

XML

Extensible Markup Language

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Agenda

- Introduction
- Overview
- Impact of XML
- Uses of XML
- Development Tools
- XML in the future



Terms and Vocabulary

- Markup language
- W3C (The World Wide Web Consortium)
- HTML (Hyper Text Markup Language)
- SGML (Standard Generalized Markup Language)



A little bit of background

- The need for XML
- How and when it was created
- Development process



The concept of XML

- Essentially what is it?
- How it differs from HTML and SGML
- Its importance to markup languages.



Overview

- Stands for:
 - Extensible
 - Mark-Up
 - Language
- “XML provides a text-based means to describe and apply a tree-based structure to information.”



Overview

- XML Consists of:
 - Characters
 - Documents
 - Entities

- These things allow for a document to be easily created and maintained.



Overview

- Documents must adhere to the rules of XML while writing.
- However...these rules can be bent by using schema.
 - Elements
 - Attributes
- This makes XML better than the inflexible HTML.



Overview

- Strengths
 - Can be read by both human and machine
 - Has support for Unicode
 - Can be used for document storage
- Weaknesses
 - Its syntax is fairly redundant
 - Mapping XML can be difficult



What is XML?

- Here is an example of a simple recipe expressed using XML:

```
<?xml version="1.0" encoding="UTF-8"?>
<recipe name="bread" prep_time="5 mins" cook_time="3 hours">
  <title>Basic bread</title>
  <ingredient amount="3" unit="cups">Flour</ingredient>
  <ingredient amount="0.25" unit="ounce">Yeast</ingredient>
  <ingredient amount="1.5" unit="cups" state="warm">Water</ingredient>
  <ingredient amount="1" unit="teaspoon">Salt</ingredient>
  <instructions>
    <step>Mix all ingredients together, and knead thoroughly.</step>
    <step>Cover with a cloth, and leave for one hour in warm room.</step>
    <step>Knead again, place in a tin, and then bake in the oven.</step>
  </instructions>
</recipe>
```

<http://en.wikipedia.org/wiki/XML>



What is XML?

- XML Declaration
 - `<?xml version="1.0" encoding="UTF-8"?>`
- Element
 - Start Tag: `<step>`
 - End Tag: `</step>`
 - Content: Knead again, place in a tin, and then bake in the oven.
 - Attributes: `<ingredient amount="3" unit="cups">Flour</ingredient>`
 - Empty Element Tag: `<blank />`
 - Entity Reference: `&`; (`&`)



The Impact of XML

- Great impact on Databases and World-Wide Web.
 - Enables “machine-to-machine understanding”
 - Goes beyond HTML
 - Easier to write software
 - Useful for sharing messages and business information
 - Useful for publishing database content
- Widespread acceptance among businesses, application developers, and data-sharing communities.



Advantages to use XML

- Defines own elements
- Better organized documents
- Easy to sort through database information



Three primary uses

- Web development
 - Most widespread



Three primary uses

- Documentation

- To write internal documentation

- Example:

```
<howto>
  <title>How to Write a Mail Link</title>
  <description>
    <paragraph>
      Use a HTML tag to allow your readers to send
      email directly from your Web site.
    </paragraph>
  </description>
  <directions>
    <step>Write a link as usual <a href="">email
    me</a></step>
    <step>Where you would normally put a URL,
    put the code "mailto" <a href="mailto:">email
    me</a></step>
  </directions>
</howto>
```



<http://webdesign.about.com/library/weekly/aa060401a.htm>

Three primary uses

- Database development

- Example:

```
<item number="00001">
  <name>
    <first>Jane</first>
    <middle>Q</middle>
    <last>Public</last>
  </name>
  <phone type="voice">
    <areacode>407</areacode>
    <number>555-1212</number>
  </phone>
  <phone type="fax">
    <areacode>407</areacode>
    <number>555-1213</number>
  </phone>
</item>
```



<http://webdesign.about.com/library/weekly/aa060401a.htm> Jane, Q, Public, voice, 407, 555-1212, fax, 407, 555-1213

Development Tools

- Cocoon:
 - Is an open source tool for web application development needs.
 - This application improves development pace and reducing the chance of conflicts.
 - Interacts with many data sources, including file systems, XML data bases.
 - Helps improve efficiency of Server Applications
 - Based on concept of component pipelines.



Xindice

- Apache Xindice is a database designed from the ground up to store XML data, or native XML database.
- You can enter data as XML and retrieve it as XML



XBRL

- Is an emerging XML-based standard to define and exchange business and financial performance information.
- This is governed by a non-for-profit
- XBRL is a standard-based way to communicate business and financial performance data. (metadata)



XML in the Future

- XML will continue to be important for expressing web content
 - License-free.
 - Large and growing support for XML.
 - Extensions have been developed such as XPath and XQuery.
 - XML 1.0 is currently in its third edition.
 - XML 1.1 contains features for mainframe programmers
- Further progress is needed for XML
 - XML does have its weaknesses- increased storage costs, limited bandwidth, uses the limited hierarchical mode for representation
 - Discussions of XML 2.0.



Summary

- One of the most widely used markup languages
- Wide acceptance among IT users
- XML is continuing to grow
- XBRL is very important for SEC



**Thank you very much for
your attention!**

Any questions?

