



SMIL: Multimedia on the Web

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Talk Outline



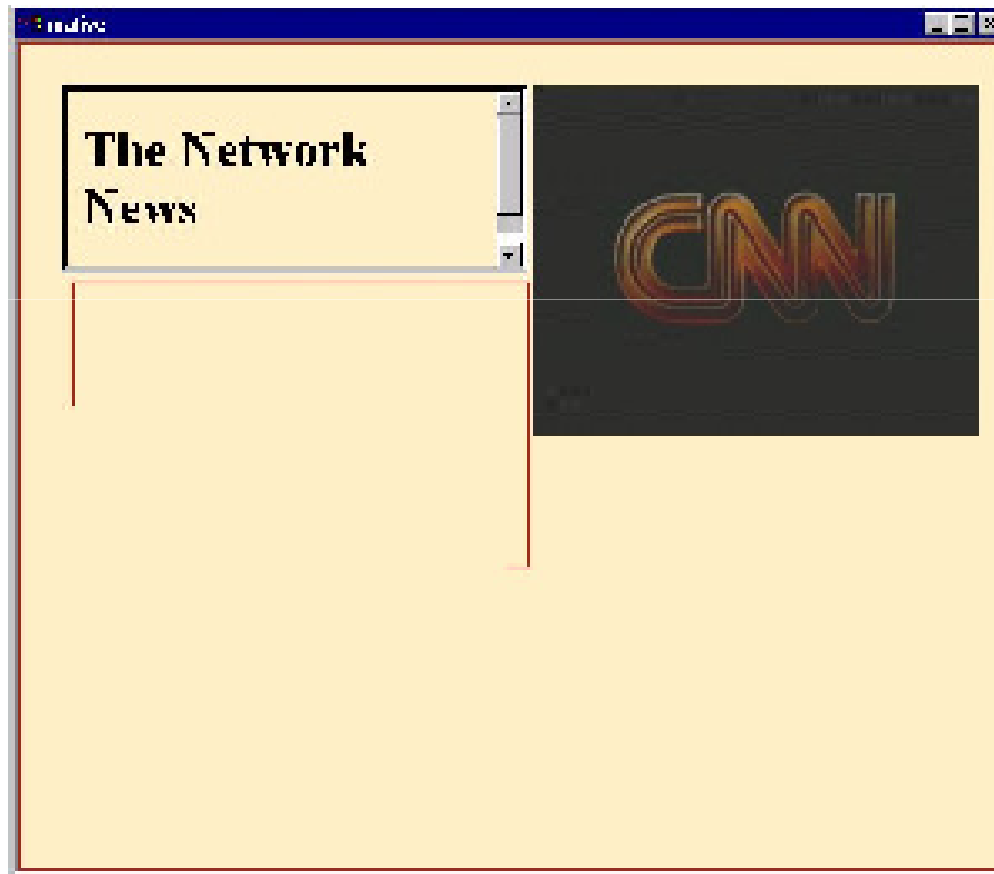
-
- Example SMIL Presentation
 - The SMIL Language
 - SMIL Tools
 - SMIL take-up
 - Microsoft's HTML+Time
 - SMIL V2 - the Future of synchronised streamed media
-



