W3C Standards in Digital Signage State of the Art Report

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About IAdea

- Founded in 2000
  - Offices in Taipei, Taiwan and Irvine, USA

- 100% business from digital signage
  - Media appliances, digital signboards, OPS
  - World's top 3 non-PC player maker
  - OEM-friendly business model

- 100% open standards
  - SMIL, HTML5, Media RSS

Media Appliance

10" Digital Signboard

The Brand Behind Many Brands

Standards Involvement

- POPAI (USA)
  - Digital Signage Standards Committee, Engineering Leader
    - Content format standard
    - Server-server interoperability
    - Server-player interoperability

- DSMA (Taiwan)
  - International Affairs and Standards Committee, Chair

Visit Us at DSJ 2012

- Booth #7H05 Scala stand

- Co-exhibiting with Okaya Electric Corp. (IAdea's Japan distributor)

Agenda

- Hands-on experience at IAdea
  - SMIL
  - Media RSS
  - HTML5
  - Applications today

- HTML5 features to be desired
  - Use cases
  - Existing practice and shortcomings

SMIL, Media RSS, HTML5

Actual Use of Standards

SMIL

- Synchronized MultiMedia (SYMM) WG

- Importance: "Synchronized" (time)
  – DOOH is primarily time-based
  – Day parting, time slots

- http://www.a-smil.org

Typical SMIL

```
<seq begin="wallclock(2012-05-01T00:00:00)"
     end="wallclock(2012-06-01T00:00:00)">
```
ISO-8601 date/time

```
    <video src="welcome.mp4" />

    <par>
        <video src="rtsp://server/channel" region="videoZone" />

        <seq repeatCount="indefinite">
            <img src="ad1.png" region="adZone" />
            <img src="ad2.png" region="adZone" />
            <img src="ad3.png" region="adZone" />
        </seq>
```
Loop

Parallel time container
+ Multi-zone layout

```
        <text src="ticker.html" region="tickerZone" />
    </par>

</seq>
```

Benefits

- A convenient, simplified programming model for
  - Looping playlists
  - Wall clock scheduling (with repeats)
  - Synchronized parallel schedule (multi-zone, multi-screen)
  - Screen layout
  - Conditional playback (XPath expressions), states
  - Priority-based scheduling
  - Triggers (interactive input, onbegin/onend)
  - Buffering (prefetch), bandwidth throttling
  - Animation (to achieve crawls, fades)

To be Desired…

- Shuffle, pick-n
- "Soft switching" semantics
- Scripting language
- Logging, error reporting

- SYMM is terminated in April 2012… we need to continue the effort!

Who Use SMIL

Many more in the pipeline…

Media RSS

```
<rss>
  <channel>

    <item>
      <enclosure
       url="http://server/video.mp4"
       type="video/mp4" />
    </item>

    <item>
      <enclosure
       url="http://server/pict.png"
       type="image/png" />
    </item>

  </channel>
</rss>
```

- The perfect simple language for
  – Simple loop
  – Full-screen content

- One of the most popular content feed formats today

Who Use MRSS

- Scala SignChannel
    - IAdea plays using simple XSLT translator
        - MRSS → SMIL
        - To make transition smooth, SMIL <prefetch> is generated to run in parallel to playing content

- Screenfeed
- Any video podcast
- ...

HTML5

- Great potential to become the standard for
  - Interactive content
  - Real-time data integration

- Some great examples
  - DEMO: http://www.IAdea.com/html5

Combining the Best

- Revive SMIL! Combine with HTML!

- HTML as a content format in SMIL
  - **SMIL** as the playlist/scheduling/synchronization standard
  - **HTML5** as the composite content standard
    - Embedded into SMIL schedules

- SMIL as time-based attributes in HTML
  - Revisit Microsoft's 1998 proposal for HTML+TIME
  - Very difficult due to incompatible DOM semantics

The Biggest Missing Piece in HTML

Live Cache for Reliable Deployment

What's Missing in HTML

- Foremost, the ability to play when connection is lost

"Live Cache"

Use Cases for Live Cache

- Conditions making playback URLs impossible
  - Lost network
  - Player restart without network

  - These are <u>not</u> rare exceptions; they are expected conditions of a real network

- Basic philosophy: "A Player Should Play"

Requirement

- HTML for digital signage should provide a mechanism to keep and play the *last known version* of media files when *network is not available* obtain updates. The cache must be persistent across player restarts.

Existing Techniques in HTML5

- Cache manifest

- Local storage

Cache Manifest

```
<html manifest='my.manifest'>
    …
</html>
```

my.manifest

```
CACHE MANIFEST

CACHE:
images/logo.png

NETWORK:
*
```

- If content has "live" components, then server must continuously monitoring changes and updating the manifest

  - If this were used to cache a Twitter feed, server would be quite busy
    - Or flight information, exchange rates, …

  - If each viewer is allowed to select a different feed…

Local Storage

- Instead of loading dynamic data from the web, store them into and play from *localStorage[]*
  - Successful results with text-based content

- Easy to cache strings; difficult for generic media files (img, video, audio)
  - Convert media files into "data URIs" per RFC 2397
  - No API defined
  - Data URIs generally are limited in size

- Would not work for icons in a Twitter feed, and videos in a podcast, for example

IAdea's Take

- "Live cache" should be a high-priority HTML reliability feature for our business group to work on and recommend to W3C

Conclusion

- Open standards are the next frontier for digital signage
  - There remains lots to be desired

- IAdea hopes to work with each one of you on
  - Promoting W3C standards
  - Sharing lessons learned from lots of experience
  - *Fulfilling your open-standard OEM product needs*

Thank You

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