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Thorsten S. Daum
Upstate Consultants

Data Management and Presentation with XSL(T)

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Overview

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- Reconcile disparate data sources with XML
- Standardized technologies to transform XML data into something useful, e.g.,
 - Web pages (HTML)
 - Print versions (PDF)
- Prerequisites for this tutorial
 - Basic understanding of XML
 - Familiarity with HTML

What is XSL?

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- XSL: eXtensible Stylesheet Language
 - An XML-based language for expressing stylesheets
 - 3 Parts
 - XSL Transformations (XSLT)
 - Language for transforming XML documents
 - XSL Formatting Objects (XSL:FO)
 - XML vocabulary for specifying formatting semantics
 - XML Path Language (XPath)
 - Expression language to refer to parts of an XML document
 - Used by XSLT

- Example: Address records saved in XML

```
<address book="Business Contacts">  
  <name type="individual">John Doe</name>  
  <street>123 Elm St</street>  
  <city>Anytown</city>  
  <region type="state">New York</region>  
  <postal-code>12345</postal-code>  
  <country>U.S.A.</country>  
</address>
```

The XSLT stylesheet

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```
<?xml version="1.0"?>
<xsl:stylesheet version="1.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="address">
    <xsl:processing-instruction
      name="cocoon-format">type="text/html"
    </xsl:processing-instruction>
    <html>
      <head>
        <title>My Address Records</title>
      </head>
      <body>
        <xsl:apply-templates/>
      </body>
    </html>
  </xsl:template>
```

The XSLT stylesheet (cont'd)

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```
<xsl:template match="address">
  <h1>
    <xsl:value-of select="name"/>
  </h1>
  <xsl:apply-templates/> <hr />
  <small><em><xsl:value-of select="@book"/></em></small>
</xsl:template>

<xsl:template match="street|postal-code">
  <xsl:apply-templates/> <br />
</xsl:template>

<xsl:template match="city|region">
  <xsl:apply-templates/>,
</xsl:template>

<xsl:template match="name"></xsl:template>
</xsl:stylesheet>
```

John Doe

123 Elm St
Anytown, NY, 12345
U.S.A.

Business Contacts

Printable Documents with XSL:FO

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- Can create sophisticated layouts
 - Complete page layouts (incl. page breaks)
 - Graphical elements (shadows, borders, etc.)
- Output
 - PDF
 - RTF
 - Others possible
- Complete stylesheet too complex to show here

The XSL:FO Stylesheet (*fragments*)

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```
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:fo="http://www.w3.org/1999/XSL/Format">

  <xsl:template match="address">
    <xsl:processing-instruction
      name="cocoon-format">type="text/xslfo"
    </xsl:processing-instruction>
    <fo:root xmlns:fo="http://www.w3.org/1999/XSL/Format">
      <fo:layout-master-set>
        <fo:simple-page-master
          master-name="cover"
          margin-top="1in"
          margin-bottom="1in"
          margin-left="1in"
          margin-right="1in">
          <fo:region-body margin-bottom="1in"/>
          <fo:region-after extent="1in"/>
        </fo:simple-page-master>
      </fo:layout-master-set>
    </fo:root>
  </xsl:template>
</xsl:stylesheet>
```

The XSL:FO Stylesheet (*fragments*)

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```
</fo:simple-page-master>
  <fo:page-sequence-master master-name="coverNormal">
    <fo:repeatable-page-master-reference
      master-reference="right"/>
  </fo:page-sequence-master>
</fo:layout-master-set>
<fo:page-sequence master-reference="coverNormal">
  <fo:static-content flow-name="xsl-region-after">
    <fo:block font-family="Helvetica" font-size="10pt"
      text-align="center">
      <fo:page-number/>
    </fo:block>
  </fo:static-content>
  <fo:flow flow-name="xsl-region-body">
    <xsl:apply-templates/>
  </fo:flow>
</fo:page-sequence>
</fo:root>
</xsl:template>
```

The XSL:FO Stylesheet (*fragments*)

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```
<xsl:template match="address">
  <fo:block font-size="16pt" text-align-last="end"
    space-before.optimum="0pt">
    <xsl:value-of select="name"/>
  </fo:block>
  <fo:block font-size="9pt" text-align-last="end"
    space-before.optimum="0pt">
    <xsl:value-of select="city"/>
    <xsl:value-of select="state"/>
    <xsl:value-of select="zip"/>
  </fo:block>
</xsl:template>
```

Recommended Reading

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- The only authoritative resource:
<http://www.w3.org/>
 - XML Specification (*"W3C Recommendation"*)
<http://www.w3.org/TR/REC-xml/>
 - Various XSL Specifications (*"W3C Recommendations"*)
<http://www.w3.org/Style/XSL/>
- Seasoned IT Professionals: Skip the XML books!