MOBILE INTERNET APPLICATIONS— XML-based Languages

Lesson 03

XML based Standards and Formats for Applications

Markup Language Format Standardized For Specific Application

- The tags, attributes, and XML-based language use the extensible property of XML

- Defines a specific standardized sets of instances of the tags, attributes, their representation and behaviour, and other characteristics for using in that application.

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XForm

- An XML format standardized for Specific Application needing UIs (user interfaces) like text area fields, buttons, check-boxes, and radios

- Xform the fields (keys) which are initially specified

- Fields either have no initial field values or default field values

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XForm

- Presented to a user using a browser or presentation software and user interactions take place

- The user supplies the values for these fields by entering text into the fields, checking the check-boxes, and selecting the radio

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XForm

- The user then submits the XForm which is transmitted from client to server for carrying out the needed form processing

- The server program can be at remote web server or at the device computing system

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XML for Forms— XForms

- An application may generate a form for answering the queries at server end, which needs to be filled and submitted by the client end

- XForms is a <u>form in XML</u> format which specifies a data processing model for XML data and UIs for the XML data

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XForms

- Provides a UI (user interface)

- Web forms which can also be used in a stand-alone manner or with presentation languages other than the ones for a set of common data manipulation tasks or user interface

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XForms controls

- <textarea>

- <input>

- <secret>

- A string data type attached with these fields

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XForms controls

- <selectOne> [for a radio]
- <choices> [for check-boxes]
- <item>
- <itemset>

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XForms Attributes

- Input control are ref and xml:lang. xml:lang = "en" enables use of XML

- The other attributes— are accessKey, navIndex, and class

XForms Elements

- <alert>

- <caption>

- <hint>

- <extension>

CLIENT-SIDE AS WELL AS SERVER-SIDE VALIDATIONS

- Done before processing of the XForms—similar to XML document validation

XML USER INTERFACE (XUI)

- A framework in XML and Java for mobile and mobile handheld device applications

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WBXML (WAP BINARY MARKUP LANGUAGE)

- A a format in which WAP presents XML document as binary numbers

- A binary number represents a string of characters for each element and attribute

- Use of the number reduces the size of the document and hence the transmission time from client to gateway or gateway to client

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VoiceXML (VXML) 2.0

- Version of an XML-based language in use from 2004 for interactive talking between a human being and a computer

- Also supported by IBM WebSphere

- Used with HTTP protocol on a network analogous to that for HTML

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VoiceXML (VXML) 2.0 Browser

- Analogous to an HTML display browser (e.g. NetScape or IE 5.0)

- Interfaces with mobile or landline telephone network

- Provides a voice user interface (VUI) to a voice browser

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Applications of VXML

- Bank account enquiry

- Report of loss of credit card

- Directory

- Flight enquiry

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The tags in VXML

- For playing a sound file from audio book

- Automatic speech recognition

- Dialog management

- Speech synthesis by voice browser

VoiceXML (VXML) 2.0 tag Example

- <prompt> Hello Lucy </Prompt> gives the message Hello Lucy using speech synthesizer with the voice browser

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Conversion of text to speech (TTS)

- The displayed text message from a website for control of traffic and congestions at nearby places

- In a moving automobile, TTS required that the site data is downloaded and read and spoken to a driver

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SSML (SPEECH SYNTHESIS MARKUP LANGUAGE)

- Used in TTS (text to speech converter)

- For synthesizing the speech by interpretation of a text by a synthesizer

- Creates audio book

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SSML (SPEECH SYNTHESIS MARKUP LANGUAGE)

- Also Specifies *emphasis* of the voice

- For example, it specifies when the voice is normal and when it is loud

- SSML can be embedded in VXML scripts

- The scripts provide an interactive telephone

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Tags with attribute in SSML

- xml:lang─ Specify attribute English, <s xml:lang="en">

- Specifies the synthesis source for voice as <voice name="Mary" gender="female" age="22">

- The text is then synthesized by spoken English in voice of Ms. Mary of age 22

Speech recognition grammar specification (SRGS)

- Used in SSML

- Lets speech recognizer to define the pattern of sentences

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Call control extensible markup language (CCXML)

- A standard for an XML-based language, which can be used independently or with VXML for telephony support

- Commands the browser to handle the calls of the voice channel

- CCXML 2.0 handles the events and state transitions

CCXML Example of commands and transition

- Commands for initial call set-up or call disconnect between a caller and voice browser

- Example transition from call set-up to call connected state or call connected to disconnected state)

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Summary

- XML based Standards and Formats required for the mobile and other Applications
- XForms for filling and submitting forms to the application
- VoiceXML
- TTS text to speech converter application
- SSML for speech synthesis

…Summary

- SRGS for grammar support in specific recognition
- CCXML for telephony support

End of Lesson 03

XML based Standards and Formats for Applications