WebNews Demo - 1



HTML Text
News Title



Video of Logo
and Audio
Music Track



WebNews Demo -2



Opening Title
Disappears

Chart appears
when mentioned
in speech

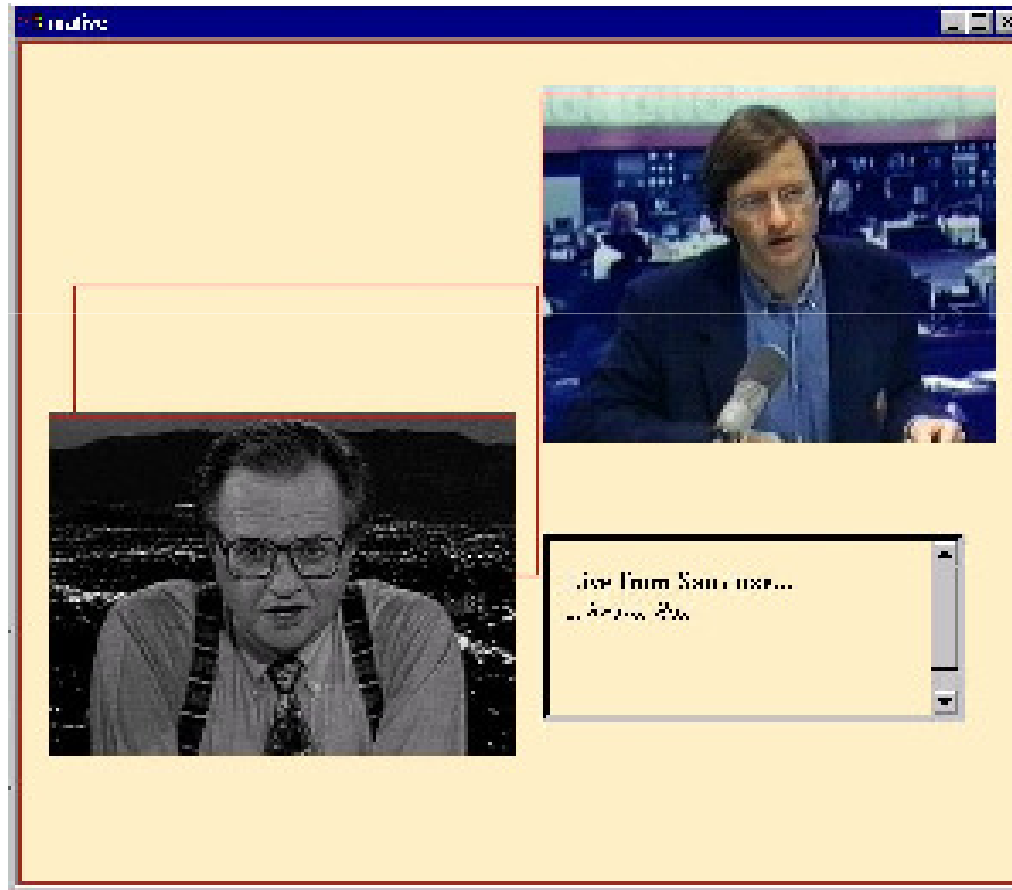
A screenshot of a web browser window titled "native". The main content area is light yellow. On the right side, there is a video player showing a man in a dark jacket and blue shirt speaking into a microphone. On the left side, a chart is displayed. The chart has a vertical axis with tick marks and a horizontal axis. The area under the curve is filled with red and blue colors. The chart is partially obscured by the video player.

Video of
Speaker

Audio of
Speaker



WebNews Demo -3



Reporter
Video &
Audio
Appears

Anchor
Audio &
Video

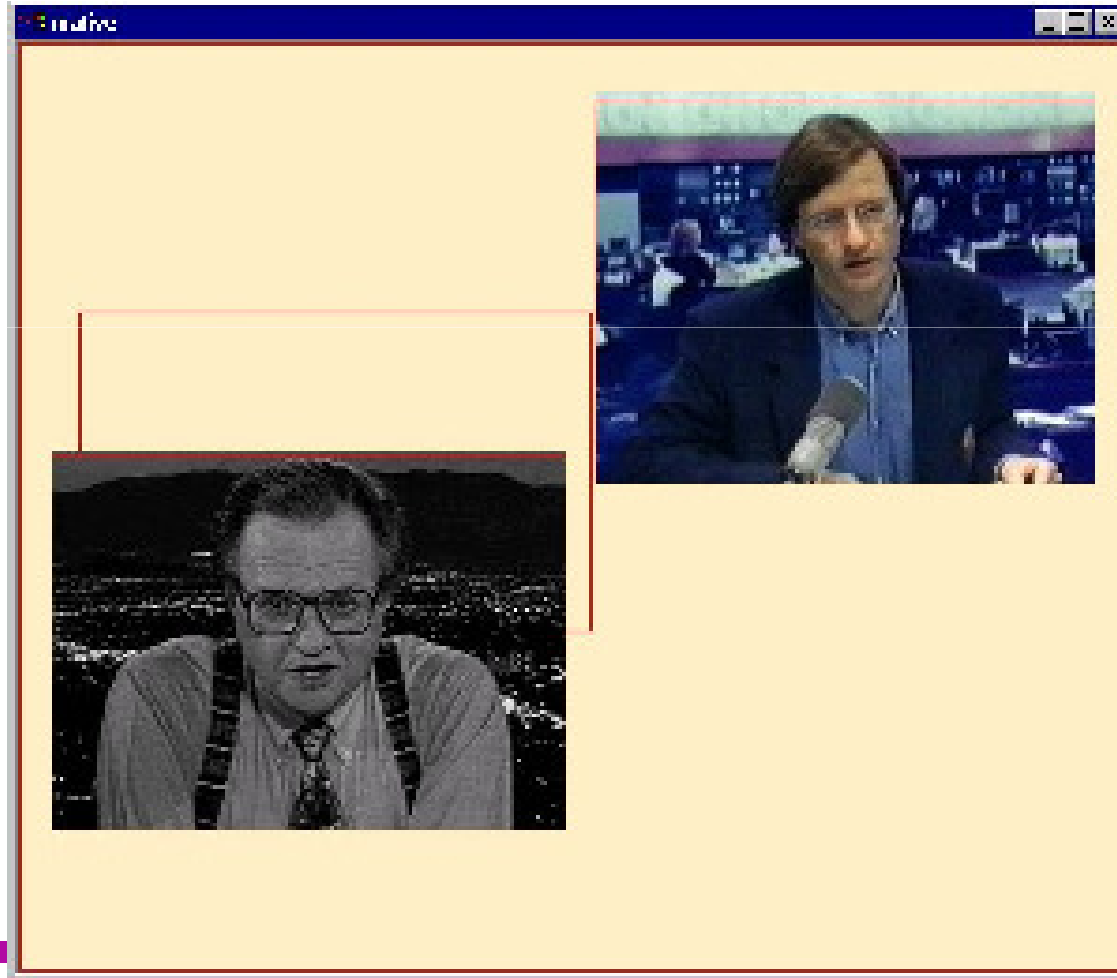
HTML Title for
Reporter
appears
at handover
then
disappears



