

SMIL Training

AlQuds Open University
Avicenna Virtual Campus
May 21st 5:30-10:00pm

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Prepared by: Dima J. Damen
May 2005

Training Schedule

- Introduction to XML and SMIL
- SMIL
- Converting Video to RealMedia
- Developing a session using SMIL

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Introduction to XML

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XML

- eXtensible
- Markup
- Language

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XML file structure

A basic breakdown of xml syntax:

- Each element has either a start-tag and end-tag or an empty-element tag.
- Tags are identifiers enclosed within less-than (<) and greater-than (>) characters.
- Elements are ended with a forward-slash (/) character, either at the beginning of an end-tag or at the end of an empty-element tag.
- Elements may have one or more attributes. Each attribute is a name/value pair in the form name="value" (The value must be enclosed in quotes).
- A set of start and end tags surround the text (or other elements) which they're marking up. (Empty-element tags contain all of their information as attributes.)
- Elements may contain other elements (this is called nesting).

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XML file structure

```
<xml>
  <student>
    <no value="10"/>
    <name>Ahmad</name>
  </student>
</xml>
```

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Difference between XML and HTML

- Xml tags are case-sensitive. This means that the tags <smil> and <SMIL> are *not* the same.
- Empty-element tags require a forward-slash (/) at the end of the tag (before the greater-than (>) character).
- Elements with a start-tag *must* have a corresponding end-tag.

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Difference between XML and HTML

- XML -> Schemas for different purposes.
- Schemas are available online in special repositories.
- Examples of XML-related schemas

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Introduction to SMIL

- Synchronized Multimedia Integration Language
- pronounced "smile"
- a language for describing audiovisual presentations
- Television-style content to the web.

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What is SMIL?

- A text-based markup language used to describe the temporal, positional, and interactive behavior of a multimedia presentation.
- free and open source

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What is SMIL?

- The W3C adopted and published the smil 2.0 recommendation August 2001. (SMIL 1.0 1998)
- supported by the World Wide Web Consortium (W3C), RealNetworks, IBM, Intel, Macromedia (now Adobe), Microsoft, Netscape/AOL, Nokia, Ericsson, Canon, Panasonic, Philips, and others

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What is SMIL?

- Editing software is available from companies such as Adobe, RealNetworks, DoCoMo, and Smil Media as well as from Open Source organizations.
- Player software is available for a number of computer platforms, including hand-held devices.
- We would use RealPlayer as our player software.

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SMIL advertised advantages

- Stream clips stored on different servers
- Lay out a presentation
- Time and control a presentation
- Stream different presentations to different audiences.
- Display special effects.

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SMIL file structure

- SMIL documents are actually XML documents which conform to the SMIL XML DTD.

```
<?xml version="1.0"?>
<!DOCTYPE smil PUBLIC "-//W3C//DTD SMIL 2.0//EN"
"http://www.w3.org/2001/SMIL20/SMIL20.dtd">
<smil>
</smil>
```

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SMIL File Structure

- Attributes of the smil tag:

```
<?xml version="1.0"?>
<!DOCTYPE smil PUBLIC "-//W3C//DTD SMIL 2.0//EN"
"http://www.w3.org/2001/SMIL20/SMIL20.dtd">
<smil
xmlns="http://www.w3.org/2001/SMIL20/Language"
xml:lang="en" title="SMIL template">
</smil>
```

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SMIL File Structure

```
<?xml version="1.0"?>
<!DOCTYPE smil ... >
<smil xmlns="http://www.w3.org/2001/SMIL20/Language" xml:lang="en" title="SMIL template">
  <head>
    <!-- Layout -->
  </head>
  <body>
    <!-- media blocks -->
  </body>
</smil>
```

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Notes on SMIL

- All smil tags are lower-case except when the tag is considered two words, in which case the second word is capitalized (as in <animateMotion>).
- <!-- for comments just like HTML -->

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SMIL Media Blocks

- img
 - jpeg, gif, png, etc
- video
 - possibly also containing audio (mpeg, avi, mov, etc).
- audio
 - Stand-alone audio, either compressed or raw (mp3, wav, au, etc).
- animation
 - An animation, usually using vector graphics (swf, vml, etc).
- text
 - Plain old text, promoted to the level of media object (txt, ascii, etc).
- textstream
 - A stream of plain old text along with timing (and possibly other) information



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SMIL Media Block attributes

- src
 - The name of the file containing the media block
- alt
 - This is a brief textual description of the file, usually not even a complete sentence.

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SMIL Media Block attributes

- Media Clipping
<video src="movie.mpg" clipBegin="14:55.7"
clipEnd="14:55.7"/>
- No need for editing!

