

**XML and XSLT:
UI Alphabet Soup**

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John Yost

Agenda

- Business Discussion
 - What is This Stuff?
 - Why Should I Care?
 - Who Actually Cares?
 - Discussion / Questions
- Technical Discussion
 - Technology Timeline
 - XML
 - XSL / XSLT
 - XHTML
 - Questions

Business Discussion

What Is This Stuff?

- What do these acronyms mean?
 - XML—eXtensible Markup Language, a definition language
 - XSL —eXtensible Stylesheet Language, a presentation language
 - XSLT—eXtensible Stylesheet Language Transformations, a formatting language
 - XHTML—eXtensible HyperText Markup Language, a layout language
 - CSS—Cascading Style Sheets, a presentation language*
 - XPATH—XML PATH language, a linking and query language*
 - XPointer – XML Pointer language, a linking language *
 - XQuery – XML Query language *
 - XForms – XML Forms language *
- Isn't this very technical?
 - Somewhat, but these technologies can help use data more effectively

* Beyond the scope of this briefing

Why Should I Care?

- Reduce costs by standardizing data interchange
 - Use standard languages—don't reinvent!
 - Use XML to define new languages, when needed
 - Use standard tools—save on training
- Save time and reduce cost by creating dynamic interfaces
 - Increase quality and reduce maintenance / development costs by “automatic” coding
 - Permit UI staff to maintain applications without coding
- Improve service by providing flexible data access
 - Access applications anywhere via the Internet
 - Link heterogeneous systems—develop where it is most advantageous
 - Reduce maintenance and development costs by reusing heterogeneous Web Service components

