SMIL: Multimedia on the Web

Michael Wilson

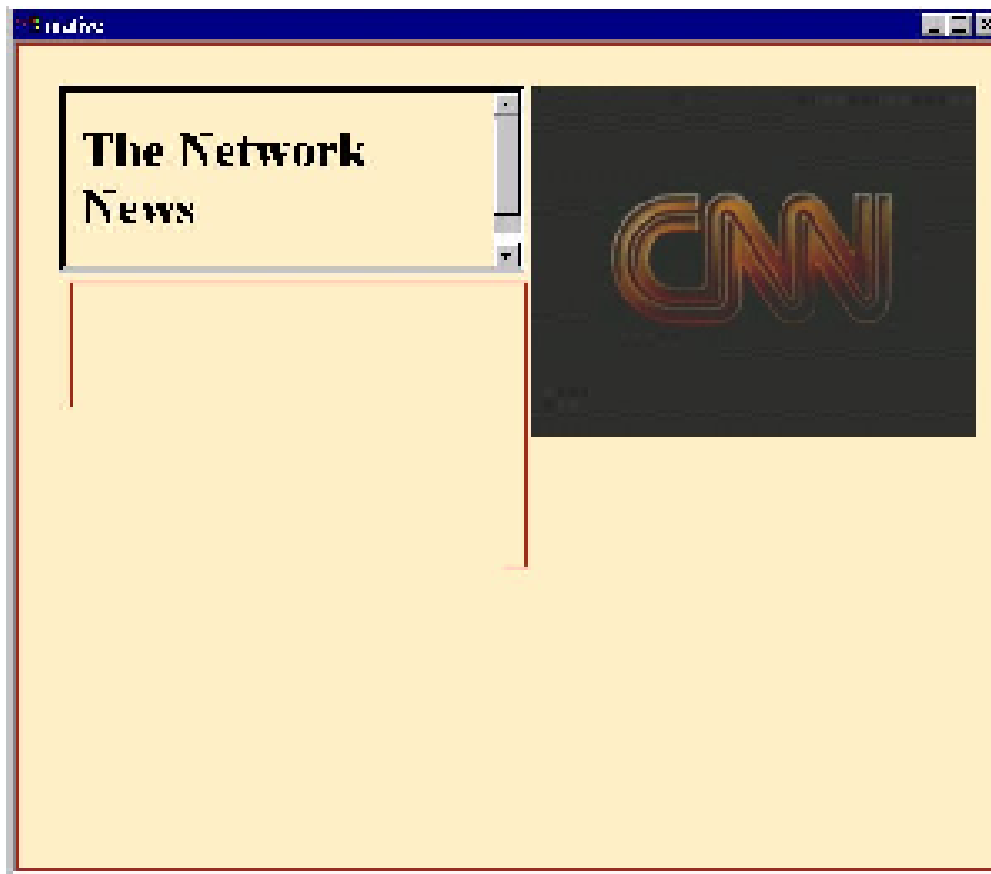CLRC Rutherford Appleton Laboratory

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Talk Outline

- Example SMIL Presentation
- The SMIL Language
- SMIL Tools
- SMIL take-up

WebNews Demo - 1

HTML Text
News Title

Video of Logo
and Audio