WebNews Demo -4



Reporter
Audio &
Video



Anchor
Audio &
Video



WebNews Demo -5

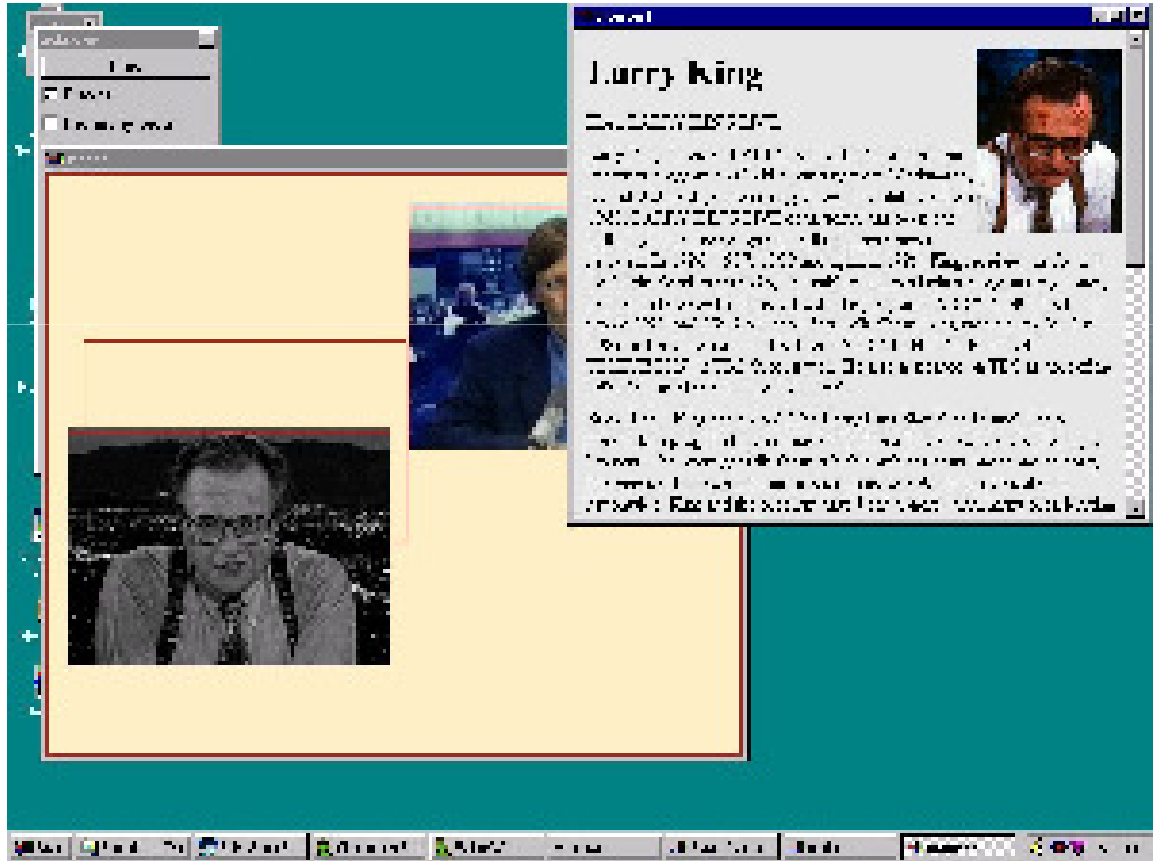


Image is
Anchor to
HyperLink

XML fork
link to
web page
of Reporter



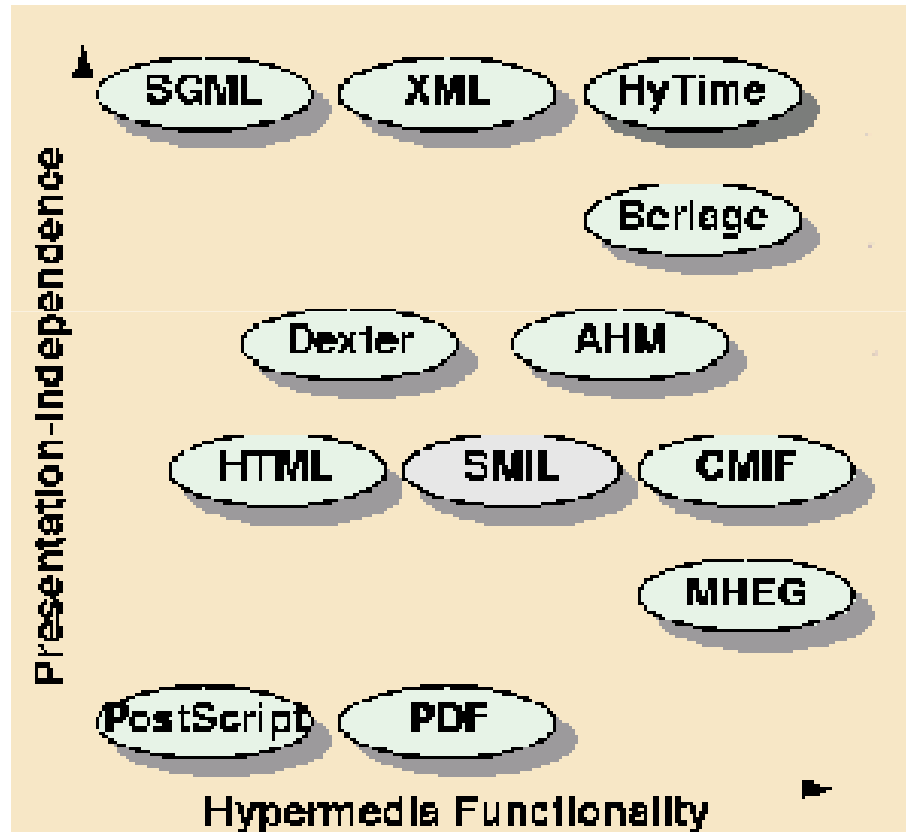
Available Technologies



-
- HTML/XML - no timing
 - DHTML (Java, CSS, DOM) - considerable programming effort, DOM standard
 - CD authoring tools - plug-in only
 - convert everything to video stream - RealVideo/MS NetShow
 - **New W3C multimedia language - SMIL**
-



SMIL Objectives



- Support 5 Constructs
 - layout
 - content
 - control/links
 - timing/synchronisation
 - tailoring
- Became W3C recommendation June 1998



SMIL Language -1



- Defined as an XML DTD
- declarative language like HTML, easier to learn & use than (DHTML: Java & DOM & CSS)
 - `<smil> <head> ... </body></smil>`
- include all 5 Multimedia Constructs

1 Layout

```
<layout>
<region id="V-Main" left="3%"
  top="44%" width="46%" height="40%"/>
</layout>
```



SMIL Language -2



2 Media Content - http, rtsp, etc., local file

```
<video region="R1" src="video.avi" />  
,  
<audio src="rtsp://sound.wav" />,  
<text src="text.html" />,  
<textstream /> e.g. tickers  
<animation />  
<ref /> - other media types
```



SMIL Language - 3



3 Media Timing/Synchronisation

```
<par>  
  <seq>  
      
      
  </seq>  
  <audio src="english.wav" />  
</par>
```

40+ attributes to set duration, synchronisation etc..



