GR*i*NS (formerly CMIFed)—A GRaphical *i*Nterface for SMIL

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SMIL

The Synchronized Multimedia Integration Language (SMIL, pronounced "smile") was adopted as a W3C recommendation in June of 1998. SMIL is a simple-to-author language to describe multimedia presentations for Web delivery. SMIL is an application of XML.

SMIL provides Web users with:

- Easily defined basic timing relationships
- Fine-tuned synchronization
- Spatial layout
- Hyperlink support for time-based media
- Ability to adapt to varying user and system characteristics

A SMIL document is a hierarchy of sequential, parallel, and switch nodes. Children of a sequential node are played sequentially; children of a parallel node are played in parallel; only one child of a switch node is played, depending on user and system characteristics. The hierarchy gives a rough timing relationship between nodes which can be fine-tuned by the use of explicit begin and end relationships.

GR*i*NS

GR*i*NS (**GR**aphical *i***N**terface for **S**MIL) is a tool for authoring and playing SMIL documents. While SMIL is a very simple-to-author language, creating and maintaining larger scale documents requires a more powerful tool than a text editor. The GR*i*NS authoring system provides an integrated editing and previewing tool (the only one available) for SMIL. The tool allows the user, among other things, to create and view the hierarchical structure of a document, to create and view the explicit timing relationships, to create and view the spatial layout of the document, and to create and view hyperlinks.

There are four main views on the document in GR*i*NS, as follows.

The *Presentation View* is used to play the document and to edit the spatial layout of the document. It is possible to play the whole document from the beginning or play only selected parts. The presentation view allows the user to start, pause, and stop the document using VCR-like controls. The presentation view is also used to edit the spatial layout of image anchors.

The *Hierarchy View* is the main editing view in GR*i*NS. In the hierarchy view it is possible to create new nodes, copy and paste subhierarchies, assign data objects to nodes etc. The document hierarchy establishes the broader timing relationships between nodes.

The *Resource View* displays the activities for each screen area and media resource along a timeline. The view displays which media items get played when and in which region. Using the resource view the user can fine tune the hierarchy-defined timing.

Using the *Link View* the user can view and define the hyperlinks within the document and to other documents. The view allows the user to select an anchor and view all related anchors. The view also allows the user to see dangling anchors (anchors which are not the end point of a hyperlink).

History and Implementation

The CMIFed project started in 1991 with the aim to investigate a new paradigm for the creation of multimedia documents. From the start, the software for the project was written in Python (Guido was the main developer when the project started), and thus this project is probably the oldest Python project in the world. In 1994 the Chameleon project started with the aim to define and implement multimedia authoring and presentation tools. CMIFed was used as a basis for this project. In early 1997 the W3C working group for Synchronized Multimedia started with the aim to define a language for web-based multimedia presentations. The work resulted in SMIL. As part of the development, CMIFed was adapted to also be able to read and write SMIL documents, and the system was renamed GR*i*NS.

Currently, GR*i*NS consists of about 50,000 lines of Python code plus a few extension modules. GR*i*NS runs on Unix (SGI, Sun), Mac, and PC (Windows 95/98/NT).

For More Information

For more information on the GR*i*NS authoring and playback system and to download the GR*i*NS playback system, see the GR*i*NS home page at http://www.cwi.nl/GRiNS/.

For more information about the Chameleon project, and for published papers about CMIFed and the theoretical background of the project, see http://www.cwi.nl/Chameleon/.