Music Track

The Network News

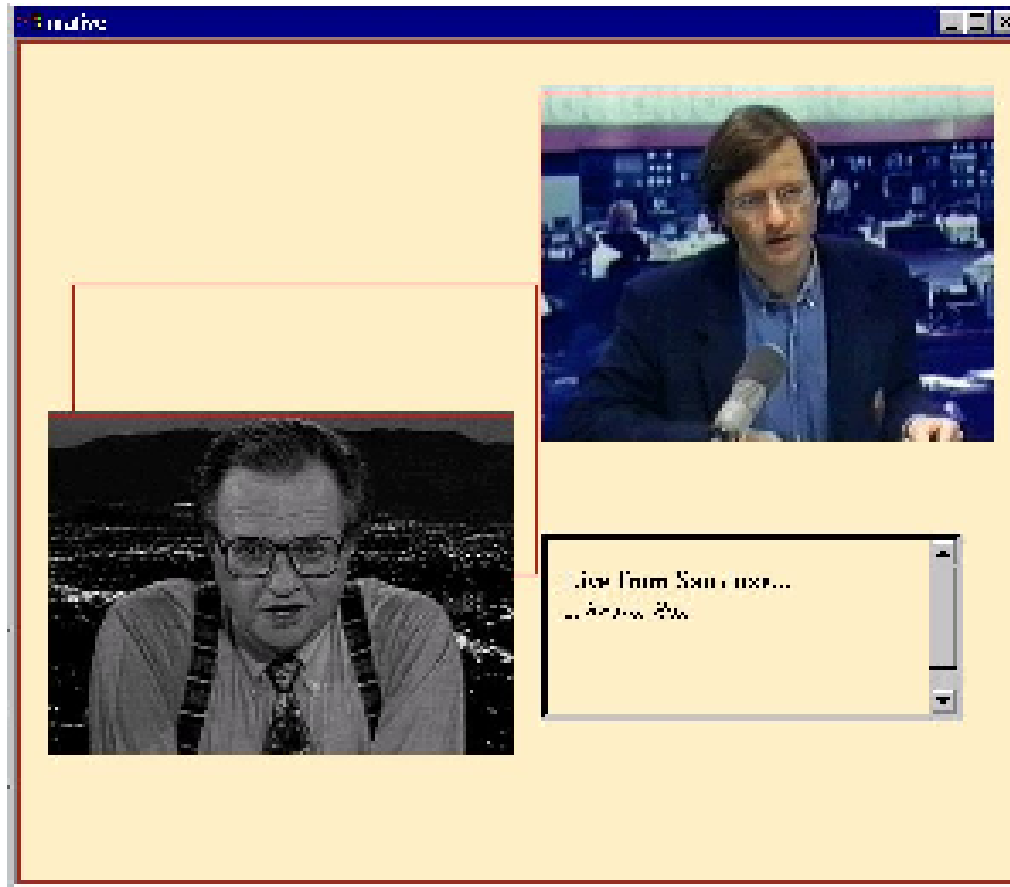# WebNews Demo -2

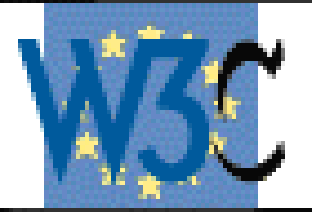Opening Title
Disappears

Chart appears
when mentioned
in speech

Video of
Speaker

Audio of
Speaker

WebNews Demo -3

Anchor Audio & Video

Reporter Video & Audio Appears

Live from Sanjose...
...Anchor Sue.

