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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
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SMIL

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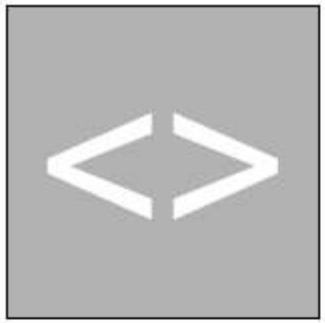
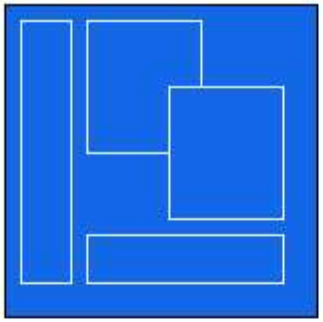
- Synchronized Multimedia Integration Language
- 1.0 published by W3C for web-based multimedia support in 1998, 2.0 in 2000, 3.0 in Oct. 2008
- A standard language that is also recommended by OASIS (Organization for the Advancement of Structured Information Standards) and it is integrated into ODF
- 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...

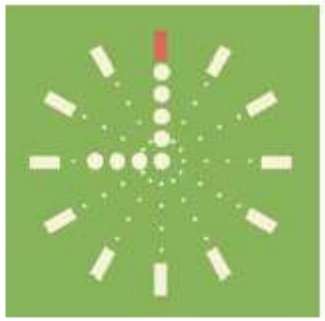
SMIL – Bird's Eye



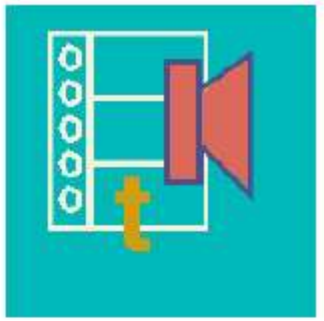
Structure



Layout



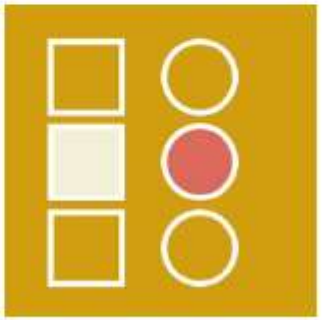
Timing
Time Manipulation



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="indefinite" smil:fill="hold">
      - <anim:par smil:begin="0s" smil:fill="hold">
        - <anim:par presentation:node-type="on-click" presentation:preset-id="Whirlpool" presentation:preset-class="emphasis"
            smil:begin="0s" smil:fill="hold">
            <anim:animateTransform smil:begin="0s" smil:dur="2s" smil:fillDefault="hold" smil:fill="hold" smil:targetElement="id1"
              smil:by="360" svg:type="rotate" />
          </anim:par>
        </anim:par>
      </anim:par>
    - <anim:par smil:begin="indefinite" smil:fill="hold">
      - <anim:par smil:begin="0s" smil:fill="hold">
        - <anim:par presentation:node-type="on-click" presentation:preset-id="Star (4 Point)" presentation:preset-
            class="motion-path" smil:begin="0s" smil:fill="hold">
            <anim:animateMotion smil:begin="0s" smil:dur="2s" smil:fillDefault="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="id2" />
          </anim:par>
        </anim:par>
      </anim:par>
    - <anim:par smil:begin="indefinite" smil:fill="hold">
      - <anim:par smil:begin="0s" smil:fill="hold">
        - <anim:par presentation:node-type="on-click" presentation:preset-id="Change Fill Color" presentation:preset-
            class="emphasis" smil:begin="0s" smil:fill="hold">
            <anim:animateColor smil:begin="0s" smil:dur="2s" smil:fillDefault="hold" smil:fill="hold" smil:targetElement="id3"
              smil:attributeName="fillColor" smil:additive="replace" smil:to="#cc66ff" anim:color-interpolation="rgb" anim:color-
              interpolation-direction="clockwise" />
          </anim:par>
        </anim:par>
      </anim:par>
    </anim:seq>
  </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: timming-root