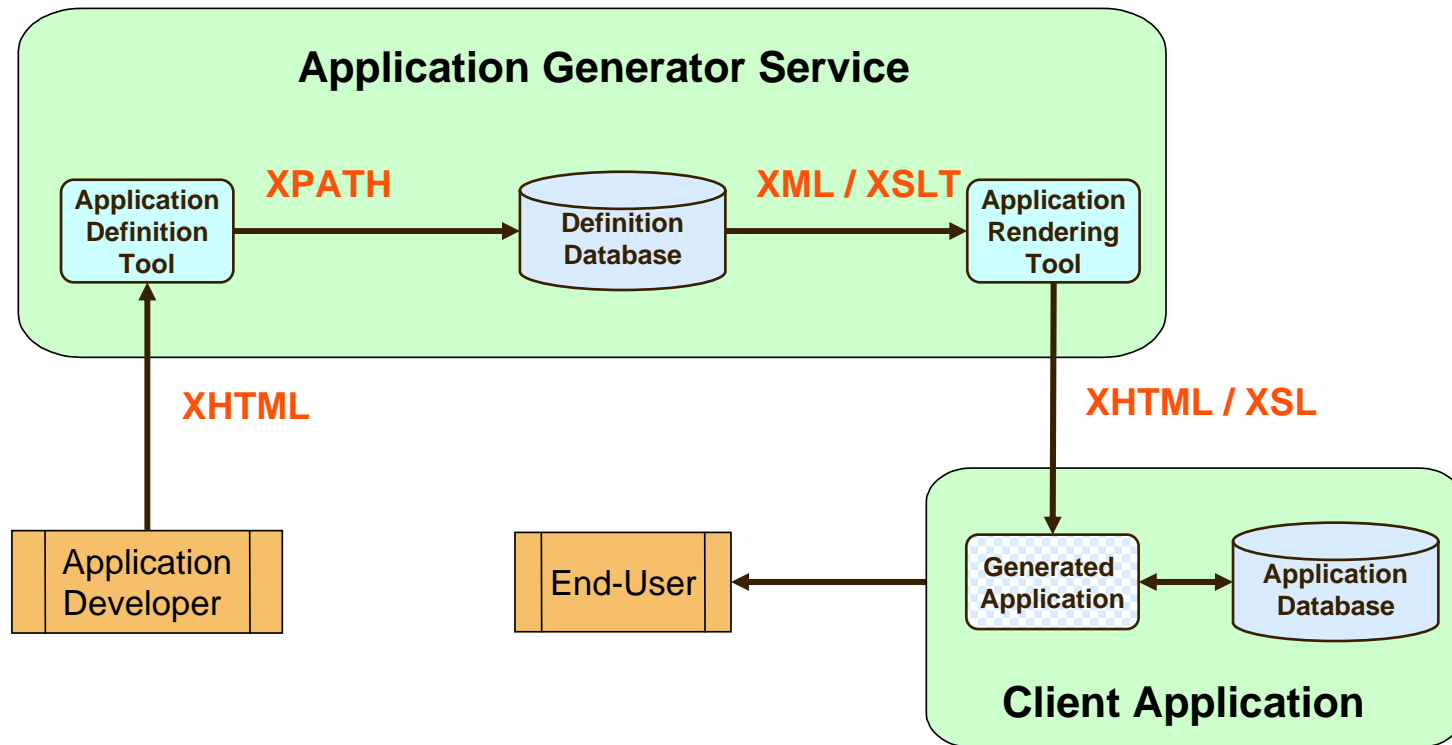
Standardize Data Interchange

- Example XML-based standard “languages”:
 - VXML: Voice XML – communication to and from voice recognition scripts
 - HRML: Human Resource Markup Language – communication between human resource applications
 - WAP: Wireless Access Protocol - communication with small, wireless devices
 - XHTML: eXtensible HyperText Markup Language – communication to web browsers
 - SOAP: Simple Object Access Protocol – communication with web services
- Create your own “language”