HTML Title for Reporter appears at handover then disappears

WebNews Demo -4
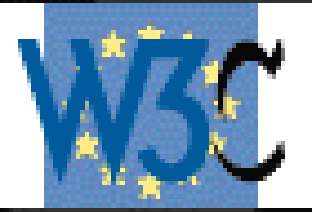
Anchor Audio & Video

Reporter Audio & Video
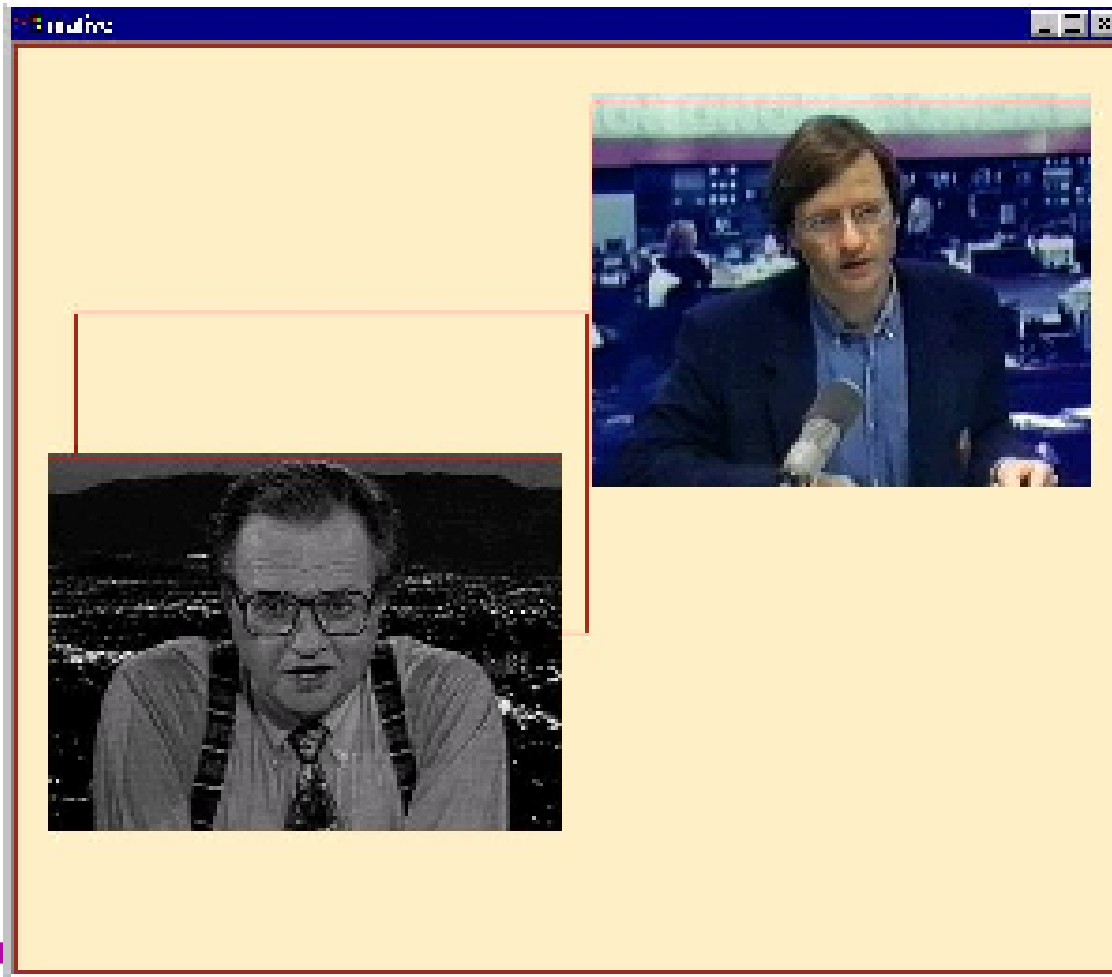
WebNews Demo -5

XML fork
link to
web page
of Reporter
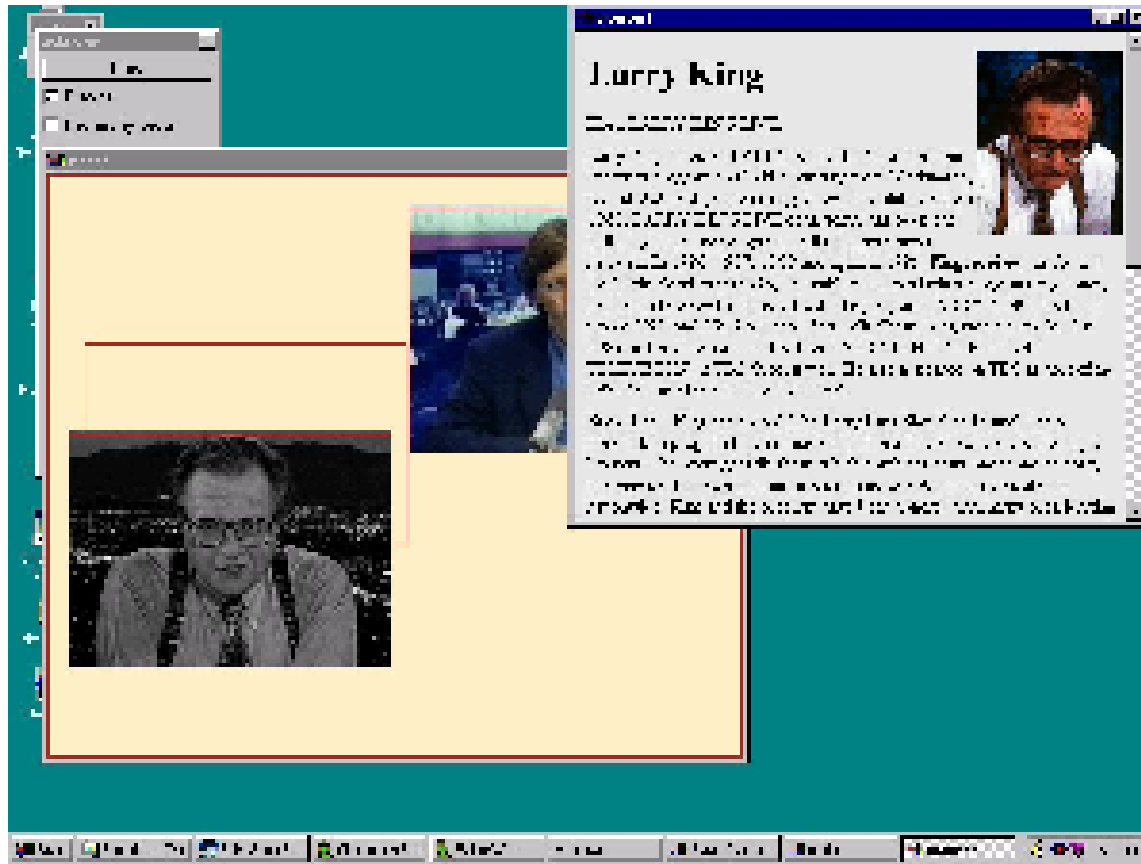