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Seq & Par

```
<seq>  
  <video src="ad1.mpg"/>  
  <video src="ad2.mpg"/>  
</seq>  
  
<par>  
  <video src="ad1.mpg"/>  
  <video src="ad2.mpg"/>  
</par>
```

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Seq & Par

```
<seq>  
  <video src="ad1.mpg"/>  
  <video src="ad2.mpg" begin="00:02"/>  
</seq>  
  
<par>  
  <video src="ad1.mpg"/>  
  <video src="ad2.mpg" begin="00:02"/>  
</par>
```



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Seq & Par

```
<seq>  
  <video src="ad1.mpg"/>  
  <video src="ad2.mpg" begin="00:02"/>  
</seq>  
  
<par>  
  <video src="ad1.mpg" id="s1"/>  
  <video src="ad2.mpg" begin="s1.begin+00:02"/>  
</par>
```

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Seq & Par

```
<par>
  <audio src="ad_music.mp3"/>
  <seq>
    <video src="ad1.mpg"/>
    <video src="ad2.mpg" begin="00:02"/>
    <video src="ad3.mpg" begin="00:02"/>
  </seq>
</par>
```

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begin, dur, end

```
<video src="ad2.mpg" begin="00:02"
  dur="00:17"/>
```

EQUIVALENT TO

```
<video src="ad2.mpg" begin="00:02"
  end="00:19"/>
```

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SMIL Layout

- In SMIL, layout is divided into regions.
- Regions are always rectangular.
- First, a region is created, and then a media object is tied to that region.

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SMIL Layout

```
<smil>
<head>
  <layout>
    <root-layout width="400" height="400 backgroundColor="white"/>
    <region id="images" width="100" height="100 left="300" top="0"/>
  </layout>
</head>
<body>
  <seq>
    
    
  </seq>
</body>
</html>
```

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<region> tag attributes

- width and height
- left, right, top, and bottom
- backgroundColor and showBackground
- fit
 - controls what happens to a media object when its intrinsic width and height do not match that of the region it's tied to. Can be: "slice", "scroll", "fit", "meet"
- id
- z-index
 - The region's position on the z-axis. Objects with a larger z-index will be rendered above others. When two or more elements have the same z-index, the elements which begin later will be given a higher position.

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Determining SMIL layout

```
<head>
  <layout type="text/smil-basic-layout">
    <region id="v1" width="352px" height="240px"/>
    <region id="photo" width="6in" height="4in"/>
    <region id="slide" left="25" top="25" width="50"
      height="50"/>
  </layout>
</head>
```

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Tie SMIL Media Block to a region

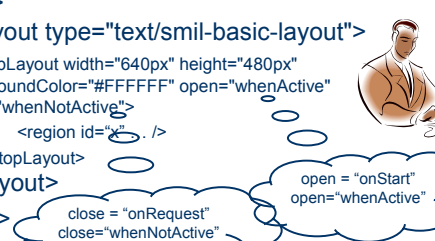
```
<smil>
  <head>
    <layout>
      <region id="a" left="10" top="10" width="100" height="100"/>
    </layout>
  </head>
  <body>
    
  </body>
</smil>
```

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Opening media in a separate window

```
<head>
  <layout type="text/smil-basic-layout">
    <topLayout width="640px" height="480px"
      backgroundColor="#FFFFFF" open="whenActive"
      close="whenNotActive">
      <region id="x" . />
    </topLayout>
  </layout>
</head>
```



The diagram shows a person sitting at a desk with a computer. Three thought bubbles are connected to the person's head. The first bubble contains the SMIL code: `close = "onRequest"` and `close = "whenNotActive"`. The second bubble contains: `open = "onStart"` and `open = "whenActive"`. The third bubble is empty.

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Hyperlinks

Two tags to define hyperlinks

```
<a>  
<area>
```

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Hyperlinks

```
<a href="x.jpg">  
    
</a>
```

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<a> tag

```
<a href="x.jpg" show="new"  
  sourcePlaystate="pause">  
    
</a>
```

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<a> tag

```
  
  <area href="x.jpg" begin="00:10"  
    end="00:15" shape="rect"  
    coords="10,10,15,10,15,20,10,20"/>  
</img>
```

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To open a hyperlink in a web-browser window

```
<a href="x.htm" external="true"
  sourcePlaystate="pause">
  <video src="x.rm"/>
</a>
```



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Linking to part of the presentation

```
<par>
  <seq>
    <video src="x1.rm"/>
    <video src="x2.rm" id="second"/>
  </seq>
  <a href="#second">
    
  </a>
</par>
```



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<animate>

```
<smil>
<head>
  <layout>
    <region id="a" left="10" top="10" width="100" height="100"/>
  </layout>
</head>
<body>
  <video src="part01.rm" width="500" height="500" region="a">
    <animate attributeName="height" from="500" to="100" dur="00:05"/>
    <animate attributeName="width" from="500" to="100" dur="00:05"/>
  </video>
</body>
</smil>
```



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<set>

```
<smil>
<head>
  <layout>
    <region id="a" left="10" top="10" width="100" height="100"/>
  </layout>
</head>
<body>
  <video src="part01.rm" width="500" height="500" region="a">
    <set attributeName="height" to="100" begin="00:05"/>
    <set attributeName="width" to="100" begin="00:05"/>
  </video>
</body>
</smil>
```