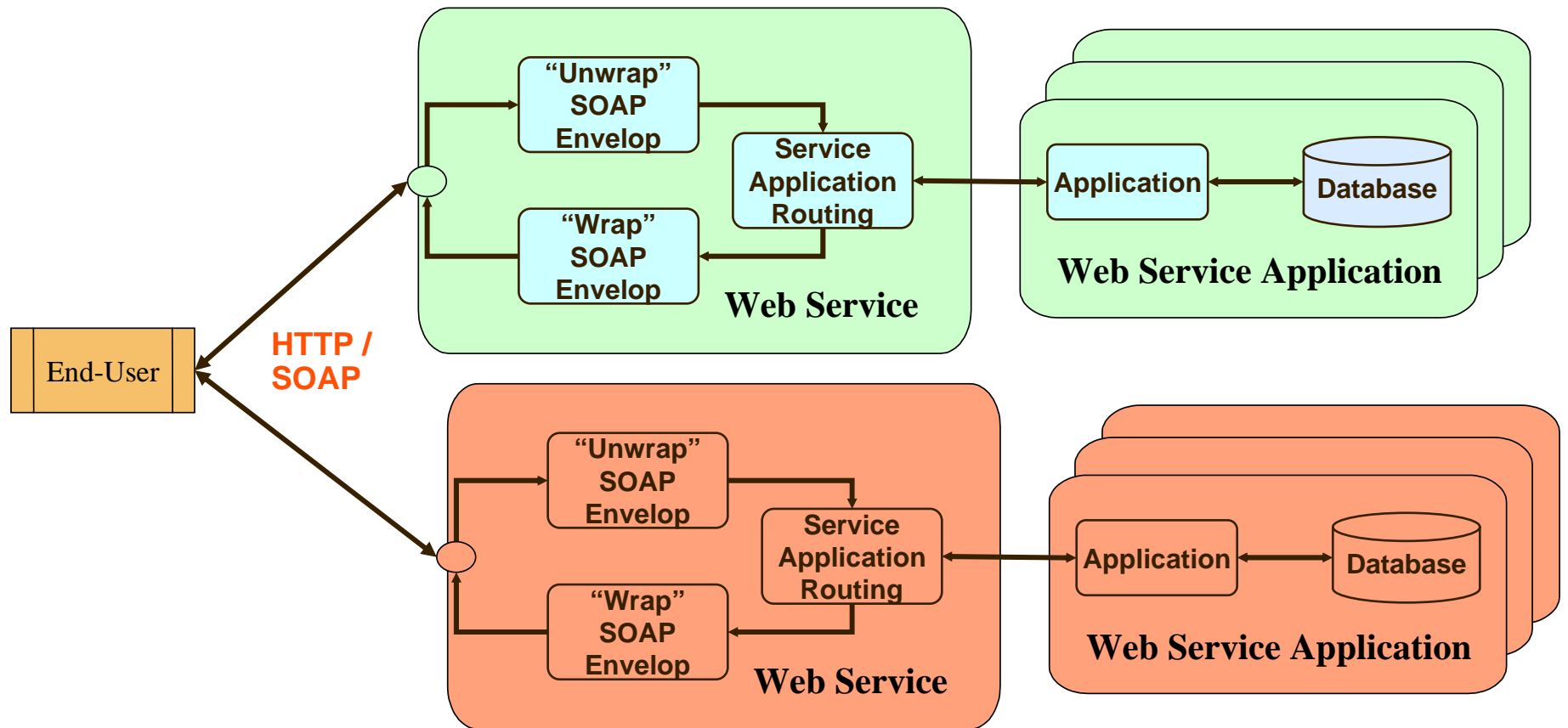
Create Dynamic Interfaces

- Application Generators
 - Store application “meta-data” in database
 - “Render” or display applications dynamically, based on user input and meta-data
- Web Services
 - Allow processing services to be invoked via a Web protocols (HTTP, SOAP)
 - Create distributed applications from Web Service components

Application Generator Technology



Web Service Technology



Provide Flexible Data Access

- Voice-enabled applications
 - Voice scripting, similar to Interactive Voice Response (IVR)
 - Voice recognition of input data
 - Delivery of valid, structured user input data
- Publication of structured data for ad-hoc reporting
 - Extract “approved” data for reporting
 - Data structure and meaning is captured
 - Reports may be designed after data is published

Who Actually Cares?

- Reduce costs by standardizing data interchange
 - Microsoft uses XML for communication within the .NET framework
 - ITSC “Futura” prototypes use “Worker” and “Employer” languages to capture application data for legacy integration
- Save time and reduce cost by creating dynamic interfaces
 - Arizona Initial/Continued Claims, Wage & Tax (deployed)
 - Delaware Initial Claims (acceptance testing)
 - Rhode Island Multilingual Claims (development)
- Improve service by providing flexible data access
 - Connecticut “XML Gateway” for Wage & Tax data (development)

Who Might Care?