Image is
Anchor to
HyperLink

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
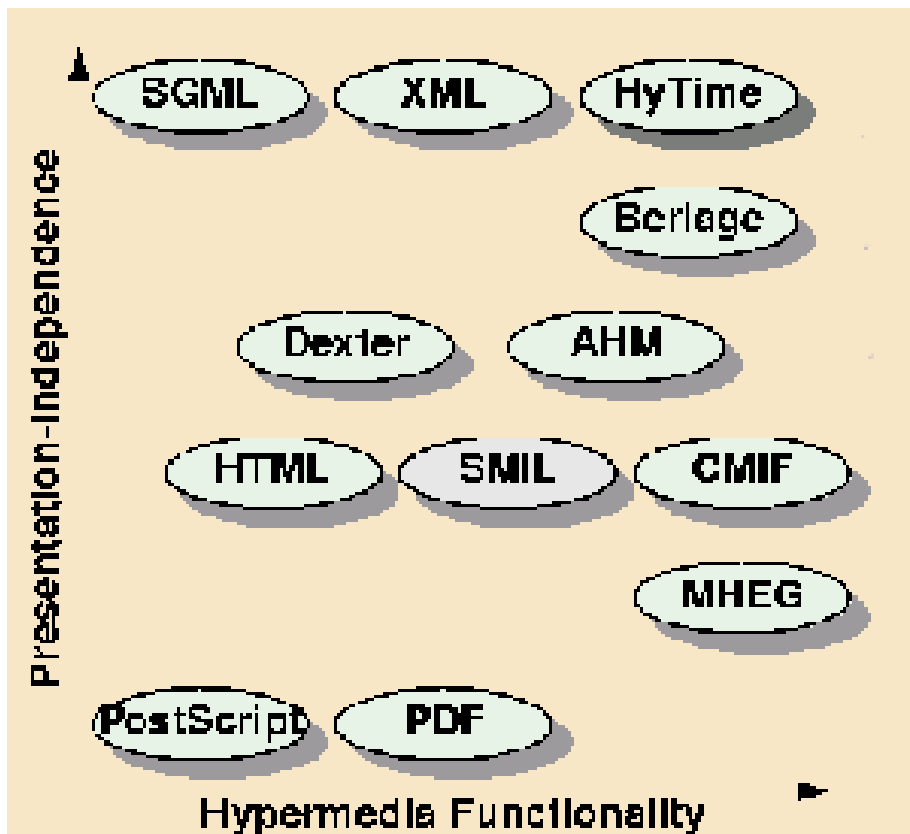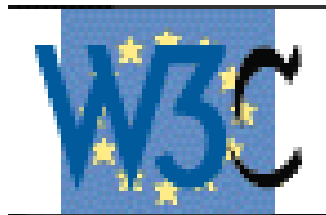
- Support 5 Constructs
  - layout
  - content
  - control/links
  - timing/synchronisation
  - tailoring

