SYSTEMS AND METHODS FOR ELECTRONIC SELL-THROUGH OF INTERACTIVE MULTIMEDIA CONTENT AUTHORED FOR DISTRIBUTION VIA PHYSICAL MEDIA

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] The present invention claims priority to U.S. Provisional Patent Application Ser. No. 61/364,001 entitled "Conversion of Content to a Web Centric Document Object Model", filed Jul. 13, 2010, the disclosure of which is incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to electronic sell-through of video and more specifically to the electronic sell-through of interactive multimedia content authored for distribution via DVD.

BACKGROUND

[0003] The DVD-Video specification created by the DVD forum has proven to be a very robust and consumer friendly method for delivering high quality interactive multimedia content to consumers. Since the release of DVDs in 1997, they have enjoyed one of the fastest consumer adoption rates of any consumer electronics device in history. Since 2007, however, DVD production has entered a period of decline. The decline in popularity of DVDs is viewed by many as being related to a decline in popularity of physical media and an increased demand for the electronic delivery of interactive content. Indeed, many consumer electronics devices are now designed to receive content via a network connection instead of or in addition to via physical media and many services offer electronic sell-through of content for viewing via such consumer electronics devices.

[0004] The HyperText Markup Language (HTML) standard specified by the World Wide Web Consortium specifies a markup language that can be used to control the rendering of web pages. HTML pages are written in the form of HTML elements including tags. HTML5 is the fifth revision of the HTML standard that adds many new syntactical features. These include the <video>, <audio>, and <canvas> elements, as well as the integration of Scalable Vector Graphics content. The new features of HTML5 are designed to make it easy to include and handle multimedia and graphical content on the web without having to resort to proprietary plugins and APIs. Many new consumer electronic devices, both as set top boxes and mobile devices, are moving to support some or all of the HTML5 specification.

[0005] A Document Object Model (DOM) is a convention for representing and interacting with objects in HTML documents. Aspects of the DOM (such as its elements) may be addressed and manipulated using DOM scripting. DOM scripting refers to programmatically accessing a DOM using a scripting language. In the context of HTML5, the scripting language utilized for DOM scripting is typically JavaScript licensed by Oracle Corporation of Redwood Shores, California. JavaScript is an implementation of the ECMAScript language standard and can be used to provide enhanced user interfaces and dynamic websites by providing programmatic access to the DOM of a HTML5 page.

[0006] Web browsers rely on rendering engines to parse HTML into a DOM and based upon the DOM and DOM scripting the rendering engine formats content for display. The <video> element was introduced by HTML5 to enable the display of videos, without the use of additionally installed plug-ins. Using any number of <source> elements, the browser can choose automatically which file to download or the JavaScript canPlay( ) function can be used to determine which file to download. By specifying the Internet media type (also referred to as a Multipurpose Internet Mail Extensions type or MIME type), the web browser can determine whether it can decode a specific video file by querying its multimedia framework for third party codecs. The current HTML5 draft specification does not specify which video formats browsers should support.

SUMMARY OF THE INVENTION

[0007] Systems and methods in accordance with embodiments of the invention enable the electronic sell-through (EST) of multimedia content originally authored for distribution via physical media. When multimedia content is distributed via physical media, including but not limited to DVDs, the multimedia content is typically authored based upon the characteristics of the physical medium on which it will be distributed. For example, the DVD specification assumes that multimedia content will be distributed via an optical disk on which the multimedia content will be randomly accessible. Were the same content to be distributed electronically (e.g. via the Internet) instead of via physical media, the same assumptions concerning the availability and accessibility of the content do not necessarily apply. In addition, playback devices configured to download the content electronically may not support decoding of the multimedia content. Content authoring systems in accordance with many embodiments of the invention are configured to ingest interactive multimedia content authored for distribution via physical media and to generate interactive multimedia content formatted for electronic distribution. In this way, content owners can avoid the expense of separately authoring interactive multimedia content for distribution via physical media and EST.

[0008] One embodiment of the invention includes building an object model of interactive multimedia content authored for distribution via a physical medium using a content authoring system, automatically authoring a user interface based upon the object model using the content authoring system, packing the multimedia content into at least one container file, and electronically distributing at least a portion of the authored user interface and the at least one container file via a network connection.

[0009] In a further embodiment, the interactive multimedia content is authored in accordance with the DVD-Video specification.

[0010] In another embodiment, the interactive multimedia content includes a plurality of files including at least one IFO file containing tables describing objects within the interactive multimedia content and at least one VOB file containing multimedia content and navigation information.

[0011] In a still further embodiment, building an object model of interactive multimedia content authored for distribution via a physical medium using a content authoring system includes parsing the at least one IFO file and the at least one VOB file to build an object model for the interactive multimedia content using the content authoring system.