Video on the Web: Experiences from SMIL and from the Ambulant Annotator

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- Using SMIL to structure video
  - Only minimal SMIL needed
- Example: video-based web application
Video on the Web

- Opaque blob
- Minimal scripting controls (play/stop/pause)
- Timing information is lost
- Even current HTML5 ideas don't help here
- All this is also true for audio, other timed media
What we want

- Ability to structurally mark up video without touching the data:
  - DRM issues
  - Enable end-user/third-party markup
- Enables symbolic addressing of subparts
- Enables time-based metadata
- Enables time-based annotation
SMIL video – minimal

<video src="biketour.mp4"/>
SMIL video - structured

<seq>
  <video clipEnd="14s" src="biketour.mp4"/>
  <video clipBegin="14s" clipEnd="32s" src="biketour.mp4"/>
  <video clipBegin="32s" src="biketour.mp4"/>
</seq>

Plays back identical (modulo player bugs:-) to single <video> tag of the previous slide.
SMIL video – addressing

<seq>
  <video xml:id="intro" clipEnd="14s"
        src="biketour.mp4"/>
  <video xml:id="hotels" clipBegin="14s"
        clipEnd="32s" src="biketour.mp4"/>
  <video xml:id="tour" clipBegin="32s"
        src="biketour.mp4"/>
</seq>

Now we can jump into the middle of the video.
SMIL video – metadata

<seq>
  <video id="intro" />
  <video id="hotels" clipBegin="14s"
        clipEnd="32s" src="biketour.mp4">
    <meta name="description" value="Hotel Information"/>
  </video>
  <video id="tour" />
</seq>

Now we have time-based metainformation.

(we could have used RDF in this example too, but unfortunately the slide is not big enough:-)
SMIL video – linking

<seq>
  <video id="intro" .../>
  <video id="hotels" clipBegin="14s"
        clipEnd="32s" src="biketour.mp4">
    <area begin="2s" end="5s" shape="rect"
          coords="120,100,400,150"
          href="tram-schedule.html"/>
  </video>
</seq>

And we have hyperlinks with temporal and spatial boundaries.

Note: <area> times are relative to parent <video>.
And we can add time-based annotations.
Case study – Video in a web app

- Guided tourist tour, basically a linear video
- with optional content (user selectable)
- Topics of interest
- Subtitles
- video timeline controls webpage content
- Hyperlinks to background info
- Advertisements
Implementation overview

- Webpage with XForms and embedded SMIL 3.0 CR player
- All logic is declarative
- Only very localised scripting
- Reusable
Demo video

- Adapting video to preferences
- also while playing
- Video timeline controls webpage
- GPS locations
- links to additional material
Video

No-Budget Amsterdam Bike Tour

Introduction
This page gives you some tourist information on Amsterdam. Using the checkmarks you can select the type of things you are interested in, and the video presentation below will adapt to skip information that is not relevant to you.

In addition, if a subject really interests you, you can pause the presentation and use the links and buttons below the video to find more in-depth information.

Select your preferences
Dialog here TBD.

Select the topics that interest you:

<table>
<thead>
<tr>
<th>Hotel Information</th>
<th>Museums and other culture</th>
<th>Shopping</th>
<th>Entertainment (including adult)</th>
<th>Subtitles</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Start

You can change these settings while the presentation plays, and it will try to adapt to your new choices as soon as possible.

SMIL presentation

GPS coordinates
Architecture

XForms document

Model, instance

SMIL document

SMIL State

XML document

shared data
SMIL influences HTML

Time

SMIL
- Scene1
- Scene2
- Scene3
- Scene4

HTML
Show new link

Data
var=www.example.com
XForms influences SMIL

Time

SMIL | Scene1 | Scene2 | Scene3 | Scene4
---|---|---|---|---

XForms | User interaction

Data | var2=1 | var2=0

Is var2 true?
SMIL State advantages

- Clean separation: the data is the API
- Replace Google Maps by MS Maps
- Use another ad service
- reuse
- Some scripting apps can now be done declaratively
- reuse, again
Conclusions

- SMIL allows timed media to be first-class citizen on the web
  - by adding structure! without touching it!
- SMIL 3.0 State enables time-based web apps