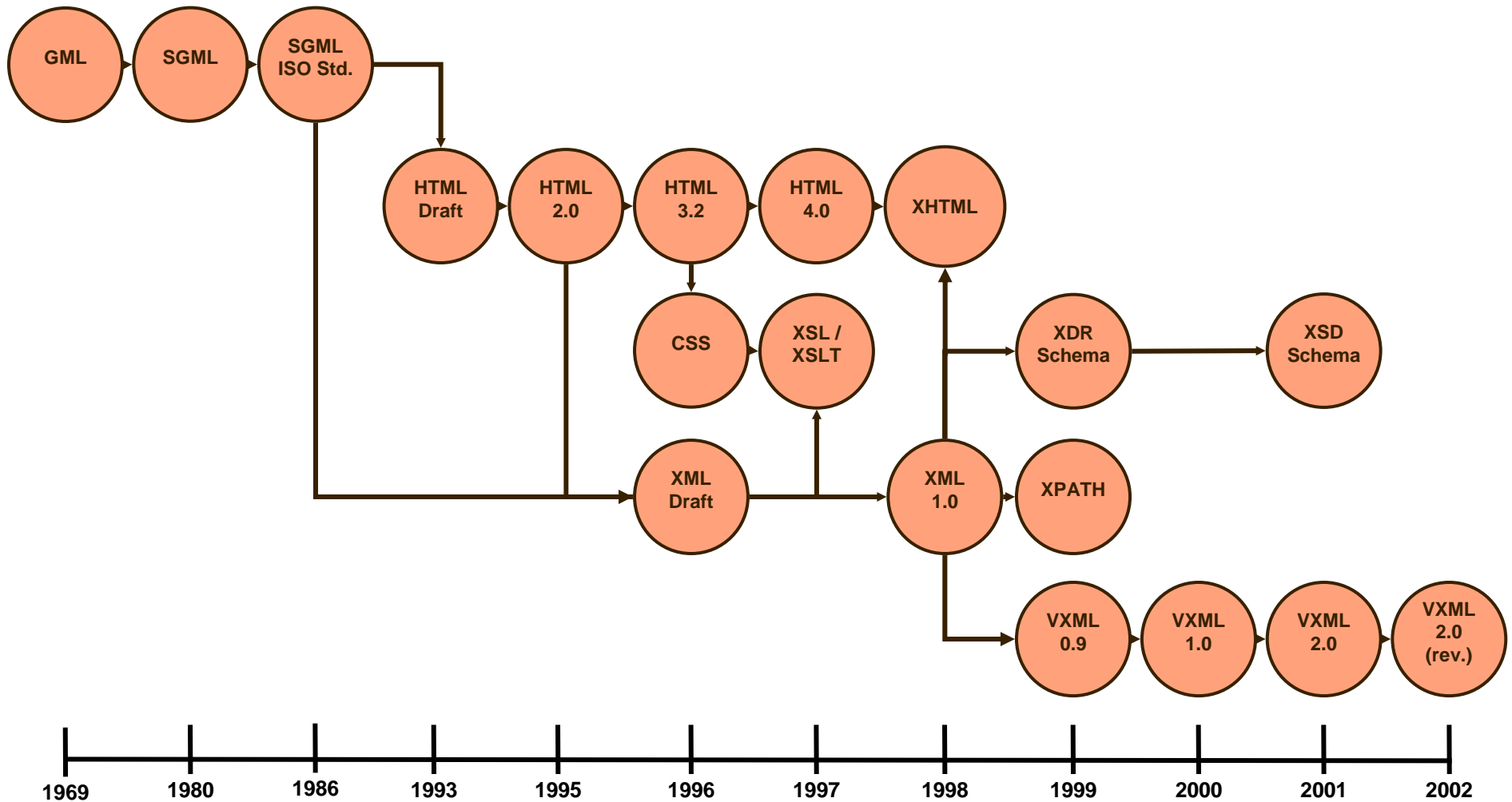
- Reduce costs by standardizing data interchange
 - Interstate claims
- Save time and reduce cost by creating dynamic interfaces
 - Web services for employers: return employer data to employer applications
 - Multilingual claimant applications: one control path—many languages
- Improve service by providing flexible data access
 - Labor Market Information for ad-hoc query

Discussion / Questions

Technical Discussion

The faint of heart may now leave ...

XML Technology Timeline



What is XML?

- Non-proprietary language definition standard
- “Markup” language (uses “tags” like HTML) emphasizing structure not presentation
- XML Document Syntax
 - XML Declaration (optional): XML language, version, encoding
 - `<?xml version="1.0"?>`
 - XML Structure Definition (optional): reference to structural definitions stored internal or external to the XML document
 - Document Type Definition: “doctype”, non-XML syntax
 - Schema: XDR (Microsoft) or XSD (W3C) definitions
 - Namespace: qualified names
 - Document Body:
 - `<elements attributes="values"> ... </elements>`

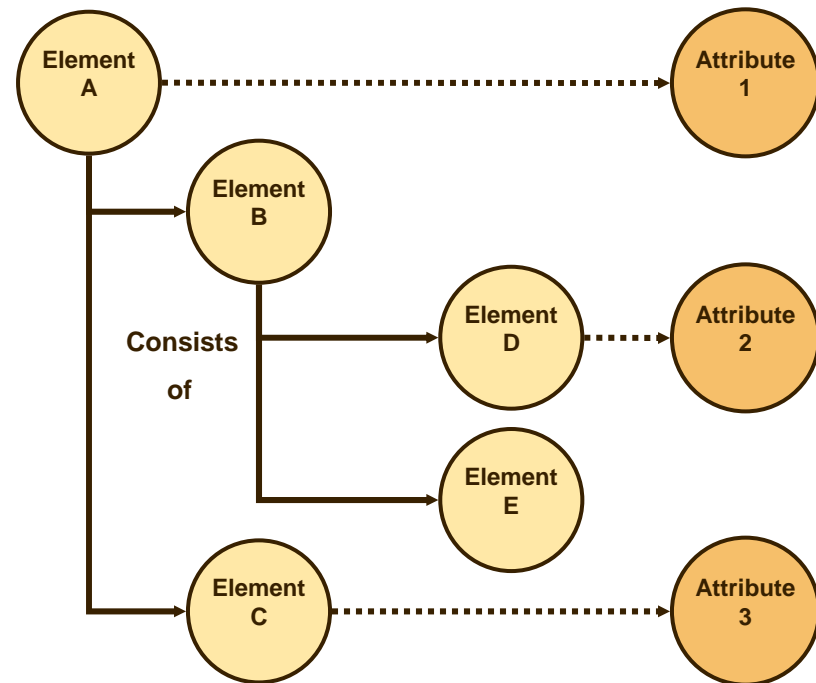
What is XML (Continued)?

