Overview of SMIL Animation and Implementation in IBM Lotus Symphony

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Agenda

• What is SMIL
• What's new in SMIL 3.0
• Characters of SMIL
• Animations in Symphony
• Looking forward to the animation in Symphony
• QA
Agenda

- **What is SMIL**
  - SMIL ≠ smile
  - Bird's eye on SMIL
  - A Sample for the animation
  - Main Elements
  - Recommended 5-layer structure for the animation
- **What's new in SMIL 3.0**
- **Characters of SMIL**
- **Animations in Symphony**
- **Looking forward to the animation in Symphony**
- **QA**
SMIL

- Synchronized Multimedia Integration Language
- 1.0 published by W3C for web-based multimedia support in 1998, 2.0 in 2000, 3.0 in Oct. 2008
- A standard language that is also recommended by OASIS (Organization for the Advancement of Structured Information Standards) and it is integrated into ODF
- Defines an XML-based language to get powerful support for interactive multimedia
- Sponsors: RealNetworks, IBM, Intel, Microsoft, Macromedia, AOL, Nokia, Panasonic, Philips...
- Products: IE, RealOne, QuickTime...
SMIL – Bird's Eye

- Structure
- Layout
- Timing
- Media Objects

- Transitions
- Animations
- Interaction
- Content Control
- Linkings
SMIL – a Sample

- <anim:par presentation:node-type="timing-root">
  - <anim:seq presentation:node-type="main-sequence">
    - <anim:par smil:begin="infinite" smil:fill="hold">
      - <anim:par smil:begin="0s" smil:fill="hold">
        - <anim:par presentation:node-type="on-click" presentation:presentation:node-type="Whirlpool" presentation:presentation:presentation:node-type="emph" smil:begin="0s" smil:fill="hold">
          <animateTransform smil:begin="0s" smil:fill Default="hold" smil:fill="hold" smil:targetElement="#d1" smil:by="360" svg:type="rotate" />
        </anim:par>
      </anim:par>
    </anim:par>
  </anim:seq>
</anim:par>

- <anim:par smil:begin="infinite" smil:fill="hold">
  - <anim:par smil:begin="0s" smil:fill="hold">
      <animateMotion smil:begin="0s" smil:fill="hold" smil:fill="hold" svg:path="M 0 0 L 0.091 -0.0453 L 0.125 -0.16655 L 0.158 -0.0453 L 0.249 0 L 0.158 0.0453 L 0.125 0.16655 L 0.091 0.0453 L 0 0 Z" smil:calcMode="paced" smil:targetElement="#d2" />
    </anim:par>
  </anim:par>
</anim:par>

- <anim:par smil:begin="infinite" smil:fill="hold">
  - <anim:par smil:begin="0s" smil:fill="hold">
    - <anim:par presentation:node-type="on-click" presentation:presentation:presentation:node-type="Change Fill Color" presentation:presentation:presentation:presentation:node-type="emph" smil:begin="0s" smil:fill="hold">
      <animateColor smil:begin="0s" smil:fill="hold" smil:fill="hold" smil:targetElement="#d3" smil:attributeName="fillColor" smil:additive="replace" smil:to="#cc66ff" anim:color-interpolation="rgb" anim:color-interpolation-direction="clockwise" />
    </anim:par>
  </anim:par>
</anim:par>
SMIL – Main Elements

- **animateTransform**: animates a transformation attribute, e.g., scale, rotate, skew, etc.
- **animateMotion**: animates along a path
- **animateColor**: specifies an animation of a color attribute
- **transitionFilter**: animates the progress of changing a polygon
- **animate**: animates numeric attributes, e.g., x, y, width, height, etc., as well as non-numeric attributes
- **set**: animates simple attributes, e.g., font name, font size, etc.
- **seq**: represents sequence (main or interactive)
- **par**: timing container/Synchronization
SMIL – 5-layer structure for Animation

par: timing-root

seq: sequence

par: once interaction

par: group starting at the same time

par: an effect
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What's New in SMIL 3.0 (part I)

• Three new functional areas
  - smilText - a new media type that provides a text container element for defining the timed text, and a set of additional elements and attributes to control timed text rendering
  - State - Provides a mechanism for the author to create more complex control flow
  - DOM - Better DOM support for programmable content control
What's New

● Introduce new world with exothermic functions

➢ Media PanZoom: Define and manipulate two-dimensional regions everywhere

➢ Media Interaction: All objects of the media object to be defined at the same place

➢ Text Styling & Text Movement: Support rich text and movement of text

➢ Stats: Differentiate presentation and feedback depending on the status

➢ DOM Timing Methods: Contains DOM methods to start and stop parts of a presentation during playback, and also DOM events that may be used to influence a presentation
What's New in SMIL 3.0 (part III)

- Revised some functional areas
  - Content Control
  - Layout
  - Linking
  - Media Object
  - Timing and Synchronization
  - ... ...

