SMIL (Synchronized Multimedia intégration Language)

XML 1.0 documents

Simple authoring of interactive audiovisual presentations

Intégrate streaming audio and video with images, text, or any other media type

No need of using scripting languages such as javascript

SMIL version 1.0 (1998)

SMIL 2.0 Recommendations (2001)

SMIL 1.0 and 2.0 very much differ

SMIL 1.0 player may not work with SMIL 2.0

Example :

- SMIL 1.0 :

<smil>

…… SMIL 2.0:

<smil xmins=http://www.w3.org/2001/SMIL20/language »>

…….SMIL 2.0 markup

</smil>

What SMIL can do ?

- Streaming video clips, even if from different servers
- Layout a presentation
- Presentation timeline
- Playing the media in sequencer or in parallel
- Synchronization between different media types
- Interactivity and linking to other web pages

XForms. Definition.

"**XForms** is an XML format for the specification of user interfaces, specifically web forms." [1]

Capabilities:

- Separate control(model), content(body) and presentation(CSS).
- Bind data to an xml file, validate against XML schema data tupes.
- Imput variable length arrays of data, output entries and quantities derived from entries, prefill using an xml file.
- Respond to actions in real time.
- Modify the style of each control depending on the device they are displayed on (browser versus mobile versus text only…)
- Interact with other XML languages: XPath SVG, VoiceXML.

The actual Xforms standard is Xforms 1.0 (Second edition).

XForms.Structure.

Structurally, a form can be throught of as having two parts: a specification of what it should do, and a specification of how it should look. In XForms these two parts are called, respectively:

- XForms Model. *(model, instance, submission)*
- XForms User Interface(form controls)

Xforms can interact with different XML languages:

XLM Schema(validation), Xpath(structure data)…

Example.

XForms. Tools.

- Editors:
  - formsPlayer(toolkit)
  - XForms validator online.
  - Chiba
  - DataMovil(movil devices)
  - Orbeon
- Browsers:
  - IE6 plugin
  - Mozilla
  - Novell XForm Explorer
  - X-Smiles(movil & desktop)
  - Oracle Engine (movil devices)

XForms. Basic controls

- **<xforms:input>** A single-line text entry field.
- **<xforms:secret>** A single-line text entry field which masks user input, good for passwords.
- **<xforms:select>** A list field allowing multiple selection.
- **<xforms:select1>** A list field allowing selection of only a single item from the list.
- **<xforms:textarea>** A multi-line text entry field
- **<xforms:upload>** A file upload field.
- **<xforms:range>** A field which restricts entry to a range of values.
- **<xforms:submit>** A form submission field.
- **<xforms:output>** A field for displaying values from the instance data

SVG. Basics.

- ***Scalable.*** Increase or decrease uniformly. Technology that can grow to a large number of files, users or diversity of applications.
- ***Vector.*** Contain geometric objects such a lines and curves, and can be rasterized in client and server side.
- ***Graphics.*** Content that involves images in vector or vector/raster.
- Capacity to intereact with different XML namespaces, and use it in web pages(stand-alone, embedding by reference, embedding inline, external link, referenced from a CSS2 or XSL property).

Scalable Vector Graphics (SVG) 1.1 Specification

- Document structure: svg, g, defs, desc, metada, use, title, switch(conditional procesiong), image(image module).
- Basic shapes: rectangles, circles, ellipses, lines, polylines polygons.
- Painting. 'path', 'text' and basic shapes can be filled(interior of the object) and strocked(along the outline of the object)..
- Text. 'text' and 'tspan'. Layout of the text: direction, color, decoration.
- Linking.'a' and 'view' elements permit links to any Web Source(video, sounf, SVG file, web page…)
- Animation. Based on SMIL, add: animateTransform, path, mpath, keyPoints and rotate.

Tools & Examples.

- **SVG Viewers.**
  - X-Smiles XML browser
  - SVG in Mozilla project
  - Adobe SVG Viewer
- **Mobile SVG Viewers.**
  - Bitflash SdVG viewer
  - KDD Labs JaMaPS
  - Pocket SVG Viewer
- **Native SVG Editors**
  - W3C Amaya
  - JASC WebDraw
- **Editors that Export SVG**
  - Adobe Illustrator 10.0
  - ILOG JViews Component Suite