- An XML document can be:
 - Invalid
 - Well-formed
 - Validated
- A parser is used to check the condition of an XML document
 - Standard tools for standard syntax
 - Validating or non-validating
- There are two main styles of parsers:
 - Simple API (Application Programmatic Interface) for XML (SAX): event-driven, no data structure
 - Document Object Model (DOM)

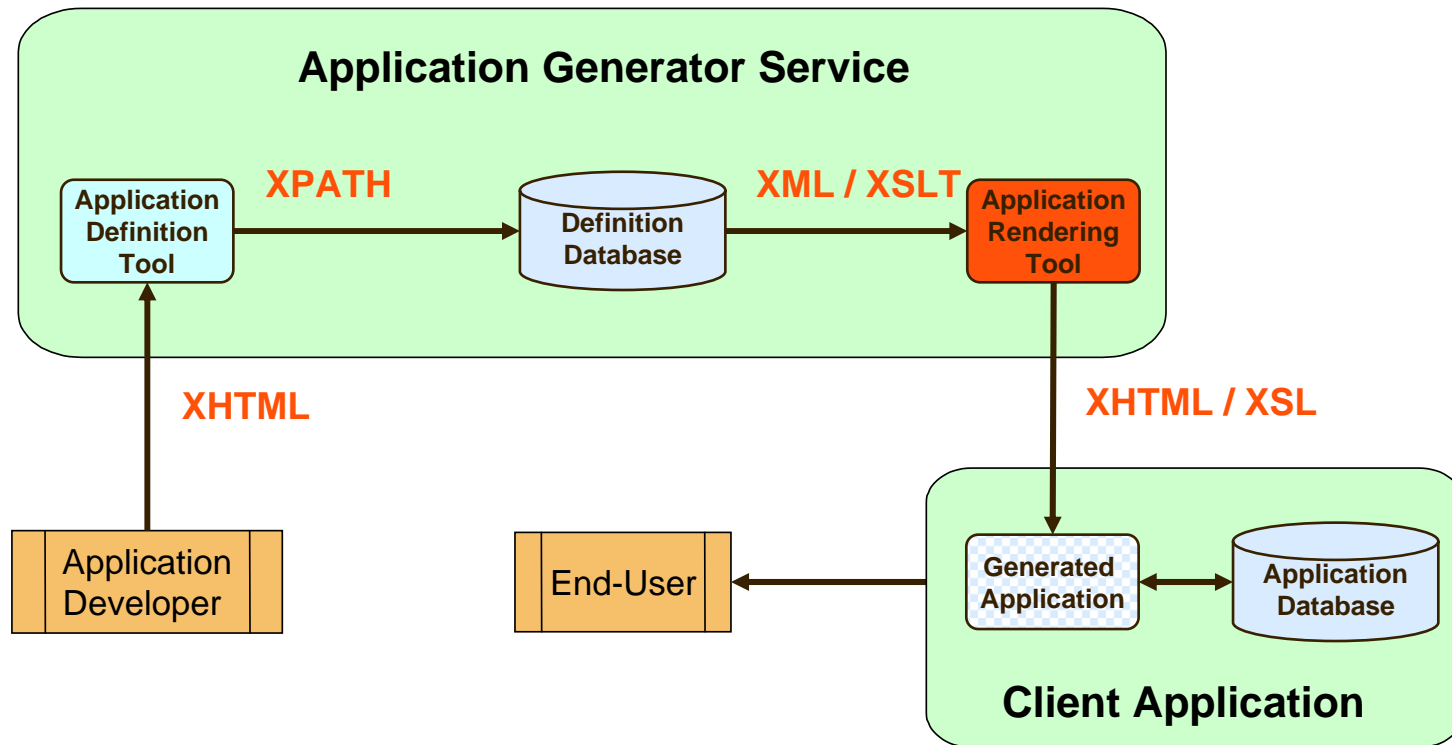
What is XML (Concluded)?

