XML for Java Developers
G22.3033-002

Session 7 - Main Theme
XML Information Rendering (Part II)

Dr. Jean-Claude Franchitti

New York University
Computer Science Department
Courant Institute of Mathematical Sciences

Agenda

- Summary of Previous Session
- XML/XSL and JSP/JavaBeans Rendering Technology
- Internationalization Issues
- Web Content Accessibility Guidelines (WCAG)
- Assignment 4a+4b (due next week)

Summary of Previous Session

- Extensible Stylesheet Language Transformation (XSL-T)
- Extensible Stylesheet Language Formatting Object (XSL-FO)
- XML and Document/Content Management
- Assignment 4a+4b (due in two weeks)
XML-Based Rendering Development

- XML Software Development Methodology
- Language + Stepwise Process + Tools
- XML Application Development Infrastructure
- Metadata Management (e.g., XMI)
- XSLT, XPath, XSL-FO APIs (JAXP, JAXB, JDOM, SAX, DOM)
- XML Tools (e.g., XML Editors, Apache’s FOP, Antenna House’s XSL Formatter, HTML/CSS1/2/3, XHTML, XForms, WCAG)
- XML Applications Involved in the Rendering Phase:
  - Application(s) of XML
  - XML-based applications/services (markup language mediators)
  - MOM, POP, Other Services (e.g., persistence)
  - Application Infrastructure Frameworks

XML Data Rendering Patterns

- Manipulating and Rendering XML Structures Using Java
  - XSL-T
    - Transform
    - Sort
    - Output
  - XSL-T + -FO
    - Format
    - Output
- Querying will be covered separately

Part I

XML Application Services and XML Rendering Technology
Towards XML Application Service

- Processing
  - DOM Extensions
  - Binding Extensions
  - Component Frameworks (reusable component models)
  - Model-Based Automation (MDA)

- Rendering
  - DOM 2.1.0, SAX 2.0, JAXP 1.1 & TruX, XSL-FO 1.0
  - Component Frameworks

- Querying
  - XQuery 1.0, XSLT 1.1/2.0, XPath 1.0/2.0
  - Security (signatures encryption/decryption, etc.)
  - Etc.

Rendering Software Development

- Languages (XSL)
- Process (“XUP”)
- Frameworks (POP/MOM) - See XML2EE
  - Cocoon 2.0
  - Xang
  - Batik
  - Etc.

- XSL Infrastructure
  - XSL-T Processors: Saxon 6.1, Xalan-J 2.1.0
  - XSL-FO Processors: fop 0.19

W3C’s New “Architecture” Slant

- New W3C UI Domain Structure
  - Document Formats
    - Amaya
    - Graphics
    - Internationalization
    - Math
    - Style
  - Interoperation
    - Device independence
    - SMIL and voice browsers
  - Architecture
Part II

XML Internationalization Issues

W3C Internationalization

- Internationalization Activity Statement
  - [http://www.w3.org/International/Activity.html](http://www.w3.org/International/Activity.html)
  - I18N and L10N features incorporated in (X)HTML, CSS, XML, RDF, SMIL, DOM, MathML, SVG, XPath, XSL(T), and XML Schema, HTTP 1.0
  - W3C’s Jigsaw, Amaya
- Problem is to document encodings being used
  - W3C Character Model
- [Character Model for the World Wide Web](http://www.w3.org/International/CharacterModel)
  - Normalization to Unicode Standard and ISO/IEC 10646
- [Ruby Annotation](http://www.w3.org/International/Ruby)
- [Unicode in XML and other Markup Languages](http://www.w3.org/International/Unicode)

Part III

Web Content Accessibility Guidelines (WCAG 1.0)
Current State of XML Standards

- WCAG 1.0 (5/5/99) - W3C Recommendation
- WCAG 2.0 (3/28/01) - W3C Working Draft
  - Support wide range of languages
  - Easier to use by authoring tools developers
  - Easier to check conformance
- Techniques for WCAG 1.0 (3/20/00)

Guidelines Summary

- Provide Alternatives to Auditory and Visual content
- Avoid sole reliance on colors
- Use markup and style sheets
- Clarify natural language usage
- Create tables that transform well
- Make Sure that Pages that Feature New Technologies Transform Well
- Ensure User Control of Time-Sensitive Content Changes

Guidelines Summary (continued)

- Ensure Direct Accessibility of Embedded UIs
- Design for Device Independence
- Use Interim Solutions
- Use W3C Technologies and Guidelines
- Provide Context and Orientation Information
- Provide Clear Navigation Mechanisms
- Provide Clear and Simple Documents
Part IV

Conclusions

Summary

- XML Application Services support a stepwise approach towards the development of XML-based system architectures
- W3C Internationalization is moving towards normalization based on a web character model
- I18N/L10N support needs to keep being added into XSL, and CSS3. XML Query, XML Protocols, XForms, and newer XML technologies
- Content Accessibility Guidelines are targeted to Web and Authoring Tools developers to ensure that Web content is accessible to people with disabilities

Readings

- XML Development with Java 2: Chapter 5
- Professional Java XML: Chapters 7, 8, and Appendix G
- XML and Java: Chapter 4
- Handouts posted on the course web site
- Review XQuery 1.0 and XPath 2.0 status on W3C web site (http://www.w3.org/TR/query-datamodel/)
- Project Frameworks Setup (ongoing)
  - Apache’s Web Server, TomCat/JRun, and Cocoon
  - Apache’s Xerces, Xalan, Saxon
  - Antenna House XML Formatter, Apache’s FOP, X-smiles
  - Publishing Systems at http://www.xmlsoftware.com
  - Visibroker 4.5, WebLogic 6.1
  - POSE & KVM (See Session 3 handout)
Assignment

- Assignment #4:
  - This part of the project focuses on the application content model design/development using XML information rendering technology. The design/development process should adhere to the following steps: (a) Identifying rendering/transformation targets, (b) Defining the optimal rendering approach for each target, (c) Considering data rendering issues when designing an overall application data model
  - More specific project related information, and extra credit assignments will be provided during the session

Next Session:
XML Information Retrieval (Part I)

- Applications of XML to Database Technology
- XML Queries
- XML Query Languages