W3C Workshop on Declarative Models of Distributed Web Applications

Application Adaptation

Rhys Lewis
Chief Scientist, Volantis Systems
Agenda

- Background
- Application Adaptation
- Trends in Application Style
- Conclusion
Volantis Interest

Volantis
- Content adaptation
- Server side offerings
  - Mobile operators
  - Large content providers
- Web technologies
  - Heavily involved in Web standardisation activities
    - W3C UWAWG
    - W3C MWI DD
    - OMA BT
  - Involved in other initiatives
    - OpenAjax Alliance

Interest in Web as an Application Platform
- Our customers are driving us to build real applications
  - Shipping products that are starting to support this
Content Adaptation

- Where we are today in Mobile
- Help authors cope with diversity
  - Thousands of kinds of device
    - Different physical characteristics
    - Different coverage of relevant standards
    - etc.
- Write once, use anywhere
- Separate authored materials
  - Device independent: higher reusability
  - Device dependent: lower reusability
- Adapt authored materials to specific device characteristics
  - change concrete UI
  - split pages
  - emulate missing features ...
- Current focus is on user interface
Topic: Application Adaptation
Application Adaptation (1)

- Extend beyond look and feel to behaviour
- Declarative authoring
  - Capture author's **intent** not code
  - Adapt to particular application environments
  - Enable late binding
- Help authors cope with diversity of application platforms
  - J2ME in various flavours
  - Brew
  - Symbian
  - Windows Mobile ...
- Reduce the authoring effort
  - Reduce the number of technologies they need to understand
- **Without** additional burden on the browser
Application Adaptation (2)

- **Device-independent material**
  - Core markup, for example
    - DIAL
      - XHTML 2, XForms, DISelect ...
  - Custom components
    - Abstractions of commonly used application components
    - Encapsulation of server-side function
      - Web services, Ajax end points, ...
    - Additional abstract UI components, ...

- **Device-specific material**
  - Policies
    - Tailor the markup and components
    - Styling and layout
    - Behaviour ...

- Generate markup, styling, script suitable for the device
Device-specific capabilities

Concrete UI

UI Events

Device-specific model

Mutation Events

Policies

Device-independent model

adaptation

Device-specific materials

Delivery Context
Statechart diagrams

UML 2 and SCXML?

Look, no markup!
Truly Distributed Web Applications

- Utilize intrinsic device features from Web applications
  - Cameras, GPS, Voice recording ...
- Utilize device applications
  - Personal information manager
    - eBay example
- Access to device facilities via APIs is essential
  - Some standardisation is happening
    - e.g. W3C Delivery Context Client Interfaces
- Increased focus on distribution of function
  - Distributed event model - REX?
- Security is a major challenge
Topic: Trends in Application Style
Trends in Application Style

● Subscribe rather than browse
  ● Helps overcome some UI deficiencies in mobile devices
  ● Information automatically transferred to device
    ● Instantly available – no latency

● Hot topic in OMA
  ● Standardisation is occurring
    ● Looks to be above the level of the communications
    ● Ajax is a possible implementation mechanism

● Buzzcast is an example
  ● Demonstration
  ● Very specific application
  ● Amenable for early implementation
    ● Doesn’t necessarily need fully functional Ajax in every device
  ● Early example of a more declarative application
Topic: Conclusion
Volantis keenly interested in pursuing declarative models

Retain as much semantic information as possible
  ● Enable application adaptation
  ● Keep more author intent
  ● Bind late

Adapt to a range of devices
  ● Graceful degradation

Capture semantics above the level of individual pages
  ● State machines
  ● SCXML?
  ● UML 2.0