User Support for RTIPA Adaptive Content

Requirements and Directions

Dick C.A. Bulterman

Oratrix Development

Amsterdam, The Netherlands

RTIPA / Paris

March 13, 2001

Overview

Basic Requirements

Introduction to SMIL 1.0

Introduction to SMIL 2.0

Introduction to GR*i*NS

Demos

Requirements

Basic Requirements

- Provide environment to allow specification of application

- Allow control of performance parameters by application

- Provide run-time interface to support application execution

CWI / Oratrix Approach

- Use W3C's SMIL as the base for the application description

- Provide user interface based on the GR*i*NS environment

  — support application authoring and alternatives specification

  — support application playback via runtime player

SMIL -- Synchronizing Web Multimedia

What is SMIL?

- SMIL = Synchronized Multimedia Integration Language
- W3C's XML language for Web-based synchronized multimedia
- "The HTML for Multimedia"

Why is SMIL Interesting?

- It provides a vendor/platform neutral way of defining presentations
- It integrates hyperlinks into multimedia presentations
- It provides a way of building adaptive presentations

SMIL in Action

- A step-by-step description of the language and its uses
- Execution examples of 'pure SMIL'

SMIL Background

Synchronized Multimedia Integration Language

- pronounced *smile*
- purpose is to describe *objects* and *integration* into presentation

Developed by W3C's SYMM working group

- Oratrix, CWI, Lucent, Microsoft, Netscape, RealNetworks, Philips, ...

Declarative language

- attribute/value pairs
- no scripting
- limited interaction

High-Level Structure of Document

Partitioning in Sections

```
<smil>
 <head>
    <meta>
       ... information about the document ...
    </meta>
    <layout>
       ... layout definition ...
    </layout>
 </head>
 <body>
       ... objects and temporal relations ...
       ... links and anchor objects ...
 </body>
</smil>
```

SMIL Example - 1

```xml
<?xml version="1.0" encoding="ISO-8859-1"?>
<smil xmlns:GRiNS="http://www.oratrix.com/">
  <head>
    <meta name="title" content="root-layout"/>
    <meta name="generator" content="GRiNS win32 level 21"/>
    <meta name="base" content="file:///D|/www9/"/>
    <meta name="proj_html_page" content="ext_plr.html"/>
    <layout>
      <root-layout id="root-layout" width="528" height="395"/>
      <region id="Background" width="528" height="395" GRiNS:type="RealPix"/>
      <regi id="Main" left="62" top="42" width="420" height="314" GRiNS:type="RealPix"/>
      <region id="Audio" GRiNS:type="sound"/>
      <region id="Titles" left="62" width="420" height="40" GRiNS:type="RealPix"/>
    </layout>
  </head>
  <body>
    <par id="WWW9">
      <img id="Background-1" region="Background" src="images-smx/btrade.JPG"/>
      <audio id="Audio-Mix" region="Audio" src="audio/mix.rm"/>
      <switch id="pictures">
        <img id="Images" title="Promo for WWW9" region="Main" src="images.rp"
          author="Maja Kuzmanovich" copyright="1999" dur="100s" system-bitrate="56000"/>
        <img id="low-bw" region="Main" src="low.rp" dur="6.001s" system-bitrate="14400"/>
      </switch>
      <img id="Titles-0" region="Titles" src="title.rp" dur="200s"/>
    </par>
  </body>
</smil>
```