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Meta tag and Meta information

```
<head>
  <meta name="Title" content="Images"/>
</head>
```

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Meta tag and Meta information

- Type
 - "InteractiveResource" or "Image"
- Title
- Subject
 - This is a list of the areas or fields. Similar to the html keywords metadata.
- Description

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Meta tag and Meta information

- Coverage
 - The intended audience and timeframe.
- Source
 - If your presentation is derived from another source.
- Creator
 - Your name here!
- Rights
 - This will normally be a copyright notice.
- Publisher
 - The person who is responsible for bringing the resource to the public.
- Contributor

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Meta tag and Meta information

- Format
 - text/xml
- Identifier
 - URL
- Language
 - The language(s) of the presentation. Language codes can be found in [rfc 3066](#).
- Date
 - ISO 8601 form (YYYY-MM-DD).

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Real Text

```
<text src="x.rt">
```

- Also allows for scrolling the text just like news tickers
- No support for Arabic!!
- Need to substitute it by written images.

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Transitions

- A transition occurs every time a clip starts or stops playing.

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Transitions

```
<smil  
  xmlns="http://www.w3.org/2001/SMIL20/Language">  
  <head>  
    <transition id="ID1" type="fade"/>  
  </head>  
  
  <body>  
    <seq>  
        
    </seq>  
  </body>  
</smil>
```

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Transition Types



Type	Subtype	Transition Appearance
fade	crossfade	The clip fades into the clip that follows it.
	fadeFromColor	The clip fades in from a solid color.
	fadeToColor	The clip fades out into a solid color.
slideWipe	fromLeft	The clip slides over the preceding clip from left to right.
	fromRight	The clip slides over the preceding clip from right to left.
	fromTop	The clip slides over the previous clip from top to bottom.
	fromBottom	The clip slides over the previous clip from bottom to top.

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Prefetching

```
<seq>
  <par>
    <text src="credits.rt"/>
    <prefetch src="v1.rm" mediaTime="00:05"/>
  </par>
  <video src="v1.rm"/>
</seq>
```

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Embedding SMIL into HTML

```
<html>
<body>
  <embed src="x.smil" width="200"
    height="400" autostart="true"/>
</body>
</html>
```

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The model



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Model Structure

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE smil PUBLIC "-//W3C//DTD SMIL 2.0//EN"
"http://www.w3.org/2001/SMIL20/SMIL20.dtd">

<smil xmlns="http://www.w3.org/2001/SMIL20/Language">
<head>
<meta name="title" content="Images and its applications"/>
<meta name="author" content="Dima Damen"/>
<meta name="copyright" content="QoU"/>
<meta name="abstract" content="An introduction to computer
representation of images"/>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

1. Change the following <meta> attributes
 1. Title to be the document's title
 2. Author to include the authors' names
 3. Abstract to include a short description about this session's document.

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Steps to customize your SMIL Avicenna Virtual Campus Session

2. Create your presentation using MS Power Point
 1. Animations won't be beneficial here. You can create animation changes using duplicate slides only.
 2. Save As JPEG (choose the "Every Slide" option)
 3. Chose the folder name to be Slides
 4. Place the folder in the same folder as your template SMIL file.

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3. Add/Remove to the template according to the number of slides you have. (46 in the template)
 1. For each slide, the following is provided

```
<par dur="00:46" id="par_45">

</par>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

4. Decide on the menus number and content
 1. For each menu, edit the file available and entitled "MenuName.psd" using Adobe Photoshop. Write the menu's title and save and .jpg
 2. Add/Remove the regions menu (increase or decrease the number of menu regions)

```
<region id="region_menu0N" left="0"
top="18 * (N-1)" width="180"
height="18"/>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

4. Decide on the menus number and content
 3. Add the following tag for each new menu. The new menu should be added after the already available ones (3 in the template)

```
<a href="#par_0N">
  
</a>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

4. Decide on the menus number and content
 4. For each menu, decide on the slide number it points to. Edit the menu information to include the Slide Number (M in the example)

```
<a href="#par_0M">
  
</a>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

5. Record your video file
 1. Recall that any mistake could be edited by SMIL so there's no need for editing by QoU.
 2. Get the file as .avi and convert it to .rm using RealPlayer Producer Basic 10.
 3. Store your .rm file in the folder "video" as "v.rm"

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6. Timing!! (The hardest bit)

1. You need to record the duration for each slide
2. Suggestion: record the timing for each slide and calculate the difference for each slide

Slide No.	Begin Time	Duration
1	00:00	00:16
2	00:16	00:28
3	00:44	...

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Steps to customize your SMIL Avicenna Virtual Campus Session

7. Edit the durations for each slide

```
<par dur="00:46" id="par_45">  
    
</par>
```

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Steps to customize your SMIL Avicenna Virtual Campus Session

- Other changes are OPTIONAL but...



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Thank you

Practical Training to
follow



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