SMIL Language -4



4 Control

WWW, therefore limited to hyperlink navigation

```
<a show="new" href="./file1.smil#1">  
  <video id="Anchor" region="V-Main"  
    src="/mpeg/file2.avi"/>  
</a>
```

- also `<anchor>` statement for video anchors that are limited in both time and space
 - jump into or out of continuous media anchors
 - no anchor for audio - use scrolling text captions
-



SMIL Language - 5



5 Tailorability

<switch> statement and test attributes

```
<switch>
```

```
  <audio src="french.wav"    system-language="fr" />
```

```
  <audio src="english.wav"  system-language="en" />
```

```
</switch>
```

- select media content for different user languages , screen size, screen colour depth, comms bitrate (e.g. GSM vs LAN)
 - optional captions for users with hearing difficulties
 - optional dubbing for users with visual difficulties
 - different layouts for screen size (e.g. GSM phone).
-



SMIL Tools



- Browsers/Players
- Editors/ Authoring Tools



SMIL Browsers



- HPAS, Netscape Plug-in, Digital
 - research tool only
- Helio, Java Applet player - improving
- Productivity Works, LP Player
 - Audio Only, DAISY compatible
- Cresendo Forte - audio only- music
- Real Networks G2 Player
- Chameleon GRiNS Player



Real Networks - RealSystem G2



- Media Types : Realtext, RealPix (JPEG), RealAudio (aif, snd), RealVideo (mov, avi), RealFlash(fla), RealMedia
- \$29.99
- Windows NT, 95+, Mac



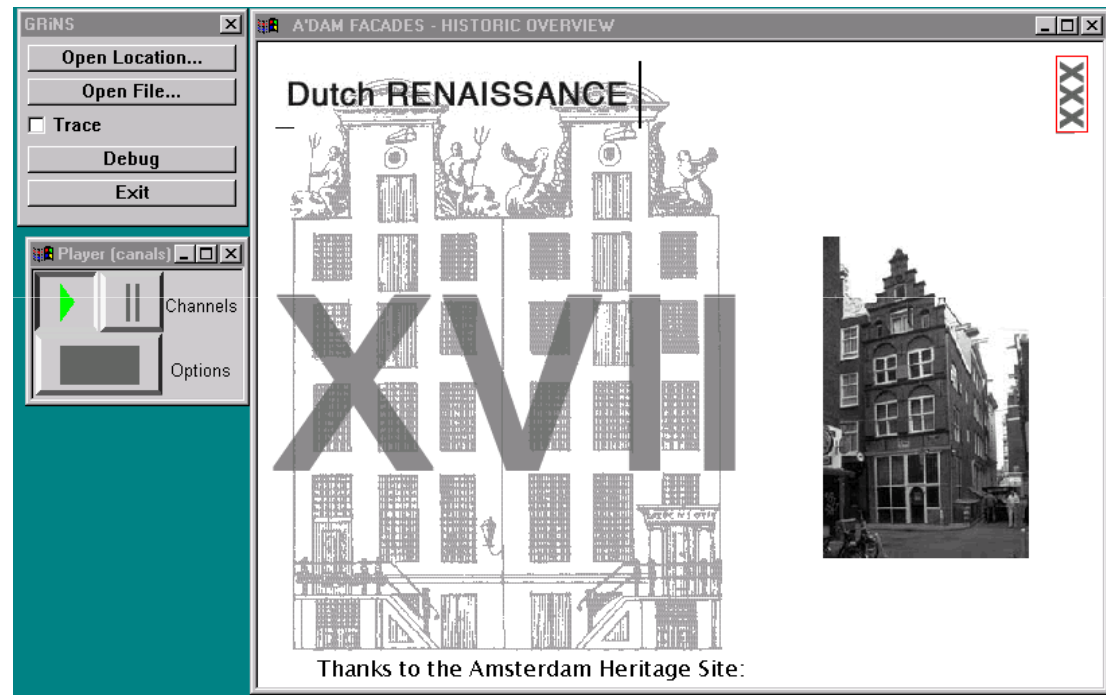
<http://www.real.com/>



GRiNS Player



- Media Types:
 - aiff, wav,
 - jpeg, png, tiff, bmp,
 - mpeg, qt(mov), avi,
 - html, txt
- Free
- Windows 95, 98,
NT, Solaris, SGI,
Macintosh