Dynamic Content Control and SMIL
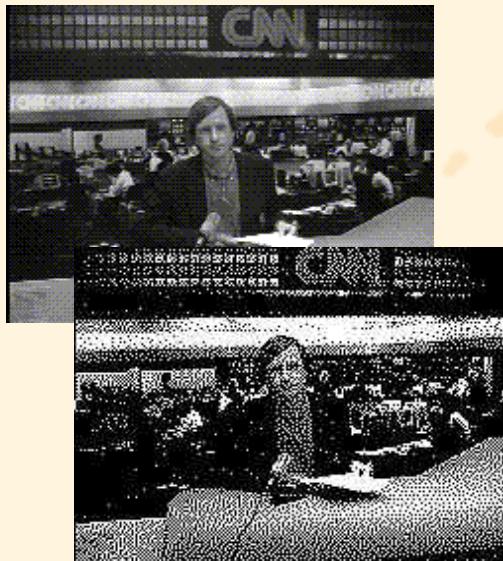
... explosive growth of the WWW ...
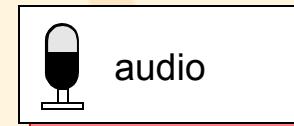
audio
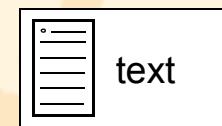
text

... explosive growth of the WWW ...
... explosieve groei van het WWW ...
... eksplozivni rast WWW ...
... crescita esplosiva della WWW ...

Specifying Alternative Behavior

SMIL `switch`

- At most one of the children of a switch element is played.

- The first acceptable element is chosen, so ordering should be best first.

```
<switch>
    <audio system-bitrate="44000" src="hi-res.aiff" />
    <audio system-bitrate="16000" src="low-res.aiff" />
    <text src="v-low-res.txt" />
</switch>
```

- If no element is suitable then no child of the switch is played.
  A catch-all choice at the end of the switch (with no test attribute)
  could be used.

Test Attributes

SMIL Test Attributes

- **`system-bitrate`**`=integer` presumed network bandwidth.

- **`system-language`**`=list of language names` denotes the intended language group.

- **`system-required`**`=extension name`. This will be an XML namespace in future versions.

- system-screen-size=screen-height x screen-width

- **`system-screen-depth="1|8|24|etc."`** gives the depth of screen colour palette the player is able to display.

Illustrating Test Attributes in Action

Demo:

- New Year's Demo

 — Multi-Resolution for Multi-Bandwidth
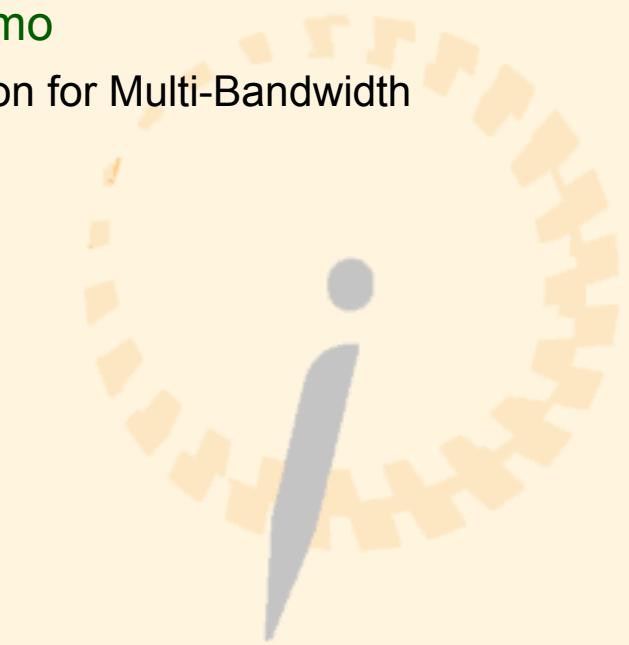
What is GR*i*NS?

A GRaphical INterface for SMIL

- developed to support the definition of SMIL
- adapted to meet the constraint's of Real's SMIL implementation

General Philosophy

- design applications based on Structure, not Time
- reuse components
- allow for flexibility in presentation delivery
- allow for integrated simulation and previewing
- isolate user for details of the encoding of SMIL