seq: sequence

par: once interaction

par: group starting at the same time

par: an effect

```
1 <amin:par> <!-- timming root-->
2   <anim:seq> <!-- main sequence-->
3     <anim:par smil:begin="indefinite">
        <!-- first user interaction -->
4       <anim:par smil:begin="0s" smil:dur="4s">
5         <anim:par> <!-- effect a -->                    Group 1
            <!-- nodes for effect a-->
          </anim:par>
5         <anim:par> <!-- effect b -->
            <!-- nodes for effect b-->
          </anim:par>
        </anim:par>
4       <anim:par smil:begin="4s">
5         <anim:par> <!-- effect c -->                    Group 2
            <!-- nodes for effect c-->
          </anim:par>
        </anim:par>
      </anim:par>
3     <anim:par smil:begin="indefinite">
        <!-- second user interaction-->
4       <anim:par smil:begin="0s" smil:dur="4s">
5         <anim:par> <!-- effect d -->                    Group 3
            <!-- nodes for effect d-->
          </anim:par>
        </anim:par>
      </anim:par>
```

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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 N


```
<seq>
    <audio src="chapter1.mp3" />
    <setvalue ref="lastPlayed" value="1" />
    <audio src="chapter2.mp3" />
    <setvalue ref="lastPlayed" value="2" />
    <audio src="chapter3.mp3" />
    <setvalue ref="lastPlayed" value="3" />
</seq>

<smil>
 <head>
  <state xml:id="stateid">
     <data xmlns="">
      <lastPlayed>0</lastPlayed>
     </data>
  </state>
  <submission xml:id="subid" action="http://www.example.com/savexmldoc" method="put" />
 </head>
 <body>
  <par>
   <send submission="subid" begin="stateid.stateChange(lastPlayed)" restart="always" />
   ...
   <seq end="... some interactive end condition ..." >
    <seq expr="lastPlayed &lt; 1">
     <audio src="chapter1.mp3" />
     <setvalue ref="lastPlayed" value="1" />
    </seq>
    <seq expr="lastPlayed &lt; 2">
     <audio src="chapter2.mp3" />
     <setvalue ref="lastPlayed" value="2" />
    </seq>
    <seq expr="lastPlayed &lt; 3">
     <audio src="chapter3.mp3" />
     <setvalue ref="lastPlayed" value="3" />
    </seq>
   </seq>
  </par>
```

- I … es
  - rendere … Saves author defined state or to transmit it to an external server

```
    <img src="couleur.jpg" />
</switch>
```