- No change for animation
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Characters of SMIL

- An open and free architecture
- Clear responsibility definitions
- Easy to learn and use
- Integrates/conforms to other standards, e.g., XML, SVG, DOM
- Synchronously play multiple multimedia objects that are deployed at different sites
- Complex control flow in terms of different situations
- Easy to convert to/from other languages, e.g., HyTime
- A declarative language; Is Scripting required by experts?
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• **Animations in Symphony**
  - Design for model
  - Design for UI
  - Timing and Drawing
  - Design for copy/paste
• Looking forward to the animation in Symphony
• QA
Animations in Symphony - Design for model

Mapping to

par: trimming-root

seq: main Sequence

par: 1\textsuperscript{st} user interaction

par: group 1

par: effect A

par: group 2

par: effect B

par: group 3

par: effect C

par: effect D

SvxSmilPar

SvxSmilSeq

SvxSmilPar

SvxSmilPar

SvxSmilPar

SvxSmilPar

SvxSmilPar

SvxSmilPar

SvxSmilPar

SvxSmilPar
Animations in Symphony - Design for UI

1. Custom Shape: Wipe
2. Custom Shape10: Wipe
3. Text Frame12: Appear
4. Text Frame11: Appear
5. Line7: Appear
6. Line6: Appear
7. Line9: Appear
8. Custom Shape11: Wipe
9. Custom Shape12: Wipe
10. Text Frame13: Appear
11. Text Frame14: Appear
12. Line12: Appear
13. Line11: Appear

- On Click
- After Previous
- With Previous

SmileEffectManager:
- pMainSmpEffList: List
- pInterSmpEffList: List
- pCurPage: SmpPage
- CreateEffectList()
- CreateEffectTree()
- AppendEffect()
- ChangeEffect()
- RemoveEffect()
- EffectUp()
- EffectDown()

Effect Wipe
Effect Appear

SmileEffect:
- pOptions: SmileEffectOptions

SmileEffectAppearing:
- pOptions: SmileEffectOptions

SmileEffectOptions:
- pSpeed: USHORT
- pTrigerEvent: USHORT
- pAccelerate: Boolean
- pDecelerate: Boolean
- pDumColor: Boolean
- pDummedColor: Color
- pDelayTime: Double
- pRepeatTimes: Double
- pRewind: Boolean
- pTrigerObj: SmpObject

SmpPage
- pSmileManager: SmileEffectManager

Order of Animation Effects

Animation Effects

Effect Wipe
Effect Appear
... ...

New Edit Remove
Preview Close

Type: Emphasis
Effect: Whirlpool
Amount: Full Spin

Speed
Medium
Accelerated Start
Decelerated End
Automatically Preview

OK Cancel
Animations in Symphony - Timing and Drawing

Timing Control
- Timing Temporary Information
  - Timing Temporary Information
  - Timing Temporary Information
  - Timing Temporary Information

Modal
- SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar
  - SvxSmilPar

Object
- Target Object 1
  - Target Object 2
  - Target Object 3

Drawing Control
- Drawing Control Information
  - Drawing Control Information
  - Drawing Control Information
  - Cloned Object 1
  - Cloned Object 2
  - Cloned Object 3
Design for copy/paste

Target Object 1

Clone

Target Object 1'

Par: triming-root

Seq: main Sequence

Par: 1st user interaction
Par: group 1
Par: effect A

Par: 2nd user interaction
Par: group 2
Par: effect B

Par: 3rd user interaction
Par: group 3
Par: effect C

Par: group 1
Par: effect D

Par: group 1
Par: effect A'

Par: group 1
Par: effect D'
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Looking forward to the animation in Symphony

- Interoperability
- Performance
- Rich and colorful effects
- New UI
Ref Link:

http://www.w3.org/TR/2008/PR-SMIL3-20081006/
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Thanks!

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