<http://www.oratrix.com/>



Player Design



- **Real Networks - G2**

- Optimised for limited bandwidth use

- few special media types

- media types pre-processed from standard ones

- RTSP - streaming protocol centered

- **GRiNS**

- Optimised for media re-use - database storage

- Original media types - many

- Soon to include RealNetworks media types



Authoring Tools

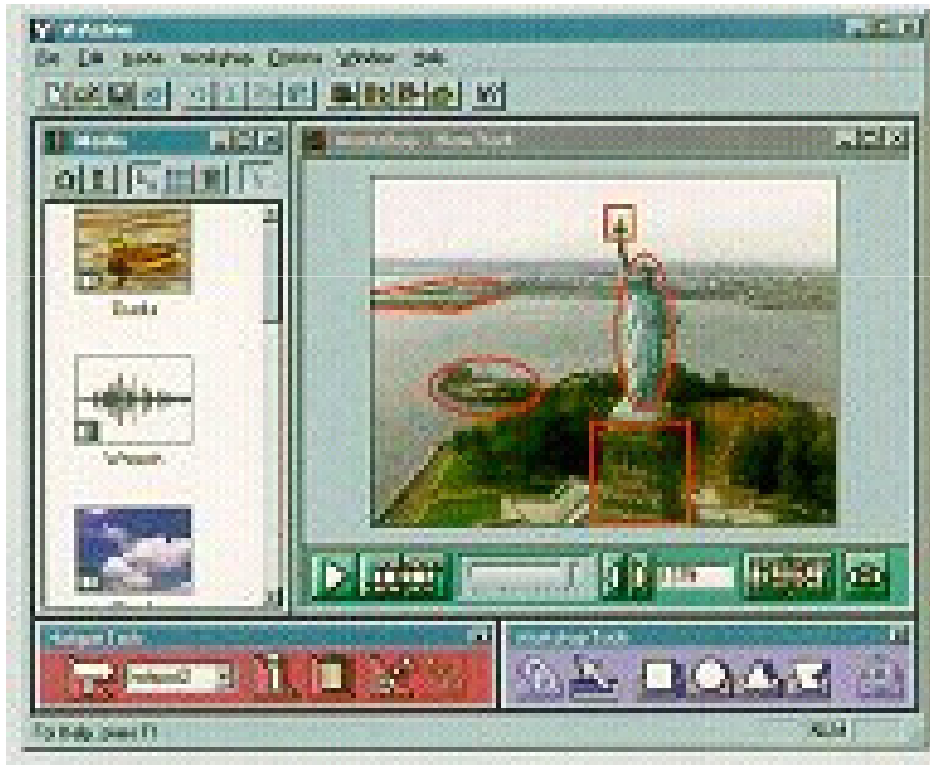


- [Tags](#) - Allaire SMIL Integration Pack
- [Audio only](#) - LP Studio
- [Template filling](#) - RealMedia SMIL Presentation Wizard
- [SMIL compatible multimedia editors](#)
 - G2 Objects for Macromedia Dreamweaver
 - Digital Renaissance T.A.G. Editor
 - Sausage Software, SMIL SuperTool
 - Veon V-Active
- [GRiNS Authoring Environment](#)