- DOMTimingMethods: 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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  - Design for model
  - Design for UI
  - Timing and Drawing
  - Design for copy/paste
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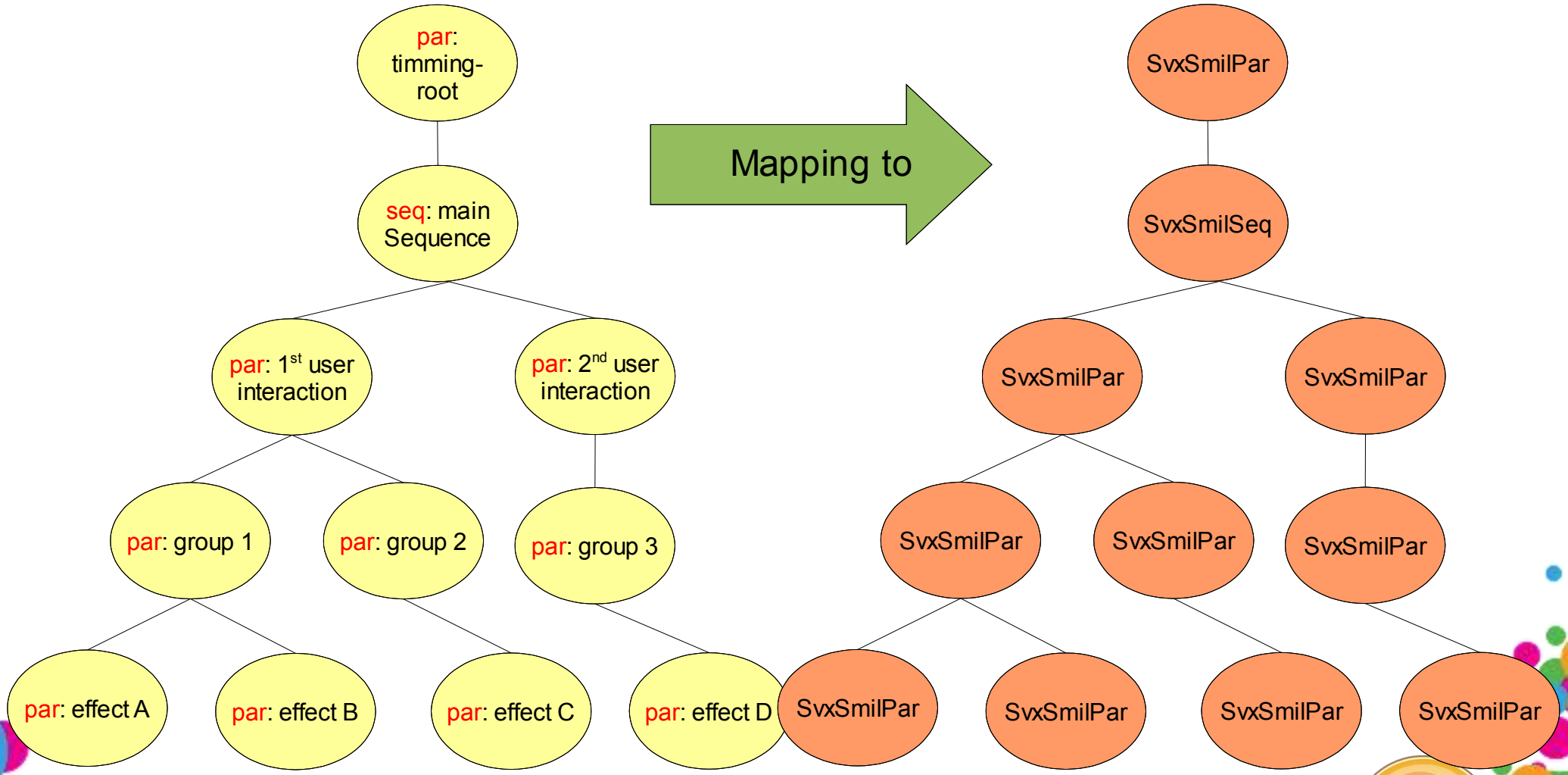
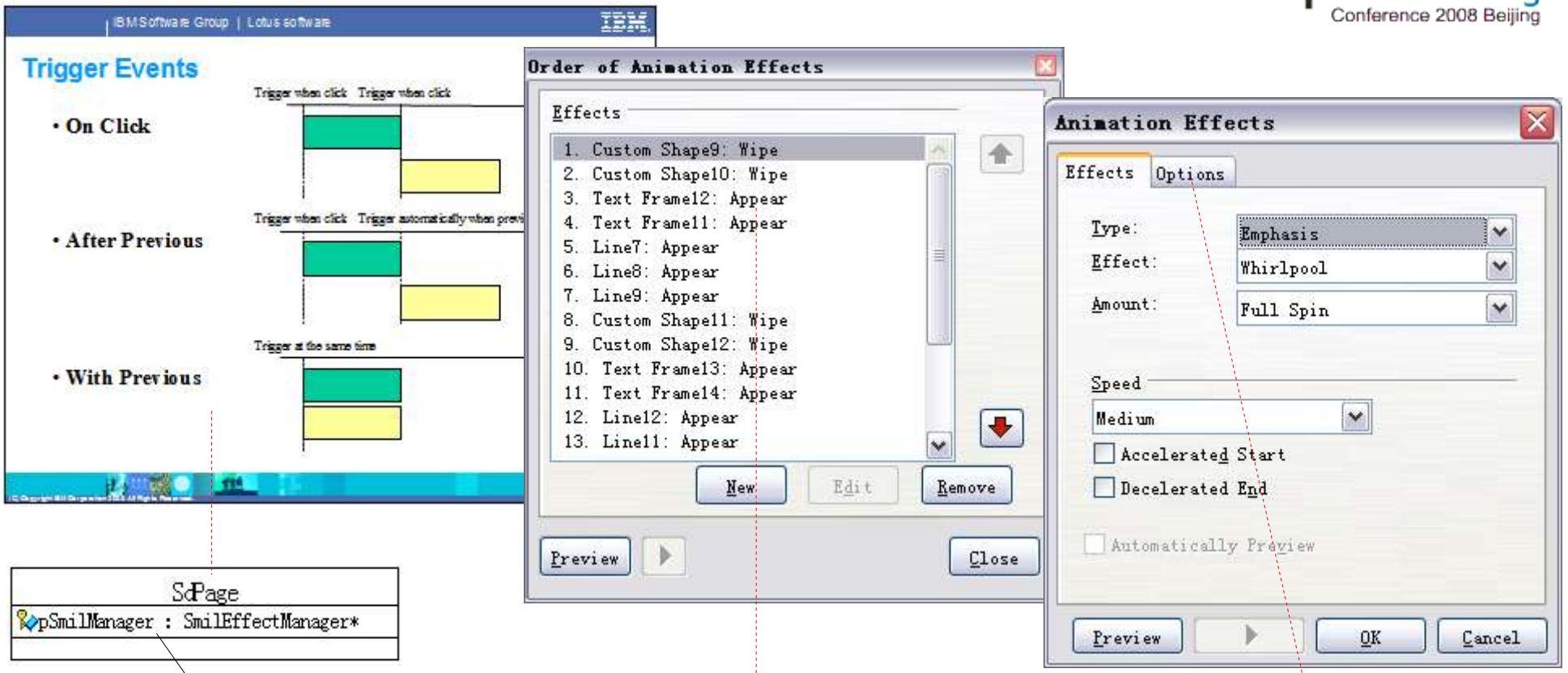
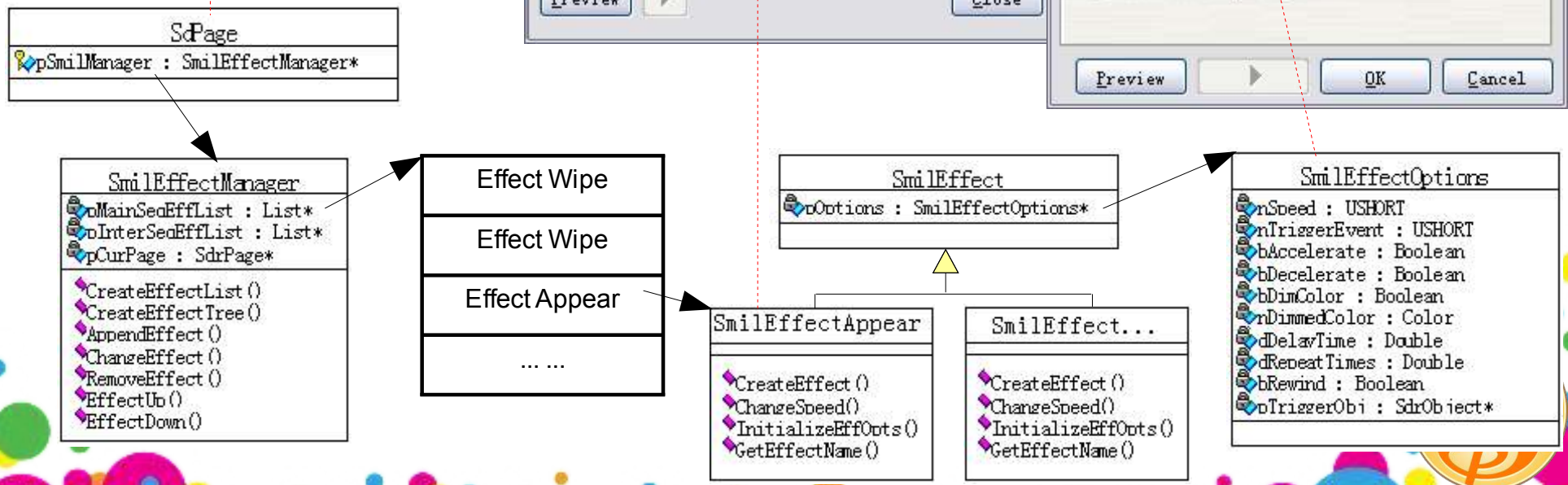
Animations in Symphony - Design for model