- Document Object Model: in-memory data structure holding all elements and attributes of XML document
 - Standard functions to create, destroy, add, delete, link, unlink, search, load, unload, validate, etc.
- Example:

```
<a attribute="1">  
  <b>  
    <d attribute="2"/>  
    <e/>  
  </b>  
  <c attribute="3"/>  
</a>
```



Application Generator Example



XML Example

```
<Page ID="Page1" Title="Personal Information" Today="Wednesday, June
  10 , 2003">
  <Question Text="Where do you live?" Description="Please tell us a little
    about yourself.">
    <Answer Type="select" Name="PlaceOfResidence"
      ListRef="State" Size="1" />
  </Question>
  <Question Text="Did you have a nice weekend?">
    <Answer Type="radio" Name="Weekend" ListRef="YesNo" />
  </Question>
  <Question Text="Please add any additional comments here:">
    <Answer Type="textarea" Name="Comments" ListRef="" Size="20"
      MaxLen="150" />
  </Question>
</Page>
```

What is XSL / XSLT?

- A translation and presentation language
 - Style sheet formatting like CSS
 - Pattern-based editing
- XSLT Document Syntax:
 - XSLT Declaration
 - `<xsl:stylesheet version="1.0" xmlns:xsl = "http://www.w3.org/1999/XSL/Transform">`
 - XSLT Template Body

XSLT Example – Format Page

```
<xsl:stylesheet version="1.0" xmlns:xsl =  
  "http://www.w3.org/1999/XSL/Transform">  
<xsl:output method="html" indent="yes" encoding="ISO-8859-1" />  
  <xsl:template match="Page">  
    <html><head><title>XML/XSL Page Generator</title></head><body>  
      <h2><xsl:value-of select="@Title" /></h2>  
      <form>  
        <!-- invoke template for Question elements (next page) -->  
        <xsl:apply-templates select="Question" />  
        <input type="submit" value="Submit Your Answers!" />  
      </form>  
    </body></html>  
  </xsl:template>
```

XLST Example – Format Questions

```
<xsl:template match="Question">
  <!-- If attribute is present, then display Description -->
  <xsl:if test="@Description">
    <h3><xsl:value-of select="@Description" /></h3>
  </xsl:if>
  <!-- Display the Text attribute -->
  <p><xsl:value-of select="@Text" /></p>
</xsl:template>
</xsl:stylesheet>
```

What is XHTML?

- An XML presentation language, based on HTML 4.01
- Advantages:
 - Standard syntax—standard tools
 - Portable—consistent interpretation
 - Extensible—serve user-defined purposes
- Differences between HTML and XHTML
 - Mandatory “doctype” and reference to XML namespace
 - CASE SENSITIVE
 - Mandatory closing tags for elements
 - Mandatory <head> and <body> elements
 - <title> must be first element within <head>
 - Attributes must be in quotes (“)

XHTML Example - Generator Output

```
<html>
  <head><title>XML/XSL Page Generator</title></head>
  <body>
    <h2>Personal Information</h2>
    <form>
      <h3>Please tell us a little about yourself</h3>
      <p>Where do you live?</p>
      <p>Did you have a nice weekend?</p>
      <p>Please add any additional comments here:</p>
      <input type="submit" value="Submit Your Answers!" />
    </form>
  </body>
</html>
```

How Do I Learn More?

- World Wide Web Consortium (W3C)
 - <http://www.w3.org>
- XML.ORG
 - <http://www.xml.org>
 - <http://lists.xml.org>
- Google
 - Search web sites for "XML", "XSLT", or "XHTML"
 - Search news groups for "XML", "XSLT", or "XHTML"

Questions

Are you still there...?

Thank you!

- John Yost, ITSC Internet Software Manager
 - yost@itsc.org
 - 301-982-1576
- Please visit our website:
 - <http://www.itsc.org/>
- Please visit our demonstration facility:
 - <http://iitf.itsc.org/>