- 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"/>
<img src="http://image.jpg"/>,
<audio src="rtsp://sound.wav"/>,
<text src="text.html"/>,
<textstream /> e.g. tickers
<animation />
<ref /> - other media types
```

SMIL Language - 3
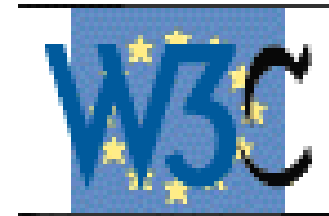
- **3 Media Timing/Synchronisation**

```
<par>
  <seq>
      <img src="slide1.jpg" dur="10s" />
      <img src="slide2.jpg" />
  </seq>
      <audio src="english.wav"/>
</par>
```

- 40+ attributes to set duration, synchronisation etc..

- **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 - very limited
- 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 due end '98

http://www.real.com/
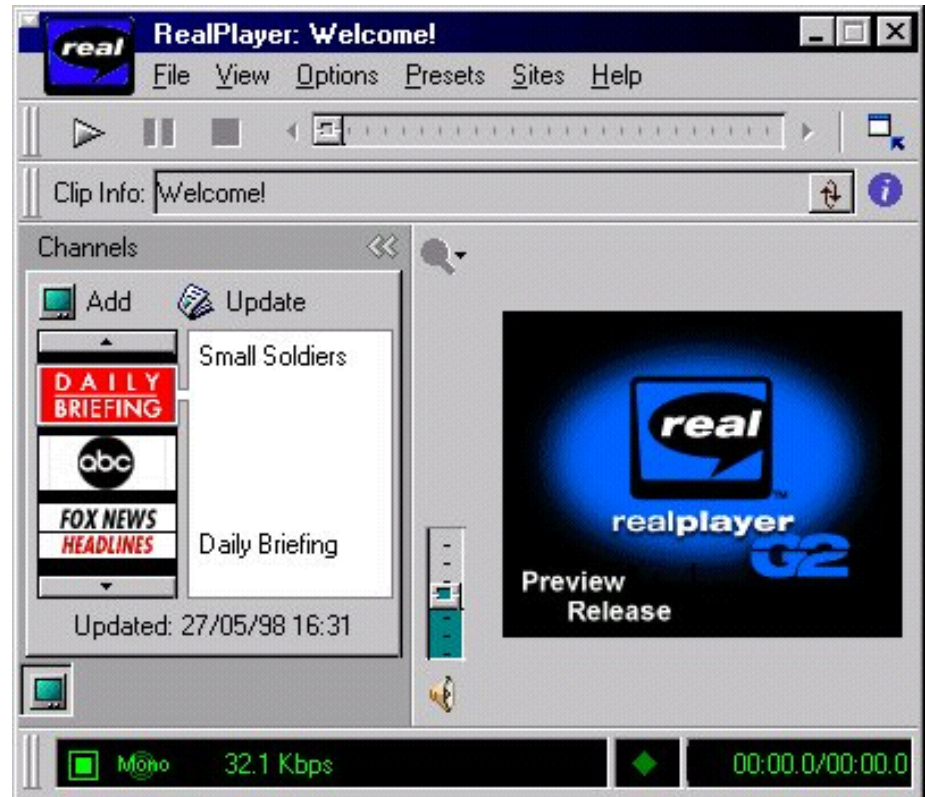
GR*i*NS Player

- Media Types:

aiff, wav,

jpeg, png, tiff, bmp,

mpeg, qt(mov), avi,

html, txt

- Free

- Windows 95, 98,
  NT, Solaris, SGI,
  Macintosh

http://www.cwi.nl/GRiNS
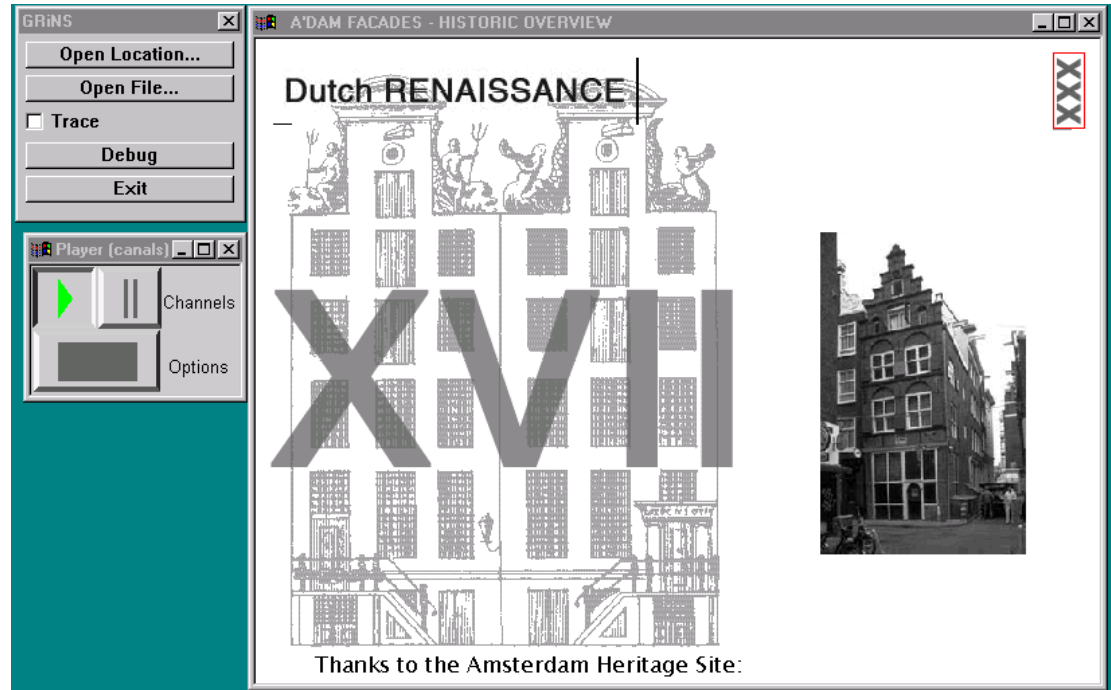
Player Design

- ## 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

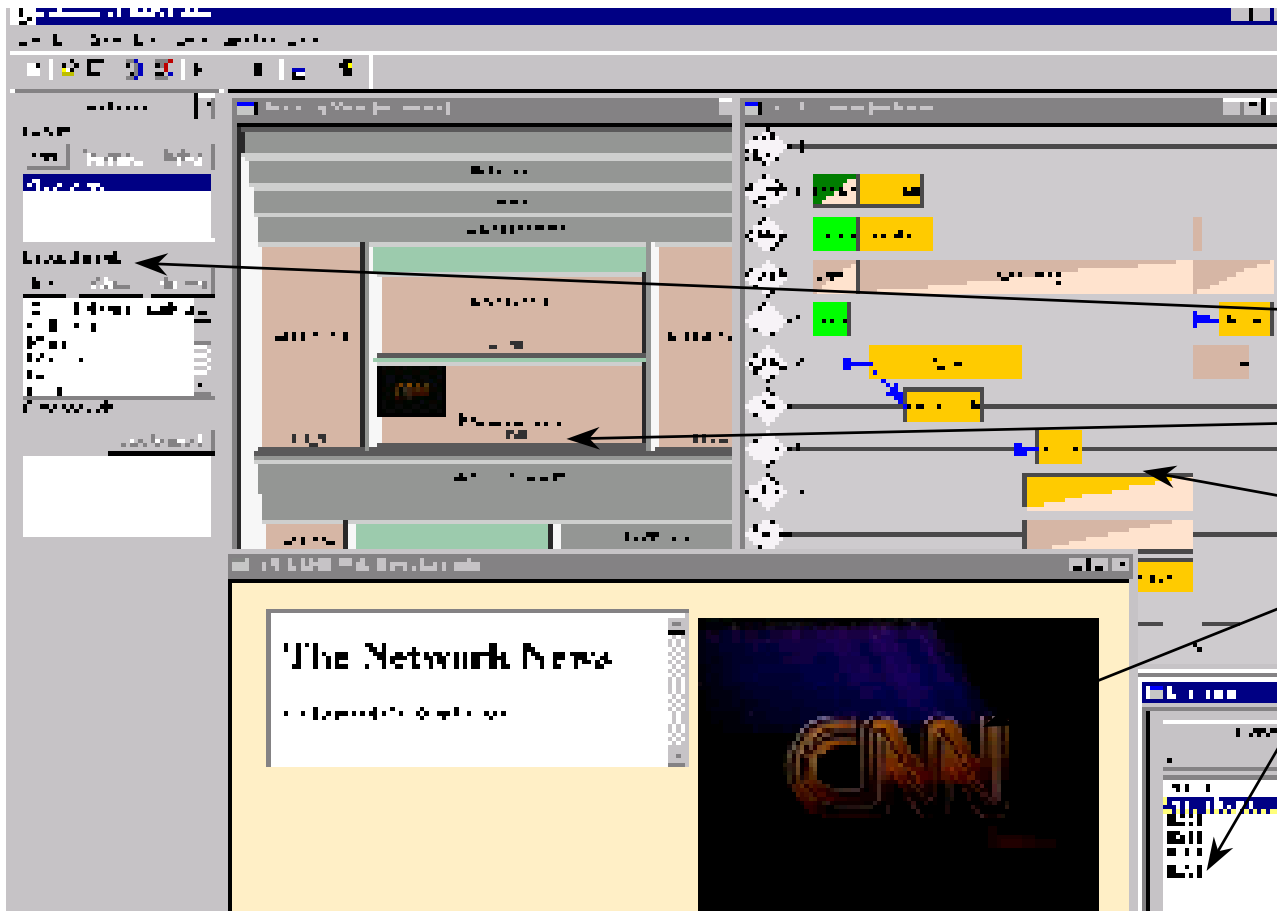# The Veon V-Active Editor

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

The Network News

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 proprietory

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

SMIL - The Future

- SMIL SIG exists now to produce errata
- SMIL WG is proposed from Feb '99 to '00 :
  - Extensions of SMIL 1.0
    - e.g. transition effects, external clock syncronsation, streamed events, anchor indication by cursor, integrating Xlink,
  - Modularisation of SMIL 1.0
  - DOM for documents with SYMM
  - Integration of SYMM functionality and HTML

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

Further Information

- SMIL Specification - http://www.w3.org/TR/REC-smil/

- W3C SMIL WG http://www.w3.org/AudioVideo/

- GRiNS player & editor -http://www.cwi.nl/GRiNS

- Real Networks G2 tools - http://www.real.com

- Latest SMIL information -http://www.justsmil.com

- Many other sites linked from these