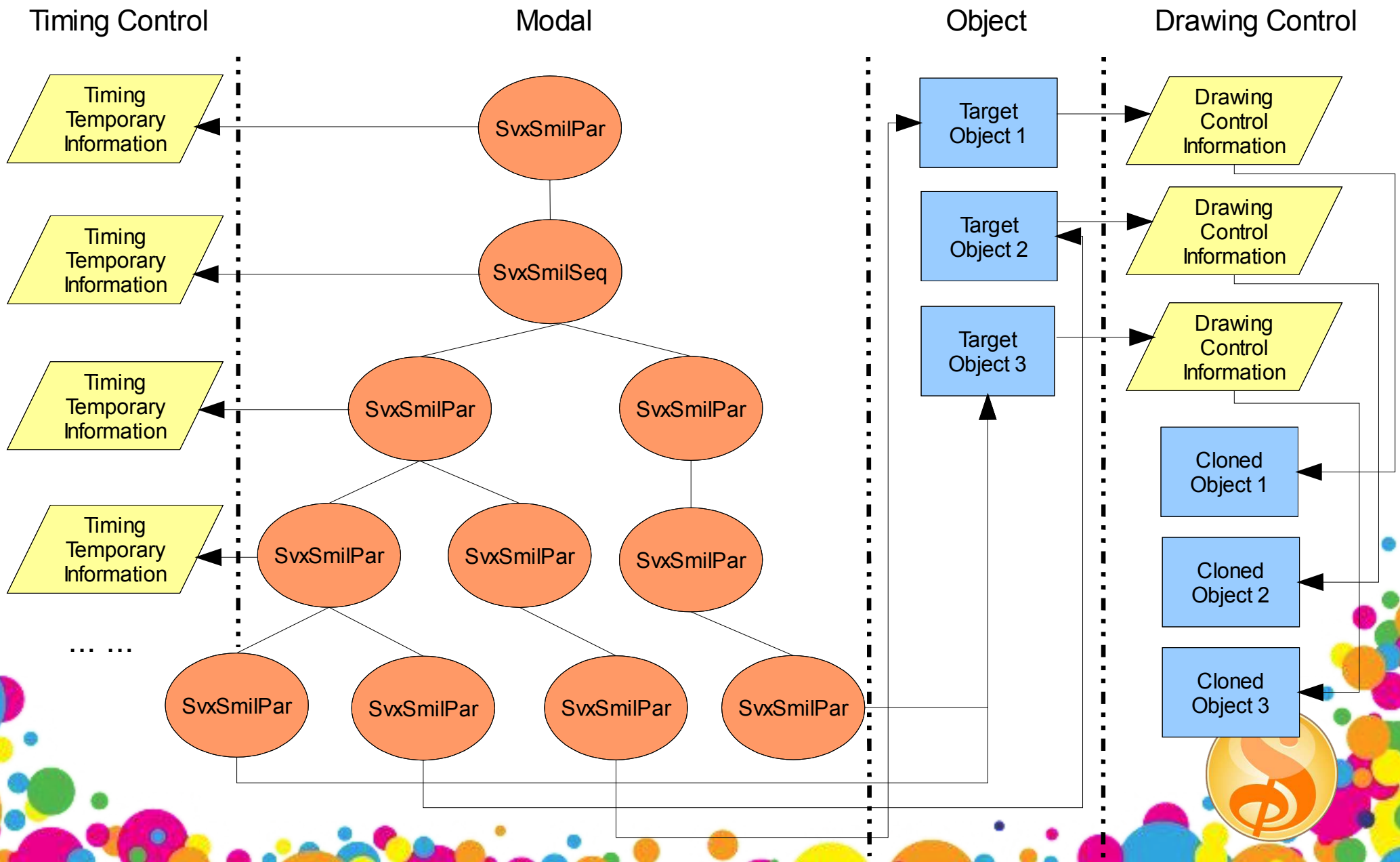


Animations in Symphony - Design for UI

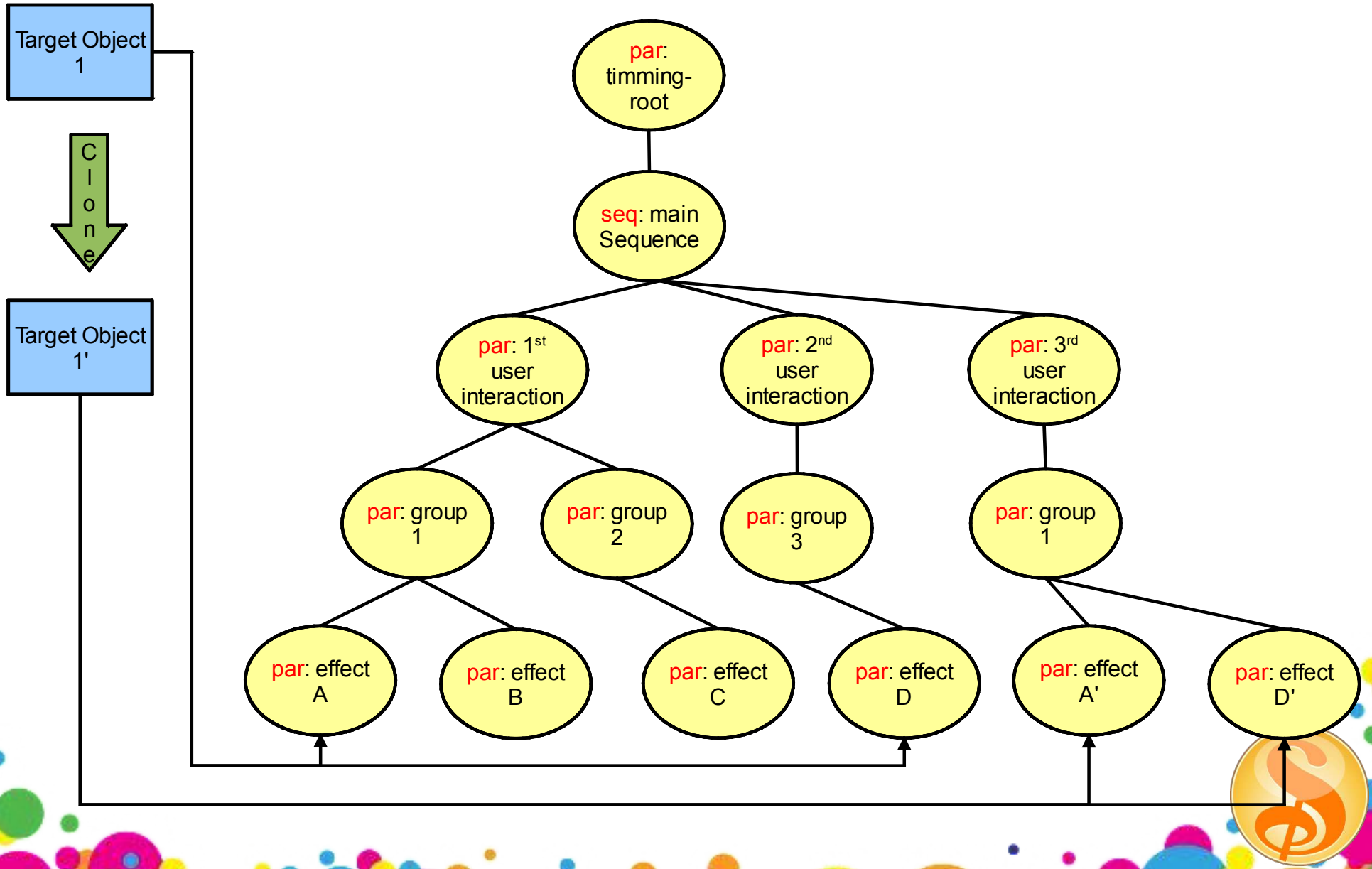




Animations in Symphony - Timing and Drawing



Design for copy/paste



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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/

Let's SMIL/Smile

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