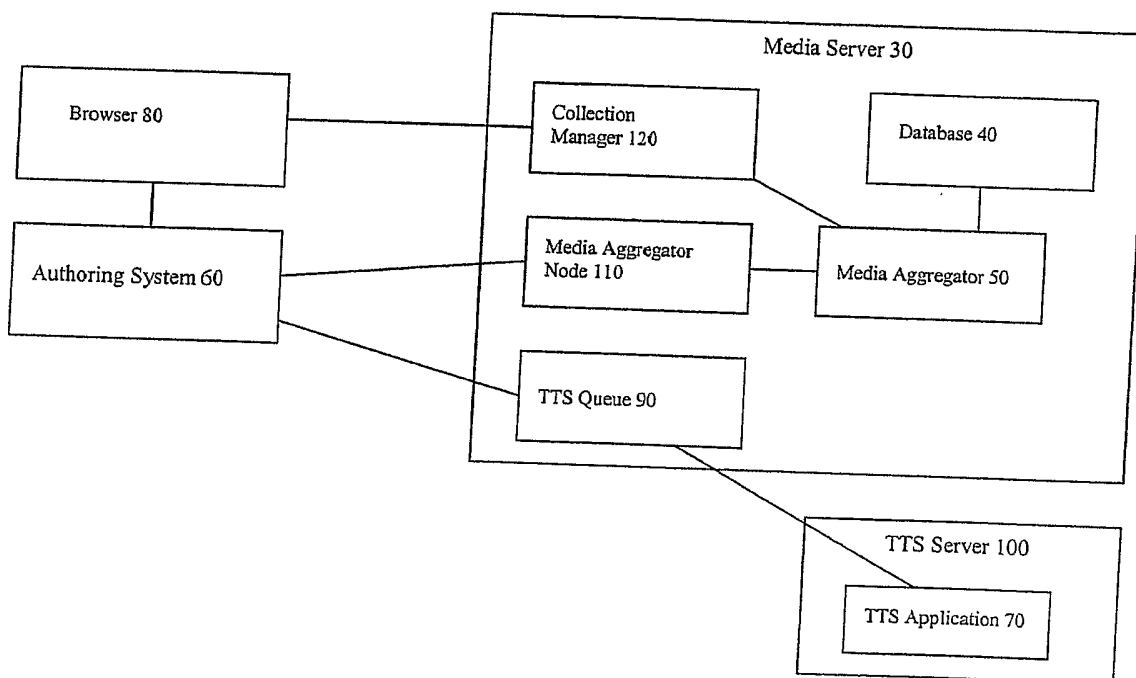


FIG. 3

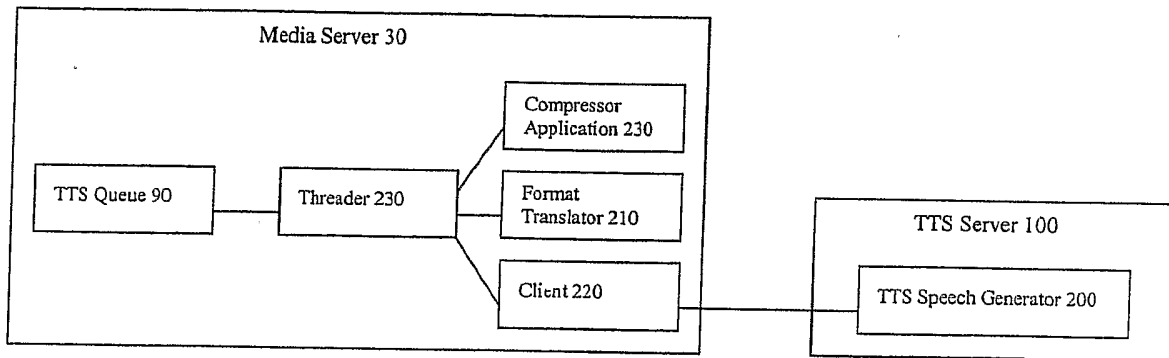


FIG. 4

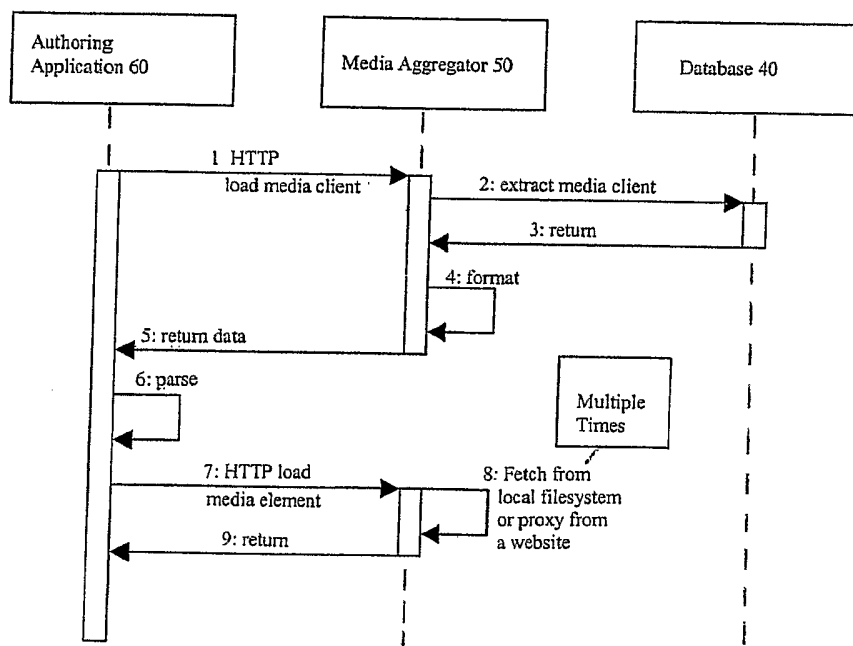


FIG. 5

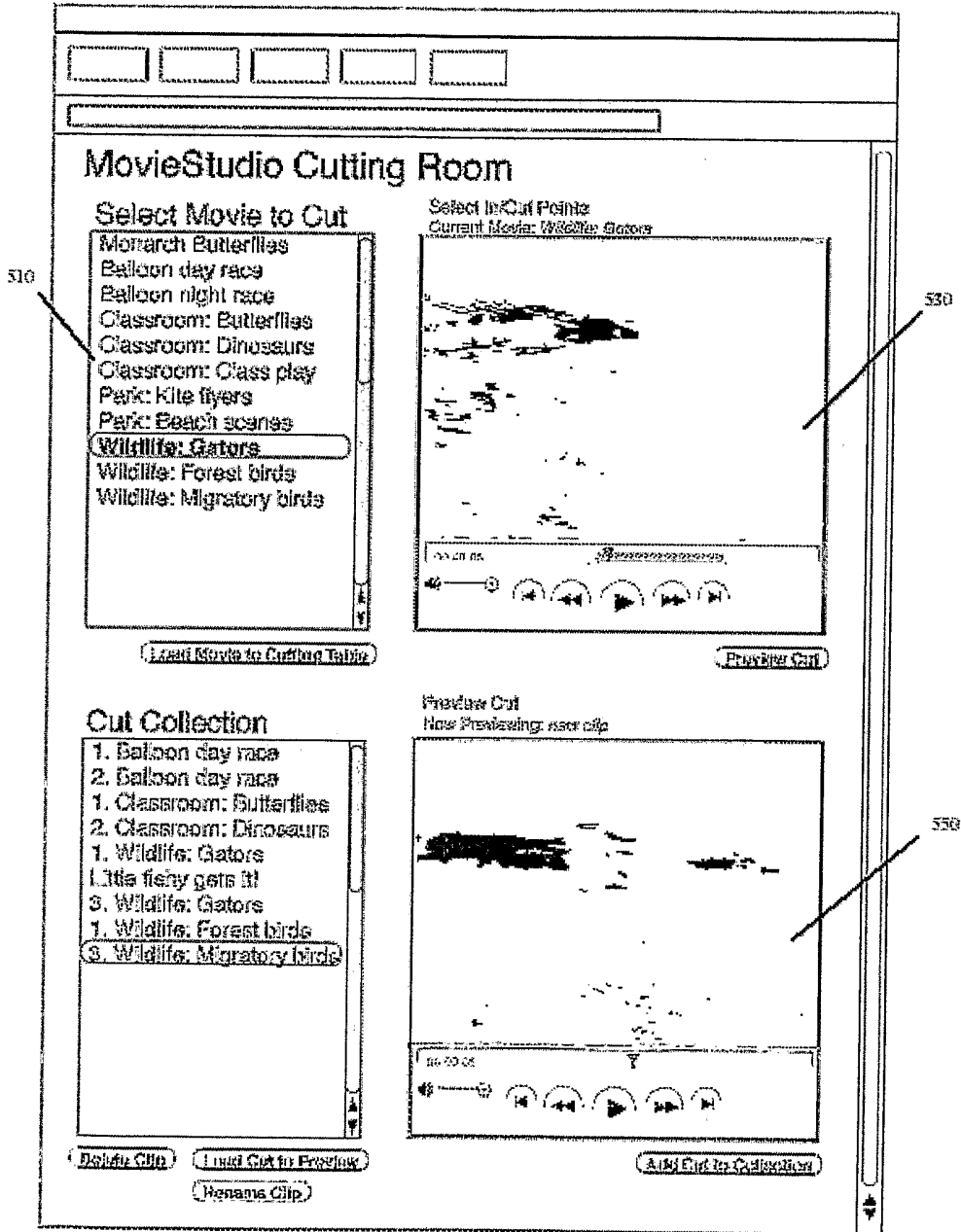


FIG. 6

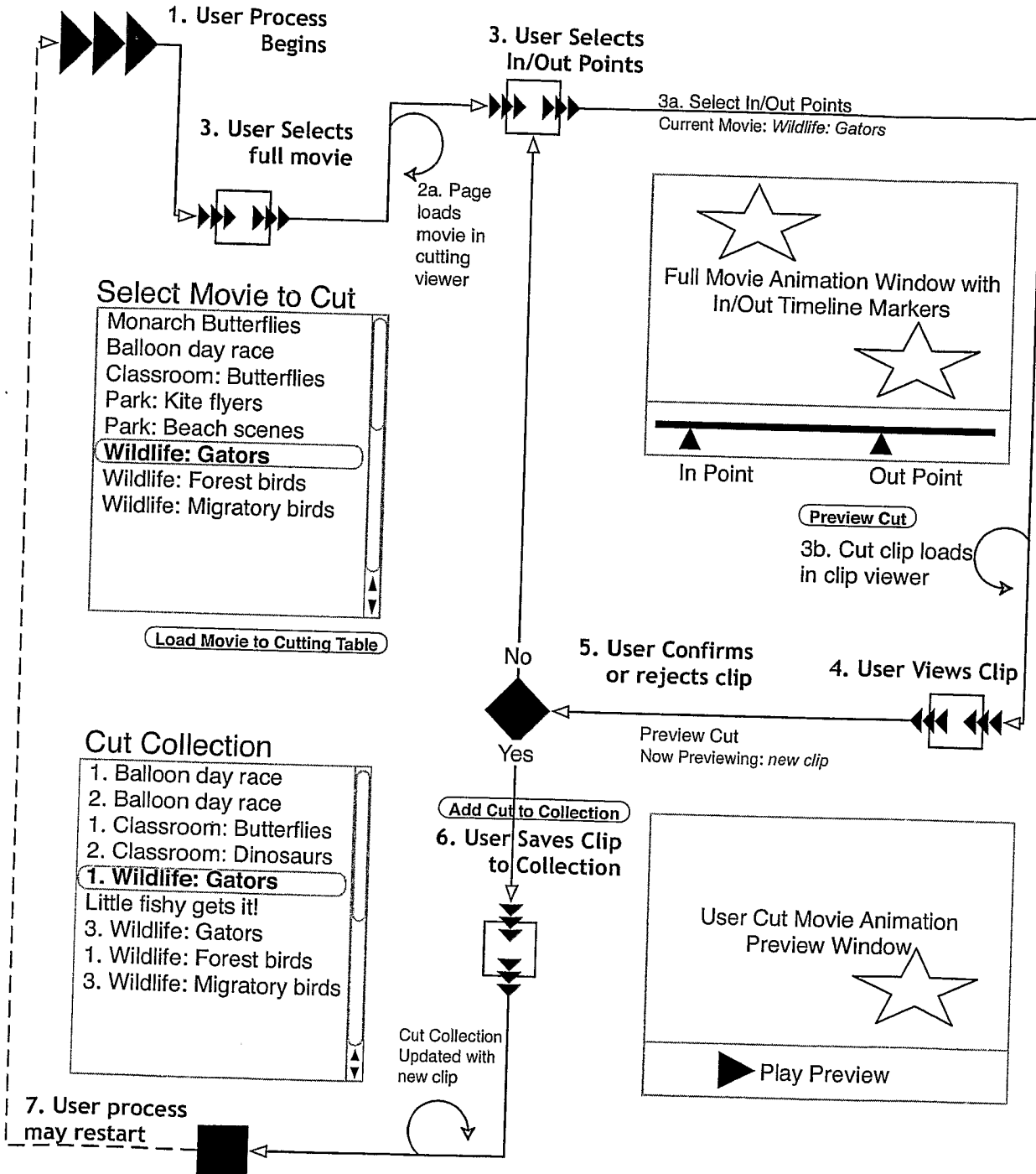


FIG. 7

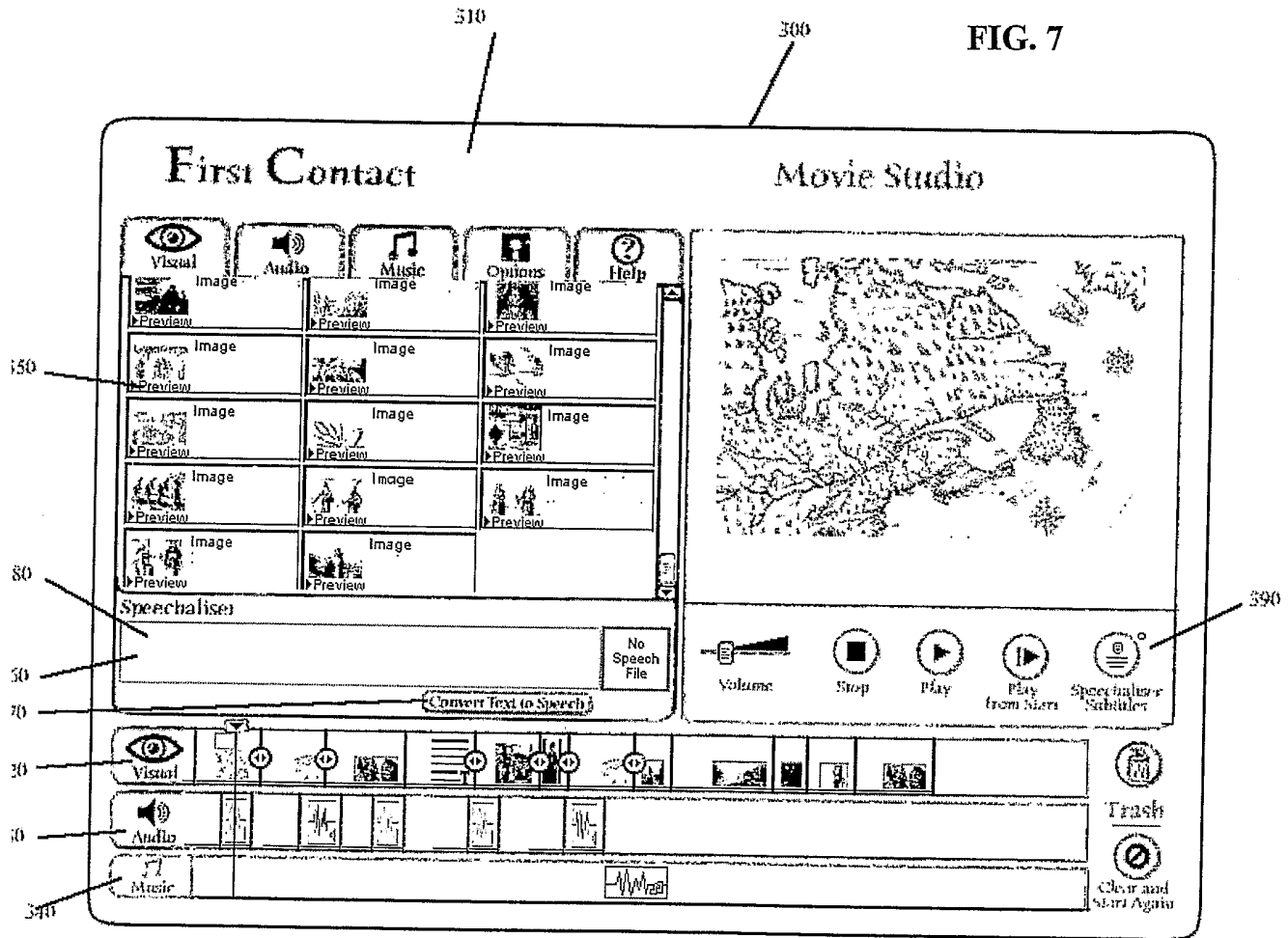










FIG. 8

400

Media name	Media type	Actions
<a href="#">1625.txt</a>	 text	<a href="#">View</a>   <a href="#">Delete</a>   <a href="#">Download</a>
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**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/CA2006/000297

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC: **G11B 27/036** (2006.01) , **G10L 13/00** (2006.01)  
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC: G11B (2006.01), G10L (2006.01)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)  
 Database: Delphion and US West Patent Database  
 Keywords: browser, multi-media, cache, narrative, text to speech, editing, Internet, server

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/091227 A1 (PARK) 21 October 2004 (21-10-2004) Figure 1 and corresponding description text	1-9
Y	US 6,314,492 B1 (ALLEN et al.) 6 November 2001 (06-11-2001) abstract	1-9
Y	WO 03/041364 A2 (VIERI) 15 May 2003 (15-05-2003) abstract	3-7
A	US 6,807,572 B1 (YU) 19 October 2004 (19-10-2004) see whole document	1-9
A	US 6,573,898 (MATHUR et al.) 3 June 2003 (03-06-2003) see whole document	1-9
A	US 6,544,293 B1 (OHANIAN) 8 April 2003 (08-04-2003) see whole document	1-9

Further documents are listed in the continuation of Box C.       See patent family annex.

* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 30 May 2006 (30-05-2006)	Date of mailing of the international search report 13 June 2006 (13-06-2006)
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Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer  <b>Dennis Atkinson (819) 953-0816</b>
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/CA2006/000297

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