More
available
soon



The Veon V-Active Editor



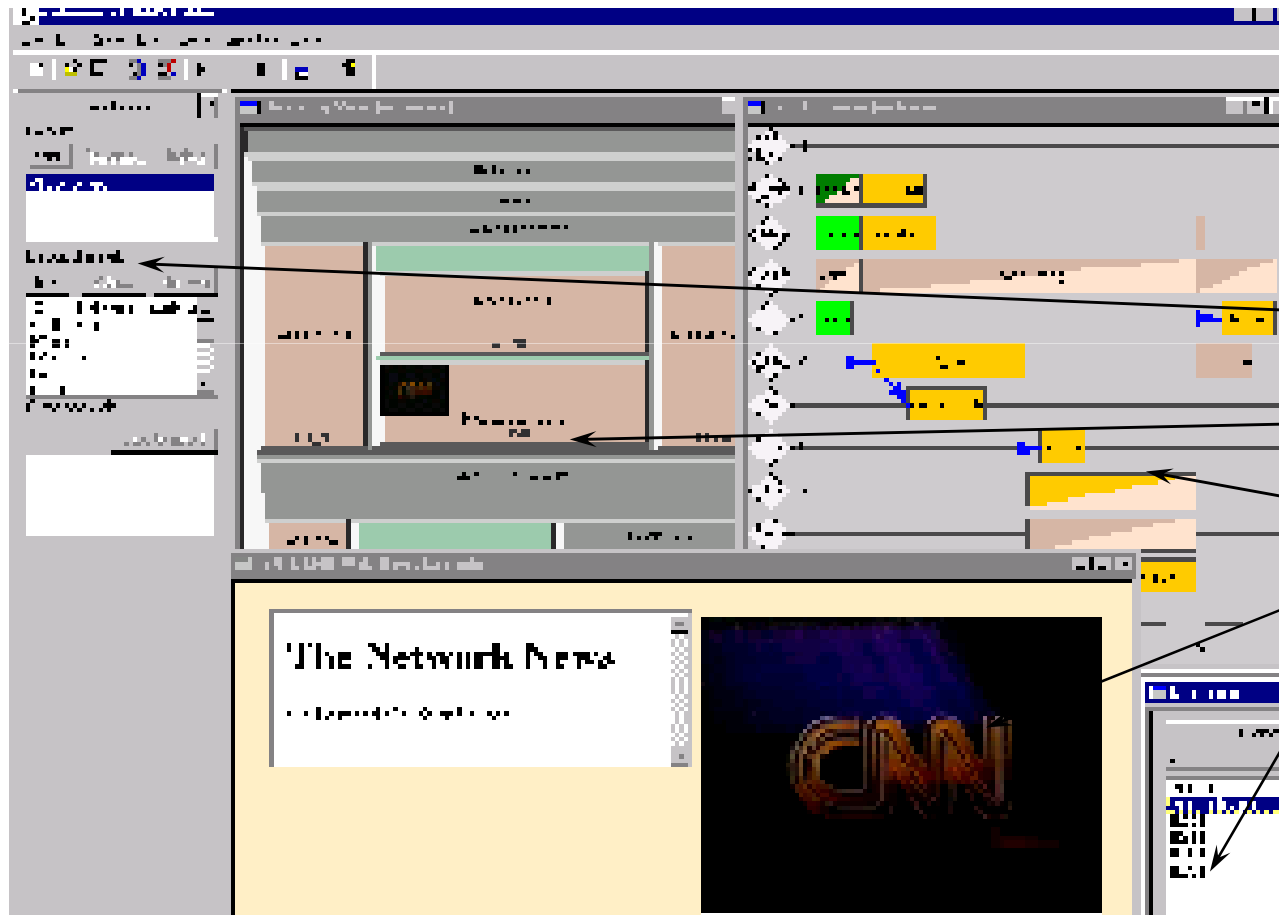
The tool includes templates designed to facilitate the production of SMIL presentations.

V-Active will not only encode audio and video, it features an integrated timeline utility.

Produces <anchor> statements for video objects.



GRiNS Editor



- 5 views for 5 constructs

Layout

Hierarchy

Timeline

End User

Links



SMIL Advantages



- Not a full programming language - DHTML
 - Declarative language - easy to learn
- Easy to convert to/from other languages - e.g., HyTime
- Controls whole player unlike CD-Rom tool plug-ins
- Less bandwidth than digital video
 - don't stream whole image, only continuous parts
- Commercial tools already exist
- Over 50 major media users use SMIL including CNN, Fox OnLine News etc..