X3D

X3D is an Open Standards XML-enabled 3D file format to

enable real-time communication of 3D data across all

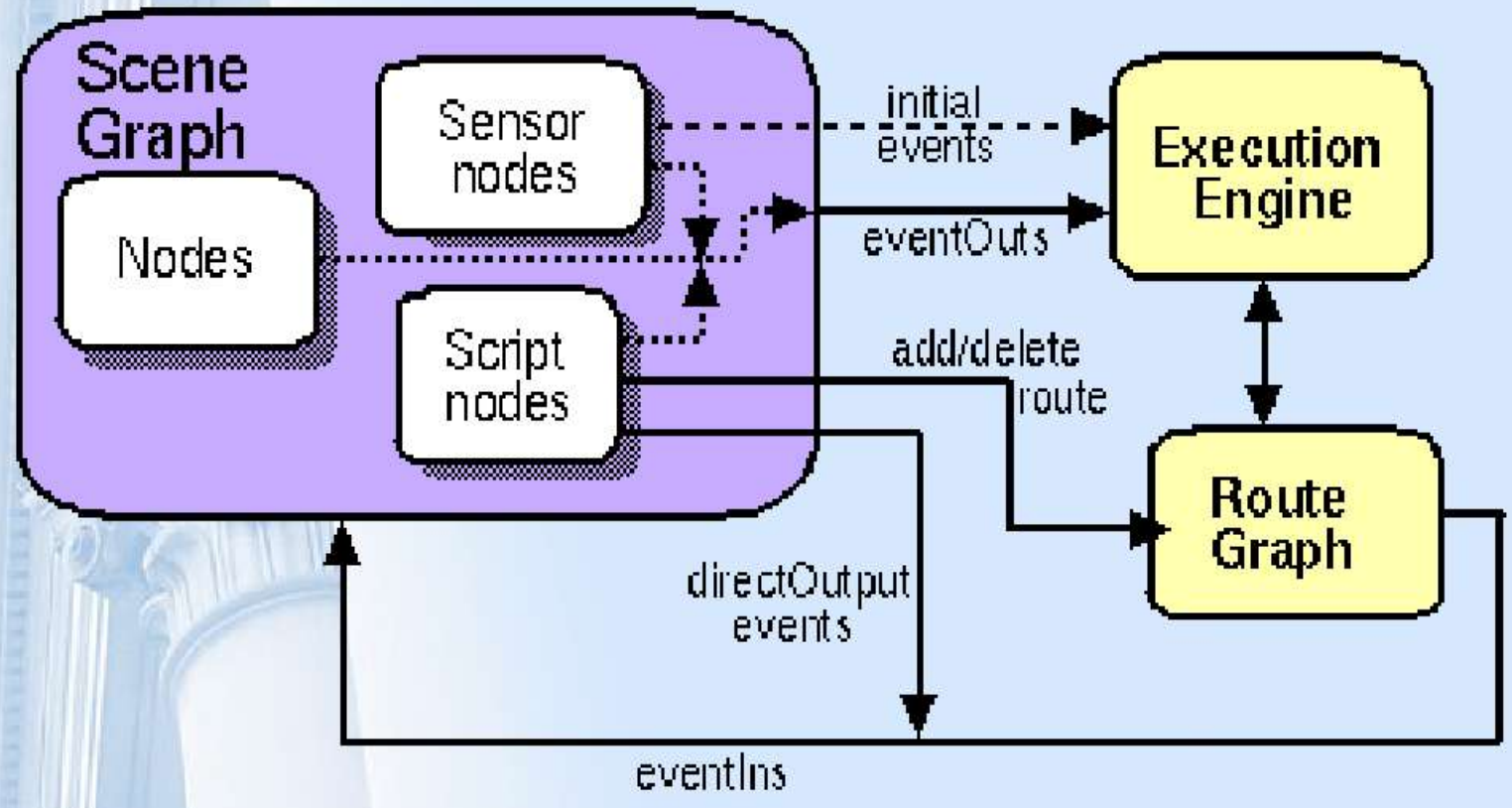
applications and network applications. An improvement of the VRLM97.

- **3D graphics**. Polygonal geometry, parametric geometry, hierarchical transformations, lighting, materials, multi-pass/multi-stage texture mapping, pixel and vertex shaders, hardware acceleration
- **2D graphics.** Spatialized text; 2D vector graphics; 2D/3D compositing.
- **CAD data.** Translation of CAD data to an open format for publishing and interactive media.
- **Animation.** Timers and interpolators to drive continous animations; humanoid animation and morphing

X3D.

- The basic unit of the X3D run-time environment is the ***scene graph***. This structure contains all the objects in the system and their relationships.
- Node. Fundamental component of a scene graph.
- Sensor node. ***node*** that enables the *user* to interact with the collection of one or more *X3D files* and other multimedia content in the scene graph hierarchy
- Script nodes. set of procedural functions normally executed as part of an ***event cascade.***
- Route Graph. connection between a *node* generating an event and a node receiving the event
- Execution engine. Usually a browser that interprets the scenes.
- Kind of components: core, time, networking, grouping, rendering, shape, geometry3D&2D, text, key device sensor, humanoid animation, geospatial.

X3D. Conceptual execution model.



