Driving adoption of W3C XML technologies on the client:
Modular specs, bridges from current markup, and making it all work together

John Boyer (Forms Chair, IBM) and Charlie Wiecha (Rich Web Backplane XG Chair, IBM)
Driving adoption of W3C XML technologies on the client: Modular specs, bridges from current markup, and making it all work together

- **What type of web app are we trying to build?**
  - Focus on high-function data-oriented clients
  - “Data-Rich” Internet Applications

- **Building blocks from existing W3C technologies**
  - Modularity: specs for data model and validation, submission, UI binding, events, update behavior

- **Bridges from current markup**
  - Abstraction: streamlined, attribute-oriented, forms syntax for HTML authors

- **Examples of making it work together: Backplane XG**
  - Data Backplane: SMIL and XHTML, VoiceXML and XHTML, Dojo and XHTML
  - MVC Backplane: calendars and color pickers in YUI
  - Accessibility Backplane: ARIA enablement
Requirements for Data-Rich Internet Applications: A Standards-based approach

- **What is a Data-Rich Internet Application?**

  - Focus on data capture at the client with interactions driving business processes:
    - This is a key high-value use case!
  
  - Client-side support for simple and complex types
    - Validation
    - Assisted entry
  
  - Contextual feedback to the user
    - What's allowed given current state of the data?
    - What’s relevant, what’s required
  
  - Server connection support
    - Both synchronous and asynchronous
    - Higher level, declarative, patterns on top of XMLHttpRequest
Requirements for Data-Rich Internet Applications: A Standards-based approach

- **Goals of a framework for Data-Rich Internet Applications**
  - Refactor common infrastructure away from any one language
    - Data instances
    - Simple and structural types
    - Validation
    - Spreadsheet function for calculation
    - Server connection framework
    - MVC binding and behavior (signaling events for valid, invalid, required, relevant…)
    - Abstract controls (select, repeat, input, output…)
  
  - Embed support for rich data interactions in popular existing RIA host languages
    - Adds data-rich functionality to existing language features: rich layout and media, component models for reuse, object-orientation, data-binding frameworks

  - Align declarative and imperative programming models
    - Same behavior (events, lifecycle) from both scripting and markup

  - Mobile as well as desktop
    - FF*, IE*, Webkit (Safari, Chrome, Webkit in browsers for iPhone and Android), Opera…
Building blocks from existing W3C technologies
Modularity: specs for data model and validation, submission, UI binding, events, update behavior

Placeholder for John’s charts
Bridges from current markup
Abstraction: streamlined, attribute-oriented, forms syntax for HTML authors

To fill in…
Examples of making it work together: Backplane XG

- **Data Backplane:**
  - SMIL and XHTML
  - VoiceXML and XHTML
  - ODF and XHTML

- **MVC Backplane:**
  - calendars and color pickers in YUI

- **Accessibility Backplane: ARIA enablement**
No Budget Bicycle Tours
Amsterdam

Select optional content in the sidebar, then press "Start" to start the video.

Als je een hotel zoekt kun je bijvoorbeeld ...

Start  Pause  Resume

Searches
Search:  hotel amsterdam
Google  Wikipedia

Websites Referenced
•  VVV (Municipal Tourist Information)
Data Backplane: SMIL and XHTML
Data Backplane: VoiceXML and XHTML

XHTML Form

VoiceXML Form

<xml:field name="voice_loan_principal">
  <xml:filled>
    <xml:value expr="xforms_setvalue(...)"/>
  </xml:filled>
</xml:field>

XForms Data Model

Framework events for UI refresh

Framework events for UI refresh
Data Backplane: ODF and XHTML

**XHTML Form**

- **Big Red Loan and Mortgage Co.**
- **The name to trust when you're in the red.**
- **Framework events for UI refresh**

**ODF Spreadsheet**

- **Home mortgage wizard.**
- **Framework events for UI refresh**

**XForms Data Model**
MVC Backplane: Calendars and color pickers in YUI
Accessibility Backplane: ARIA (TBD)

Big Red Loan and Mortgage Co.

The name to trust when you're ... in the red.

Agreement Date: 08/21/2008
Borrower Name:
Borrower's Address:
Principal of Loan:
Choose currency:
Duration of Loan in Months:
Yearly Interest Rate (compounded monthly):

Monthly Payment: 895
Total Payout: 10750

Submit Loan
Backup
Goals of the Rich web application *backplane*: Refactor common infrastructure away from any one language

- **XML Data Model**
  - Validation
  - Constraints
  - Binding
  - Transformation

- **XHTML View**
- **Voice View**
- **SVG View**
- **Dojo View**
- **ODF View**
- **XForms View**

**Page Lifecycle:**
- Model updates
- Controller fires
- View updates

**Submit**
- Synchronous page replace
- Asynchronous instance replace

Optional SCXML Controller

- Full client-side page lifecycle is supported via zero-install, JavaScript, tag bindings:
  - Supports both declarative and procedural components
  - Declarative components interpreted on the client via JavaScript based tag bindings
Modularity: independent RIA Backplane “mini-specs” usable in a variety of interaction languages

**Interaction Namespaces and Frameworks**
- XHTML and HTML
- SVG
- ODF
- VoiceXML
- SMIL
- AJAX-based Composite apps

**Backplane modules**
- Submission module
- XML Data Instance
- Data model (instance plus actions)
- Model-view binding and events
- Choreography (SCXML)
- Abstract UI controls Module
- Webforms-A Module

**Example platform technologies**
- DOM Parser
- XPath, XSLT
- DOM Events
- JS
- Security

**Example platforms -- Desktop and Mobile**
- Mozilla/FireFox
- Internet Explorer
- WebKit
- Opera