- W3C Recommendation, not proprietary



Risks to SMIL Positioning



- Are SMIL layout & linking sufficiently consistent with XML, CSS and HTML ?
- Should alternatives be addressed at a more general level than SMIL ?
- Is a declarative language enough, or is scripting required by experts?
- Microsoft may promote HTML+TIME instead of SMIL, but RealPlayer G2 will ship with AOL V4.0



HTML + TIME



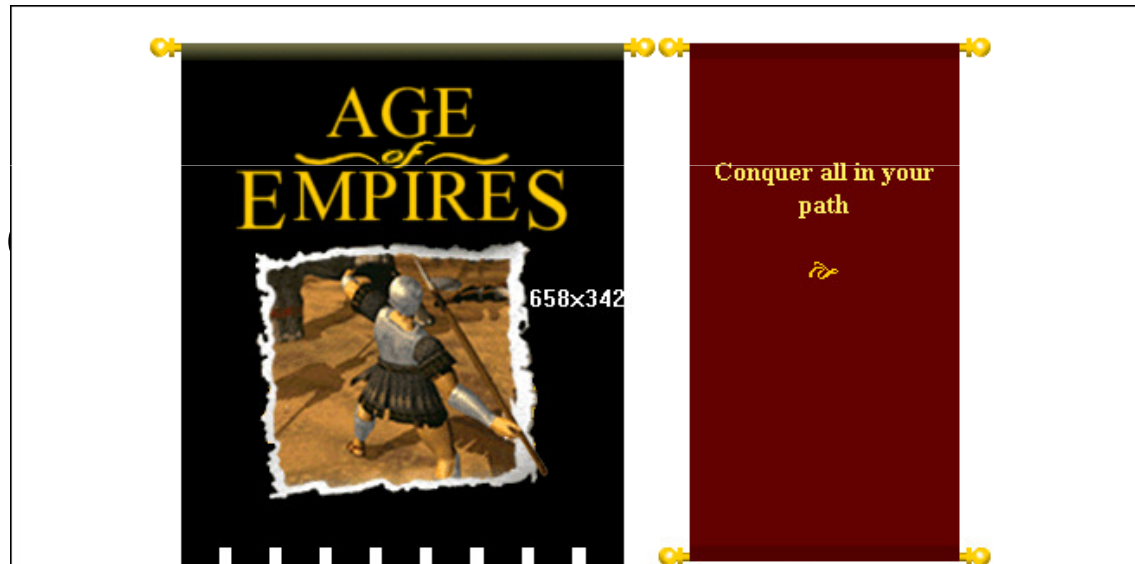
- Microsoft were represented on SMIL W3c working group but do not support SMIL yet
- Microsoft submitted HTML + TIME to W3C after SMIL was approved
- Microsoft include HTML + TIME in IE5
- Supports time model functionality for script programmers
- Works inside main browser, not in separate player window