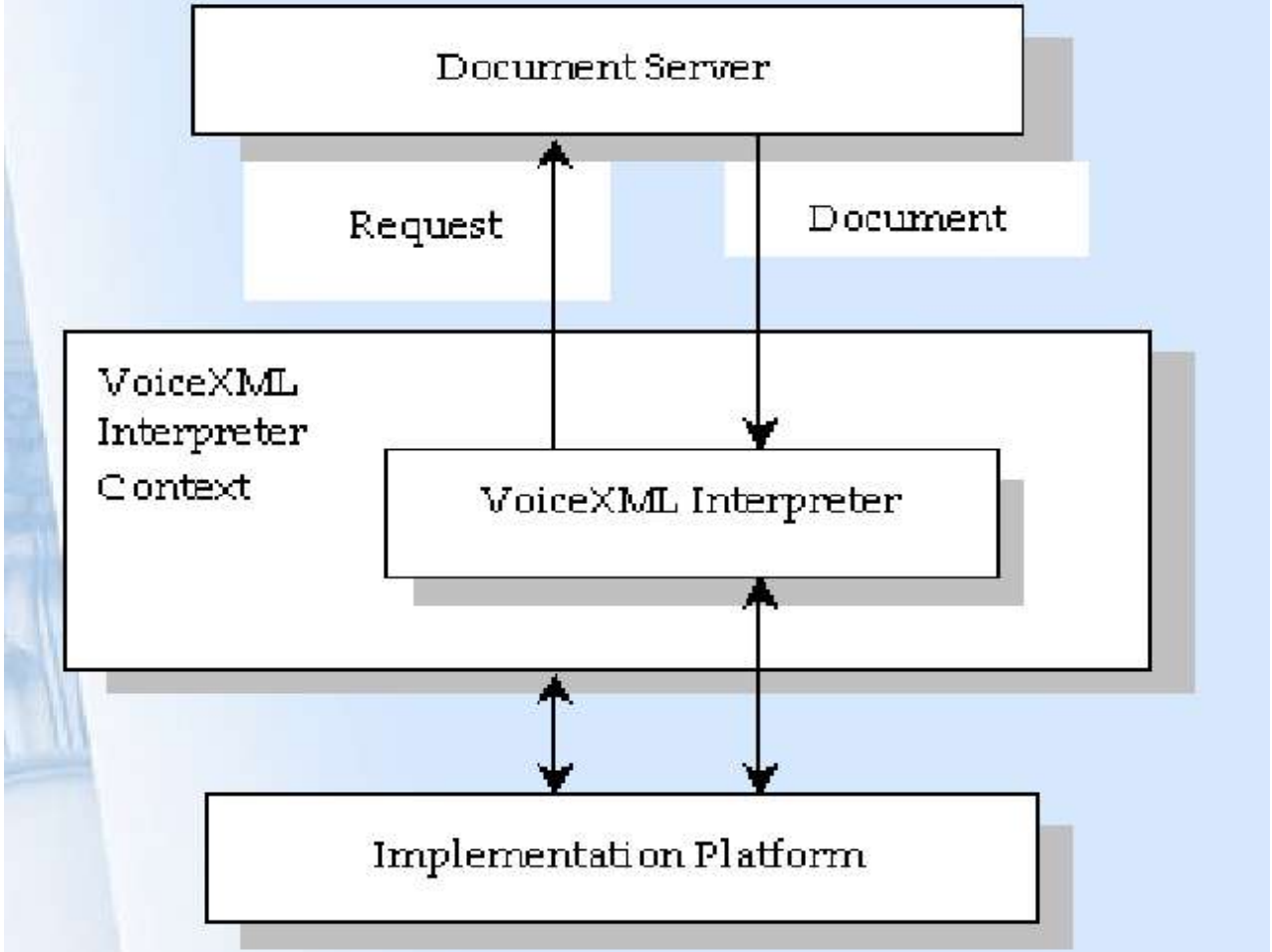
Tools & Examples.

- **X3D Content Authoring & Editing Tools**
  - **X3D-Edit.** Graphics file editor for X3D that enables simple error-free editing.
  - **WireFusion.** asily create interactive Web3D presentations from X3D and VRML models.
- **Browsers & Viewers.**
  - **Octaga.** High-performance, standards-compliant viewer that supports the whole profile of VRML and X3D. It gives users a multitude of visual effects such as multi-texturing, pixel shader
  - **Xj3D.** Toolkit for VRML97 and X3D content written completely in Java.
- **Example**: The Taylor Tour. An X3D world modeled after Taylor Hall at The College of Wooster.

VoiceXML. Concepts.

- VoiceXML is designed for creating audio dialogs that feature synthesized speech, digitized audio, recognition of spoken and DTMF key input, recording of spoken input, telephony, and mixed initiative conversations.
- **Dialogs and subdialogs**. Two kinds: forms, Forms present information and gather input; menus, choices that are present to the user.
- **Sessions**. Begins with the intereaction of the user with a VoiceXML interpreter context and finish with the request of the user, a document or the interpreter context.
- **Applications**. Set of documents, sharing the same application root document, to share grammar, variables.
- **Grammar**. Specifies a set of utterances that a user may speak to perform an action or supply information and the system returns a corresponding semantic operation.

VoiceXML Architecture.



VoiceXML. Tags

<assign>Assign a variable a value

<audio>Play an audio clip within a prompt

<block>A container of (non-interactive) executable code

<catch>Catch an event

<choice>Define a menu item

<clear>Clear one or more form item variables

<disconnect>Disconnect a session

<else>Used in <if> elements

<elseif>Used in <if> elements

<enumerate>Shorthand for enumerating the choices in a menu

<error>Catch an error event

<exit>Exit a session

<field>Declares an input field in a form