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>
  <video id="tour" .../>
</seq>
```

And we have hyperlinks with temporal and spatial boundaries.

Note: <area> times are relative to parent <video>.

SMIL video - annotation

```
<seq>
  <video id="intro" .../>
  <par>
    <video id="hotels" clipBegin="14s"
           clipEnd="32s" src="biketour.mp4"/>
    <smilText region="caption">
     Hotel Information
    </smilText>
  </par>
  <video id="tour" .../>
</seq>
```

And we can add time-based annotations.

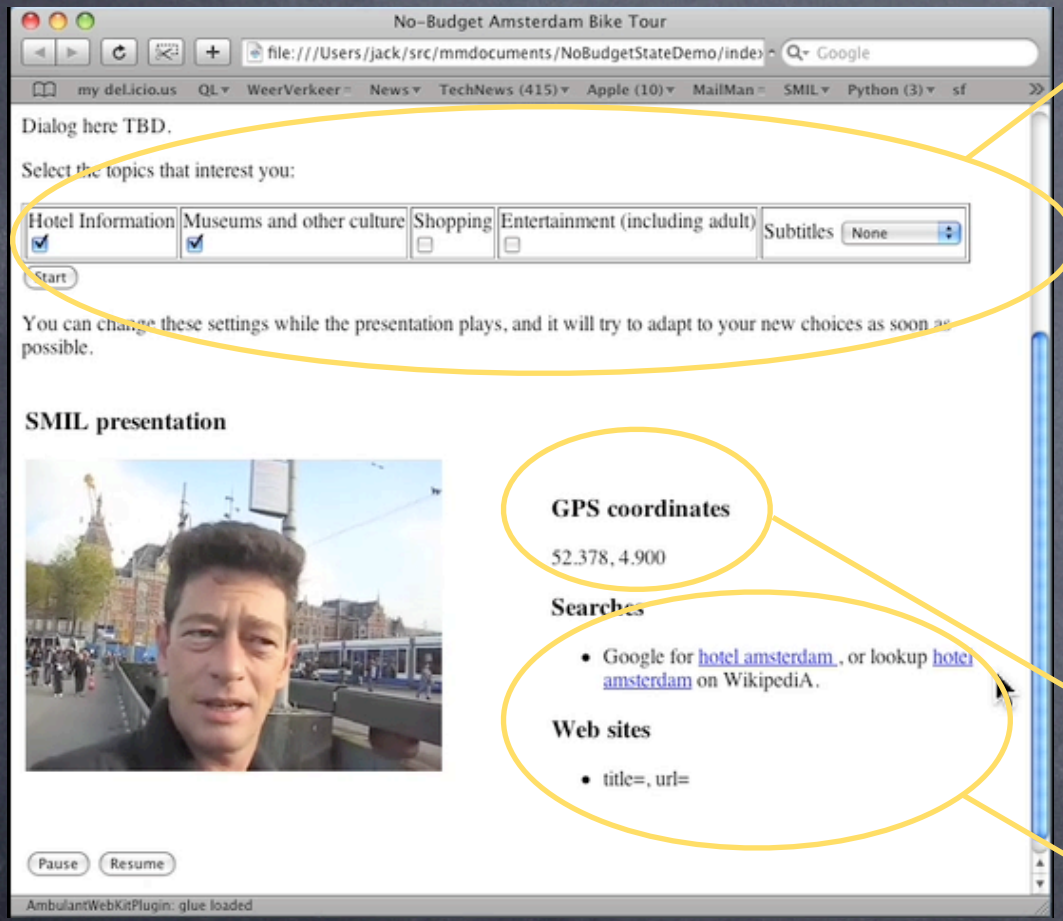
Case study - Video in a web app

- 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

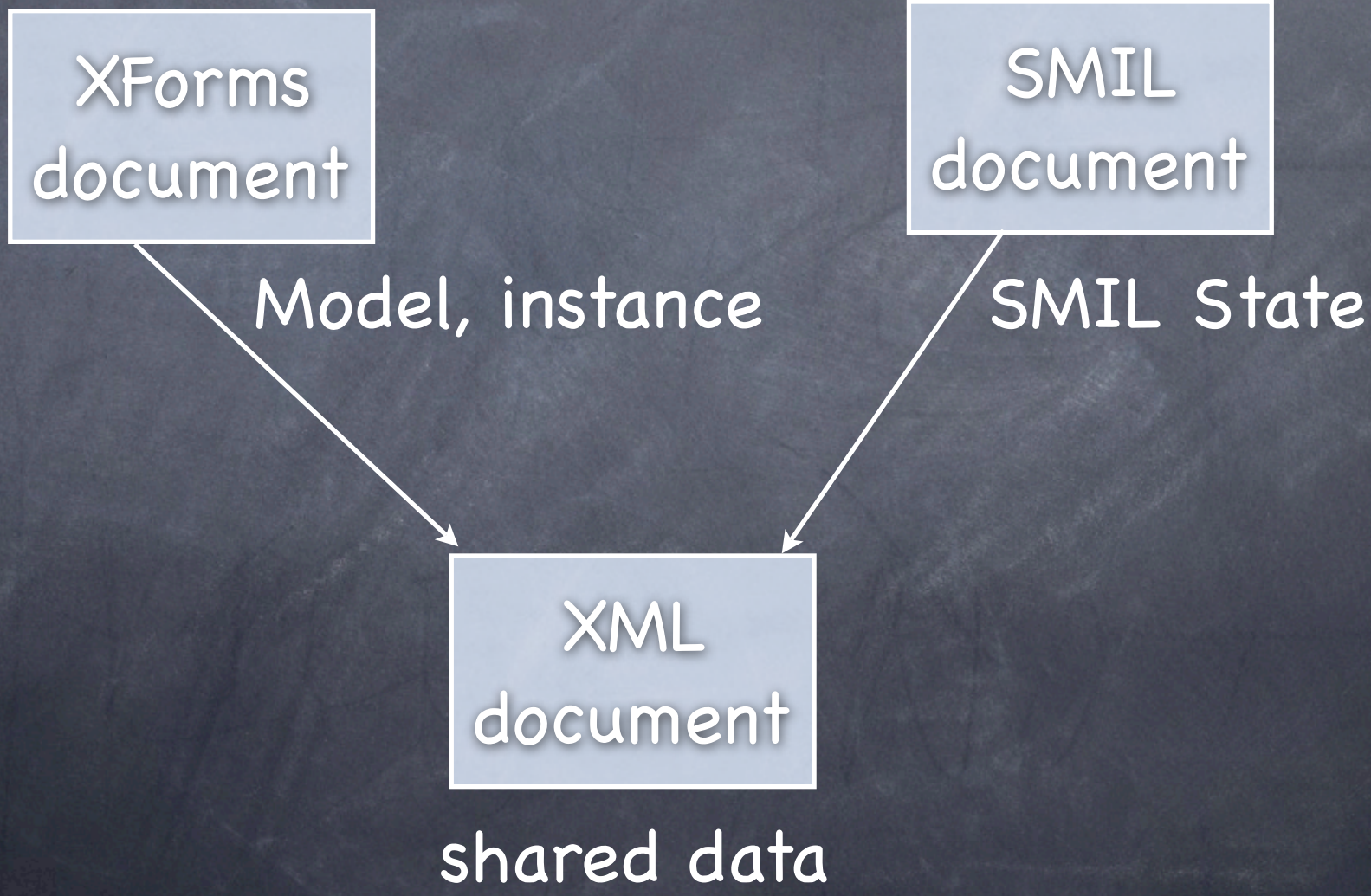


- Adapting video to preferences
