A Content Transformation System for the Multimedia Home Platform

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Introduction

- SVG²MHP is the result of a Bachelor project at the Hasso-Plattner-Institute for Software Engineering

- Motivated by a company active in the business of MHP (Multimedia Home Platform) content creation

- SVG²MHP translates SVG documents into Xlets (self-contained applications that run on the MHP)
What is MHP?

- International standard for interactive DVB TV applications
- Xlets – written in Java – are broadcast in parallel to video and audio streams
- applications are executed on end user's Set Top Box
- already adopted by many countries
The happy life of an MHP application developer

- Poor computing power and memory on Set Top Boxes
- Low rendering speed (120ms for a filled polygon with alpha blending)
- Restricted bandwidth
- Only Java 1.1 Graphics (no Java2D!) - additional rendering code necessary:
  - Transformations
  - Paths and curves
  - Grouping of graphics primitives

We couldn't adopt a pre-existent SVG viewer (such as Batik's Squiggle)
Motivation for SVG²MHP

- Special requirements of TV applications:
  - Rapid development
  - Bug free
  - Division of graphical user interface and application logic

- Hand-coding Xlets does not meet these requirements

- SVG²MHP addresses these issues:
  - Fast development with standard SVG drawing tools
  - Automatic code generation minimizes number of bugs
  - The application interface and logic are clearly separated and can be developed independently
Generating Xlets with SVG²MHP

artist → SVG graphical user interface → SVG²MHP → Xlet

software developer → application logic
Why SVG as input format?

- Open standard
- XML based
  - Highly extensible through XML namespaces
  - Easily parsable by computers
  - Suitable for automatic content creation
- Supports all graphic objects necessary for TV user interfaces
- Numerous SVG authoring systems available
- Interactivity and animations through scripting and SMIL declarative animations
Architecture

- Uses Apache Batik's SVGDOM
- SVGDOM is reduced to supported elements
- Optional prerasterization step
- Lightweight MHPDOM is generated
- Xlet Code contains only structures necessary for displaying a specific SVG Document
Capabilities

- **Aim to support SVG Tiny**
  - Rendering support for basic shapes, text, raster images
  - No filters

- **Declarative SMIL animations (partial)**

- **User interaction via remote control**

- **Scripting using embedded or external Java code**

- **MHP specific extensions (inline video stream, preliminary support for return channel and stream events)**
Demonstrations
Thank you!