

Efficient Dynamic Media Generation

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Abstract

The session presents two approaches to dynamically generated content for use on the Web and in offline presentations. These techniques utilize software applications to perform production tasks that were previously tedious and time-consuming, freeing the designer to focus on the creative process. The first technique enables high-resolution graphics to be stored in a single format on a Web server, and converted or manipulated as needed using an intuitive Web-based graphical interface. The second technique allows a PowerPoint-type presentation to be authored with the use of Macromedia Flash template movies, where the content (e.g. text, images, video) is separate from the presentation (e.g. color scheme, background). This technique can also evolve to an online production model, enabling the integration of custom templates.

1 Introduction

Advances in software from Open Source and commercial vendors allow media files in standard formats to be programmatically manipulated. These tools can be integrated with custom software applications to solve a variety of business-specific needs. The ultimate goal is to eliminate the use of designer time for tedious and repetitive tasks, and to enable the content author to create or modify content without compromising the design.

2 Programmatic Media Manipulation

The advantages of adopting standards-based file formats include the potential for the data to be manipulated by programs that implement capabilities not present in the application used to create the content. For example, the capabilities of Adobe Photoshop are invaluable in creating PNG or GIF files for the Web, but the tool is not efficient for iteratively producing a large number of similar graphics with minor modifications, as is often required in the production of Web-based navigation user interface elements. These capabilities are implemented in software packages available from the Open Source community, as well as in certain commercial software products. These tools can be integrated with custom software applications to achieve a variety of business-specific needs. The ImageMagick package (www.imagemagick.org) implements a programmable set of image manipulation capabilities, like resize, rotate, and color palette modification. Images can be created or manipulated from the command line, via shell script or custom code integrated with a Web based GUI application.

Adobe Graphics Server implements a similar set of capabilities, but includes robust support for the Photoshop PSD file format. This allows text embedded in a PSD file to be programmatically changed, the layers flattened, and a GIF, PNG or JPG image written out - without having to open the file in Photoshop. The product provides similar capabilities for manipulating vector graphics in the Adobe Illustrator EPS file format. The capabilities of these platforms can be integrated with Web software

application to provide a variety of functionality that is invaluable to many common business practices.

3 Template Presentation Model

Macromedia Flash Player technology is increasingly used for information delivery systems (e.g. presentations, reporting tools, slide shows) that exist outside of the web browser space. Just as XML is used separate data from HTML page layout, XML can be used to specify graphics, text, and multimedia assets for a Flash presentation layer.

Schematic's presentation engine manages JPEG, SWF, and FLV assets, along with HTML-formatted text with various styles (e.g. headings, bullet points). The engine can scale the dimensions of the presentation without resolution loss, and video assets can be tagged to enable windowed vs. full-screen modes. Nearly every aspect of the presentation is dynamic, including presentation title, client logo, colors, individual slides, and slide thumbnails. Presentation properties also cascade gracefully within the XML specification, such as asset locations, branding options, and default settings (colors, type faces, point sizes).

This template approach enables designers to focus their attentions on all aspects of the user experience, from interface usability to enhanced visual appeal. In further iterations of the engine, designers will be able to create slide-specific templates without demanding large-scale revisions to the XML schema. This model will allow a single presentation to utilize several custom layouts whose specifications exist outside of the presentation engine. The process to architect such a solution involves the following steps:

1. Create a prototype of the presentation or experience.
2. Develop a schema for the data required.
3. Build the presentation engine.
4. Create additional slide-specific templates.
5. Provide data for each slide, adhering to the schema.

Material related to this presentation can be viewed online at <http://conferences.schematic.com/2004/siggraph/>.

About the Presenters

Matthew Rechs (mrechs@schematic.com) is Chief Technology Officer for Schematic, a services company that develops interface and Technology Solutions for the Web and Interactive Television. He leads two of the firm's practice groups: Web Development, and Software and Integration, as well as the Managed Hosting and Security division. He has served as Adjunct Faculty at New School University and Parsons School of Design, and is the author of a book under contract to O'Reilly & Associates.

Robert Reinhardt (reinhardt@schematic.com) is internationally recognized as a leading Flash expert and has written several books including the *Flash Bible*. Since 1999, Robert has been the technical lead for many award-winning Web sites and applications.