GR*i*NS Workflow
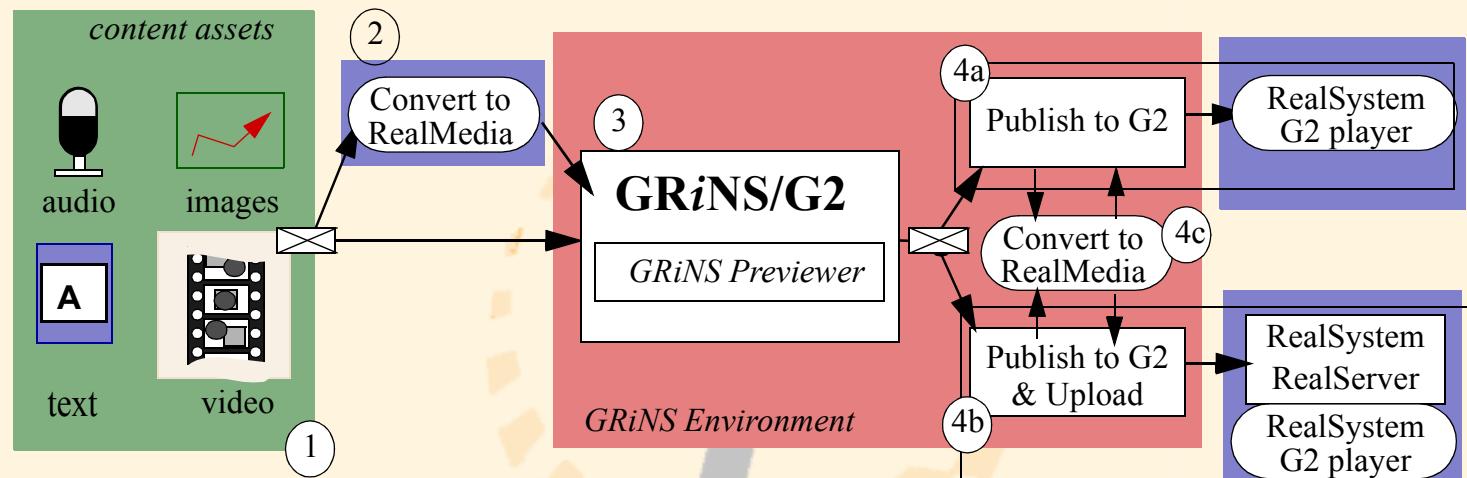
- Steps:
  - — 1: Gather Content
  - — 2: Optionally Pre-Convert to RealMedia
  - — 3: Design Structure / Layout
  - — 4: Publish

SMIL 2.0

Design Goals

- Increase amount of interaction in a document
- Increase flexibility of publishing a document
- Add animation support
- Add enhanced layout support
- More content control
- More sophisticated timing control
- Better cross-profile support

SMIL 2.0 Specification

The Good News:

- the spec provides a significant 'tightening' of SMIL 1.0
- the spec is modularized
- the spec is almost finished

The Bad News:

- the spec is complex
- the spec is large
  - — SMIL 1.0 Spec: 29 pages
  - — SMIL 2.0 Spec: 511 pages

The Good News:

- Implementations exist now for testing
  - — GR*i*NS/2.0 for Language; IE-5.5 for XHTML+SMIL

Examples of SMIL in Multiple Profiles

New Year Demo

- Standard SMIL 1.0 version already seen
- Native SMIL 2.0 version
- Exported to HTML+TIME version

The BBC Evening News

- Illustration of new timing semantics

Publishing the "Document"

Options:

- SMIL Language Profile
  - — GR*i*NS SMIL 2.0 player (out now)
  - — Real's RealPlayer *n* (out "soon")
- XHTML + SMIL Profile
  - — Microsoft's IE-5.5 (HTML+TIME, out now)
  - — Microsoft's IE-6 (out "soon")
- MPEG-4
  - — IBM's XMT uses SMIL as text format for MPEG-4
- Windows Media Player
  - — linearized version of a presentation via GR*i*NS

Closing Comments

GRiNS Provides an Integration Tool that Support Adaptivity

Content Editing is Enabled, but not Internally Implemented

GRiNS can be Tailored to meet the need of RTIPA

For Further Questions:
- mailto: dick.bulterman@oratrix.com