HTML+Time Demo



- Sequence of image files, with audio files in parallel





HTML+TIME vs SMIL -1



HTML+Time

- Procedural - extensible for hackers
- works in main IE5 browser
- Microsoft supported
- MS-Visact Editor available

HTML+Time and SMIL

- XML implementations
- No Netscape support

SMIL V1.0

- Declarative - easy for novices
- plug-ins, separate browser etc..
- W3C recommendation
- Various Editors available



HTML+TIME vs SMIL -2



```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD W3 HTML//EN">
<HTML>
<HEAD>
<TITLE>HTML+TIME Sample</TITLE>
<XML:NAMESPACE PREFIX="t"/>
<STYLE>
/* hook up time tags */
.time { behavior: url(#DEFAULT#TIME); }
t\:SEQ { behavior: url(#DEFAULT#TIME); }
</STYLE>
</HEAD>
<BODY>
<!-- sequence of screenshots -->
  <t:SEQ >
    <IMG CLASS="time" t:TIMEACTION="display" SRC="p1.jpg" t:BEGIN="0" t:DUR="2" >
    <IMG CLASS="time" t:TIMEACTION="display" SRC="p2.jpg" t:BEGIN="0" t:DUR="2" >
    <IMG CLASS="time" t:TIMEACTION="display" SRC="p3.jpg" t:BEGIN="0" t:DUR="2" >
  </t:SEQ>
</BODY>
</HTML>
```

HTML+TIME
Version



HTML+TIME vs SMIL -3



```
<smil>
<body>
  <seq>
    
    
    
  </seq>
</body>
</smil>
```

SMIL V1.0
Version



SMIL - The Future



SYMM WG exists from Feb '99 to '00:

- Extensions to SMIL 1.0
 - e.g. transition effects, external clock synchronisation, streamed events, anchor indication by cursor, integrating Xlink,
- Modularisation of SMIL 1.0
- DOM for documents with SYMM
- Integration of SYMM functionality and HTML

Merging best of SMIL with HTML+TIME



Conclusions



-
- SMIL became W3C recommendation for synchronised media on WWW in June 1998
 - XML technology is a key component of SMIL
 - More efficient than alternative formats
 - SMIL is easy to learn and use
 - There are risks to the positioning of SMIL
 - Example browsers and editors available now
 - SMIL V2.0 should overcome positioning risks
-



Further Information - 1



-
- **SMIL V1.0 Specification** –
<http://www.w3.org/TR/REC-smil/>
 - **GRiNS player & editor** - <http://www.oratrix.com/>
 - **Real Networks G2 tools** - <http://www.real.com/>
 - **Latest SMIL information** - <http://www.justsmil.com/>
 - **W3C SMIL WG** - <http://www.w3.org/AudioVideo/>
 - **Draft of SMIL V2.0 (Aug 99)**
<http://www.w3.org/1999/08/WD-smil-boston-19990803/>
-



Further Information - 2



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- **Microsoft HTML + Time introduction:**
<http://msdn.microsoft.com/workshop/author/behaviors/time.asp>
 - **Microsoft HTML + Time demo:**
<http://msdn.microsoft.com/downloads/samples/Internet/imedia/wmrmedia/html+time/time.html>
 - **Microsoft VIZact HTML+Time editor**
<http://www.microsoft.com/vizact/home.html>
-