  - also while playing
- Video timeline controls webpage
- GPS locations
- links to additional material

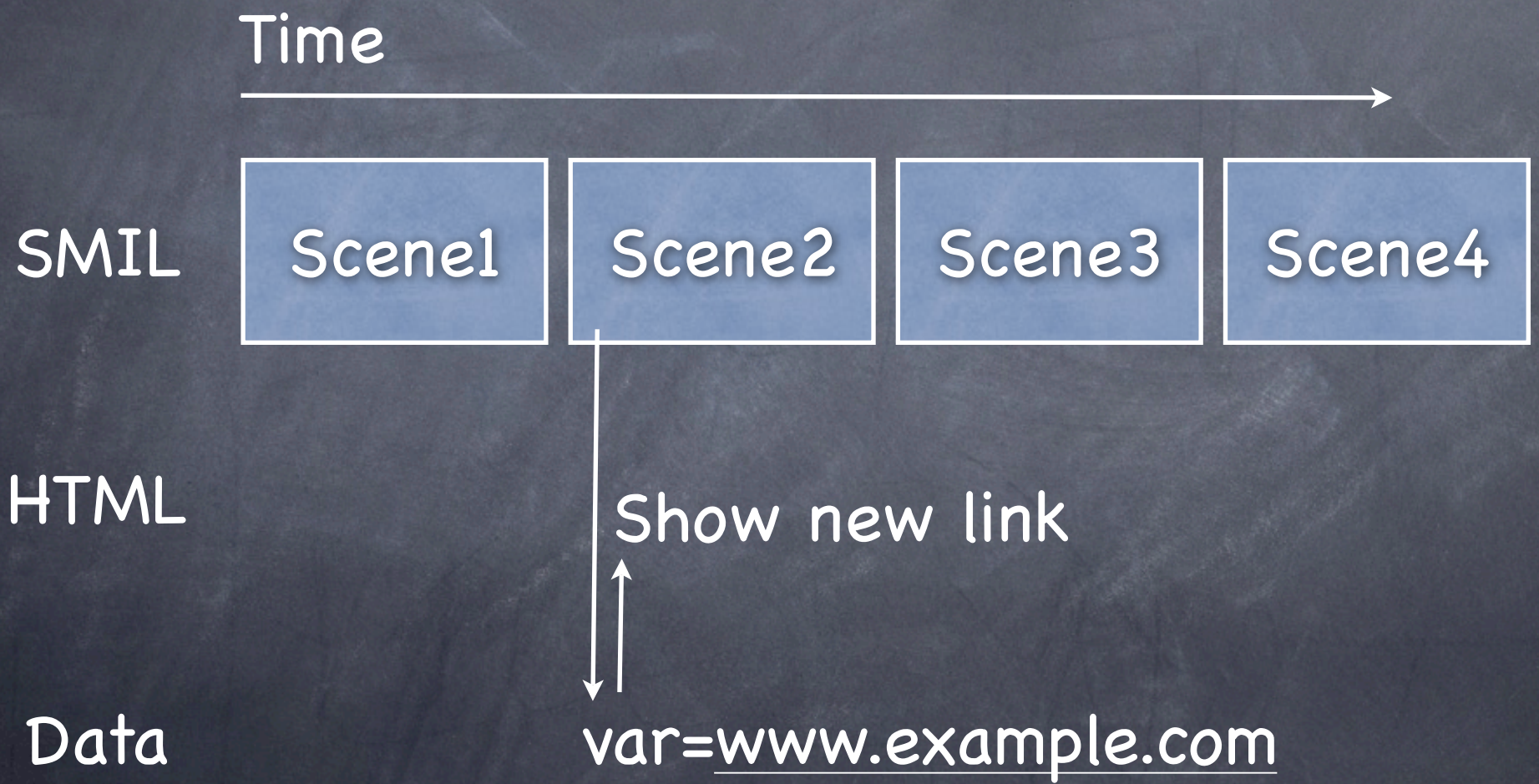
Video

No-Budget Amsterdam Bike Tour
file:///Users/jack/src/mmdocuments/NoBudgetStateDemo/index
Google
my del.icio.us
QL
WeerVerkeer
News
TechNews (415)
Apple (10)
MailMan
SMIL
Python (3)
sf
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:
