Confluent Technologies Inc.

www.SMILsoftware.com

Create Rich-Media and SMIL

As Internet connection speeds, computing processor speeds and data storage devices continue to increase in size and decrease in price, the advantages for widespread rich-media production and Streaming across the World Wide Web continues to improve. The ability to offer truly interactive, rich-media presentations to a global audience is an opportunity for rich-media producers and Web designers that offer more possibilities than any previous technology. Rich-media delivered over the Internet, when assembled using SMIL, Synchronized Multimedia Integration Language, offers creative and distribution opportunities that have never before been possible. When the broadcast quality of television and the interactivity of the Internet converge, SMIL will be the design language used to maximize the versatility offered by Streaming rich-media.

Advantages of SMIL

The World Wide Web has opened up the world of communications in ways that we are only beginning to explore. The World Wide Web has spawned the creation of countless technologies, both proprietary and open standards. The advantages of open standard based technologies continue to be demonstrated as popular standards become ubiquitous and refined. The popularity of open source technologies is clearly demonstrated with the successes of Linux, QuickTime server core technology, Real Time Streaming Protocol and others.

SMIL, a W3C recommended specification[1] was designed to be a flexible markup language for delivering rich-media presentations. SMIL is a language that is positioned to follow the same path that HTML has to date and possibly go beyond. SMIL's rich media components offer many features and advantages over HTML. However, SMIL was developed to function as a complimentary technology to other standards such as HTML, SWF, and others. Due to the number of features the SMIL specification offers, it is ideal for Internet rich-media delivery. The SMIL 1.0 specification offers a number of benefits to the Streaming rich-media industry.

SMIL presentations have several attributes that allow control over the layout of the presentation to be created. The Root-Layout portion of a SMIL presentation allows complete control over the dimensions and color of a presentation in addition to specifying other general information such as the Title, Description, Author, and Copyright. In addition to the overall layout attributes of the presentation, the media contained within a presentation is equally flexible and programmable. A SMIL presentation's appearance is

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[1]   For more information visit http://www.w3.org

defined by the root-layout. The location of the media to be played is determined by the location of the Regions within a presentation.

Using regions for presentation layout has a number of benefits. Regions can contain any number of media file types that can be played back in sequential or parallel order. Regions have many attributes including co-ordinate based positioning, layers, media clip sizing options and appearance options. By allowing the combination of various media types into a precisely laid out presentation, the design possibilities for SMIL developers are endless.

SMIL offers benefits to the playback and sequencing of media clips within a presentation. Clips contained within regions can be played in sequential or parallel order. The playback start and end times as well as the in and out points for individual clips can also be specified. SMIL gives the developer the capability to synchronize timing for media playback within a presentation. During the playback of a video in one region, advertising (for example) can be synchronized in another region and brought into the presentation at specific, designated time points to enhance advertising impact.

Linking to other related media including Web site content external of the presentation or other media within the presentation are all possible with SMIL. Linking to other content from a SMIL presentation is the most flexible implementation of linking yet offered by the World Wide Web. Entire clips can be used for linking, or "hotspot" links can be inserted within media clips focusing on one or more particular points of interest in the clip. Timeline based linking is combined with hotspot linking in SMIL to create Anchors. Anchors are areas within a media clip that can link to other SMIL presentations or Web sites. An Anchor can appear at any point in the clip's timeline and can be any size of area contained within the clip.

Anchors can be added to any media that has been captured for use on the Internet. Anchors are a feature of SMIL that can create the following experience for a viewer: the viewer watches a video as it streams over the Internet; during the video, items within the video can have Anchors; the viewer can click on an Anchor while viewing; the viewer's Web browser will launch or change Web sites, or a new SMIL presentation will be loaded into the player, or an email window will open (depending on what the author has linked the Anchor to); the viewer can find out more information about the item, or even purchase it at an e-commerce site; or the Anchor the viewer selects affects the order of video playback in the same SMIL presentation, creating a unique experience chosen by the viewer.

SMIL offers the capability to combine several different media file formats into a presentation. This makes SMIL a very flexible and robust language for creating rich-media presentations. The ability to layout graphics, sound, video, animation and text into the same viewing space and combine these media files by linking them together and making them available over the Internet are all factors that contribute to the exceptional ability of SMIL for Streaming rich-media. SMIL offers similar functionality to previous media technologies (e.g. CD-ROM), and offers similar capabilities for technologies of

today and tomorrow (e.g. DVD). SMIL presentations can present passive entertainment, such as a movie, with additional interactive enhancements offered by additional media. This can include graphical links to various points in the film; additional text information about the making of the film or background information; photos of sets during the shooting of the film; and even access to the Web for purchase of the film or other related merchandise. A global audience can Stream all of these features across the Internet for direct consumption.