Hotel Information
Museums and other culture
Shopping
Entertainment (including adult)
Subtitles
None
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
Ambulant Plugin: Loaded

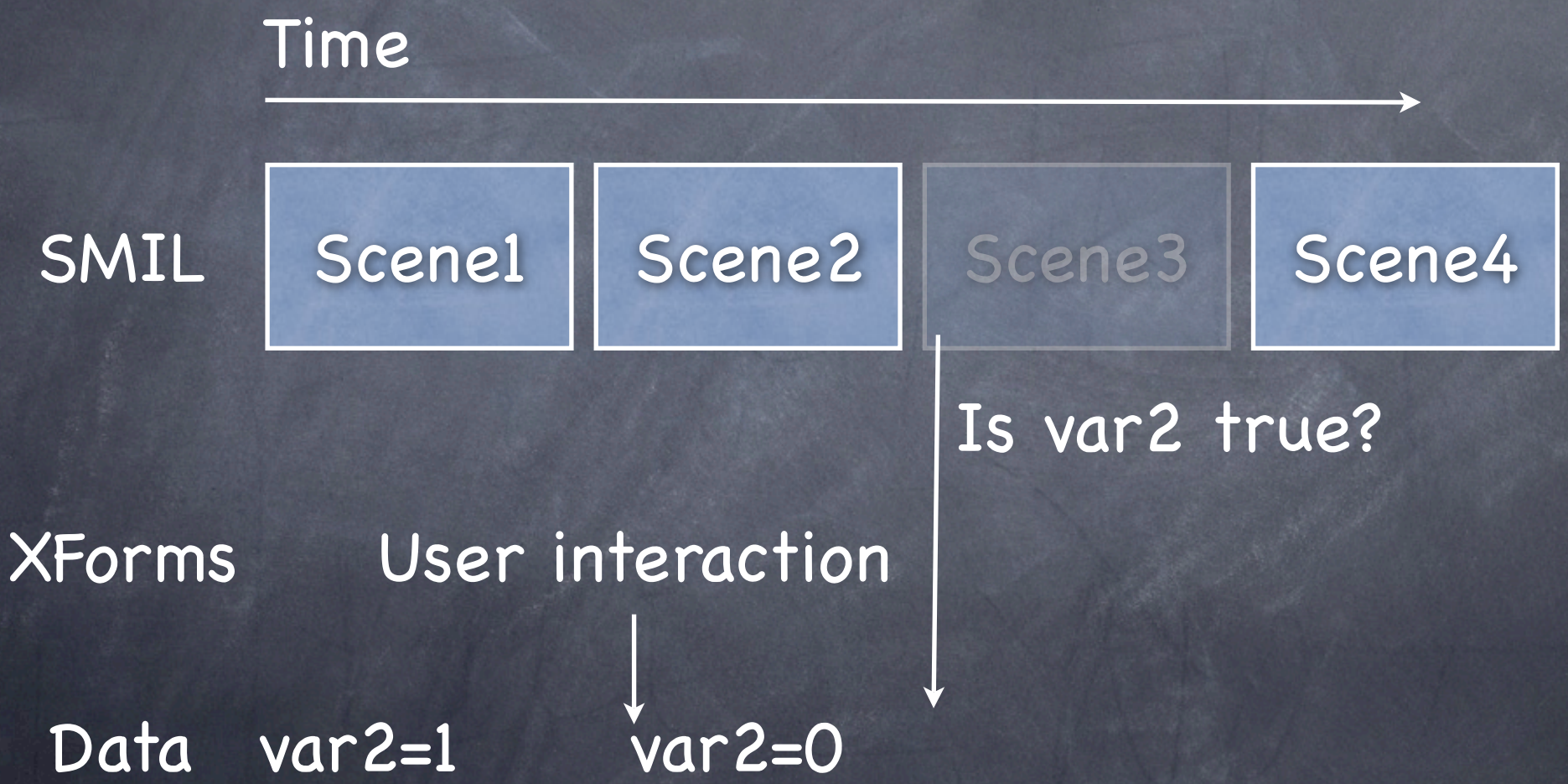
Architecture



SMIL influences HTML



XForms influences SMIL



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