Bandwidth consumption, bandwidth availability and the overall technological obstacles surrounding effective, Internet delivered rich-media can be challenging to overcome. SMIL was also designed to have accommodations for the fluctuating nature of hardware and variations in connection speeds. SMIL allows for alternate presentation characteristics based on varying circumstances. Every Streaming media project has different variables that contribute to the success of the broadcast, from concept and design to packet deployment. At all layers involved with delivery of rich-media across the Internet there are ways to help with bandwidth consumption, which can ultimately affect the overall performance of a presentation. Examples of where the quality of the final output would be impacted to the viewer include:

- Switching capabilities within SMIL code to allow alternative layouts based on connection speed;
- Pre-loading of images and proper use of image attribute values, such as freezing and filling;
- Encoding audio and video for varying bit-rates; and
- Using animation files for high-motion, low-overhead visuals.

A SMIL presentation can also be set up so that a slide show with voice-over plays over a dial-up or slow connection, but a full motion video will play for a high-speed connection.

Presenting content with SMIL

The Web enables companies to instantly create awareness of products and services, with or without the expense of traditional marketing practices. Promoting using the Internet allows access to potential customers that might not otherwise be aware of the existence of the products or services. The size of a Web site is not as important as the quality of content offered and maintaining a competitive edge is crucial to Web site survival. By leveraging technologies such as Streaming rich-media and SMIL, Web content developers can create a sticky experience promoting products, services and brand over their less media-rich savvy competitors.

New methods for direct distribution as well as direct sales are available on the Web as electronic commerce becomes widely accepted. As the World Wide Web continues to grow and expand, so to does the need for new, compelling content to attract viewers. Web site developers need content, and the technology required to produce quality content has never before been so accessible. Content creators can use the Web to expand on their content beyond the base offering. Added interactive features related to the products or

services can be incorporated into Web presentations, giving site visitors an additional sense of inclusion and increasing the value of the overall experience. Streaming rich-media in connection with the product or service being sold will captivate a visitor at any e-commerce site longer. Using SMIL to combine various media elements can create a unique experience that is not achievable through any other means.

Some ambitious content creators have chosen the Internet as their delivery platform for the main purpose of retaining creative control over a project. The Internet offers exposure to a global audience without restrictions. If a content creator has the resources to produce the content independently, then by distributing the content directly over the Internet, there is no need for interference from intermediaries. Seeking ultimate control through Internet distribution is an opportunity that has many advantages over traditional media delivery. Spumco (www.spumco.com) is an excellent example of a Web based project developed from a desire to keep creative control within the hands of the creator.

Traditional content business models revolve around the delivery of content for a price based on usage. Examples of usage can range from single individual use to theatrical or broadcast licensing. Generally, traditional media delivery is linear in its presentation, the production starts and is played through to the end of the content. In traditional media the viewer has little or no choice in how the content is delivered. With the interactivity component SMIL offers to rich-media, combined with the potential for the combination of various media types, a unique experience for the viewer can now be achieved. Combine these aspects with a subscription-based service and electronic payment, and the business model evolves.

Delivering content in a linear fashion still continues to be a highly popular and successful way to entertain audiences. By applying the advantages of SMIL to the delivery of content, viewers can be presented with an entertaining experience in which they can become more immersed through their interaction with the content. DVD is the offline example of expanding content through interactivity and expansion of media assets. SMIL can allow the viewer to jump to various points in the content, combine different media types and Stream them immediately via the Internet.

SMIL enables the content producer the ability to create a new experience from existing media on the Web by re-purposing original content for Web broadcast and using SMIL. By leveraging the many advantages of the SMIL specification, content creators can produce compelling content and allow the viewer to interact with content previously created for a passive audience. Most content created for the Internet consists of many forms of media. Photographs, descriptive text, graphics, sound tracks, video, animation and other forms of media can be used to enhance content created for delivery over the Internet. SMIL enables content creators the ability to combine these media elements and link them into an interactive whole.

A SMIL presentation can take an existing production and expand it into a greater experience without necessarily increasing the production overhead. A film can be enhanced with SMIL by combining still photos, biographical information, email links,

and links to related information on the Web, all within the same presentation. Existing media from the original production can be assembled into a SMIL presentation that can then be Streamed across the Internet. The value of the production is enhanced by exposure to additional related content.

In the new world of communications it is possible to distribute interactive rich-media content to an audience across the Internet using SMIL. As technology continues to increase in performance and decrease in cost, the ability to Stream rich-media content is spreading in popularity. In an excellent quote from Patrick Loubert of animation studio Nelvana, he states, "We know that the Internet and television are like two characters in a film," Loubert told the Toronto Star. "You know they're going to meet sooner or later, you just don't know where or when."

Everyone with access to a computer and the Internet now has access to create and distribute their own media creations. Web sites already exist for sharing photos, music, videos and animation, in addition to the endless supply of text information. SMIL is the language that will take any media files and combine them into viewer experiences that have only begun to surface. The power and flexibility of SMIL make it the ideal solution for delivering rich-media in this new era of communications.