Why XML for Print?

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Why XML for Print?

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Why XML for Print?

- Print is only one of many uses (maybe primary, maybe not)
- Print is not just about *one* product
- Vendor-specific files are a trap
- Processing gains
  - single source
  - quality
  - speed
- XSL-FO, print directly from XML
- Busting some myths concerning XML and print

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Print is Only One of Many Uses

slide 3

"Print" Now Encompasses More

"We consider our online delivery part of our print business"

Elsevier executive (5 years ago!)

slide 4

XML is All About Repurposing and Reuse

(The"Why XML" Clichés)

- Print is not enough any more
- Single-use data is too expensive
  - Information is a corporate resource and must be managed accordingly
  - If we can't get our data out, we don't want it in
- Standard pages aren't enough anymore; every client needs a personalized look and feel
- I want just-in-time merge from *this* form plus *that* database
- Web design and print design are different

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Companies are Using XML for Print

When the Same Content Must Be:

- Printed, as we've always done
- Published on website
  (cross-references and bibliographies as live links)
- Delivered to newsfeeds
- Placed in the data repository
  - reuse / repurpose the same material
  - update continuously
  - maintain digital rights and permissions
- Provided to content aggregators
  (meansbusiness.com, books24x7.com, EBSCO, Mead, JSTOR, PubMed Central, Ithaka)
- Electronically reviewed and revised
- Printed again, in new products or formats

Ultimate Purpose of XML

- Encode (mark up) data only once (not once per product)
- Construct *many* products from that markup
- Reuse data (in whole or part) many times
  - print publications
  - websites and online syndication
  - ebooks and publishing to other devices (PDAs)
  - electronic archives for search and reuse
  - new product opportunities

One XML Document and Many Results

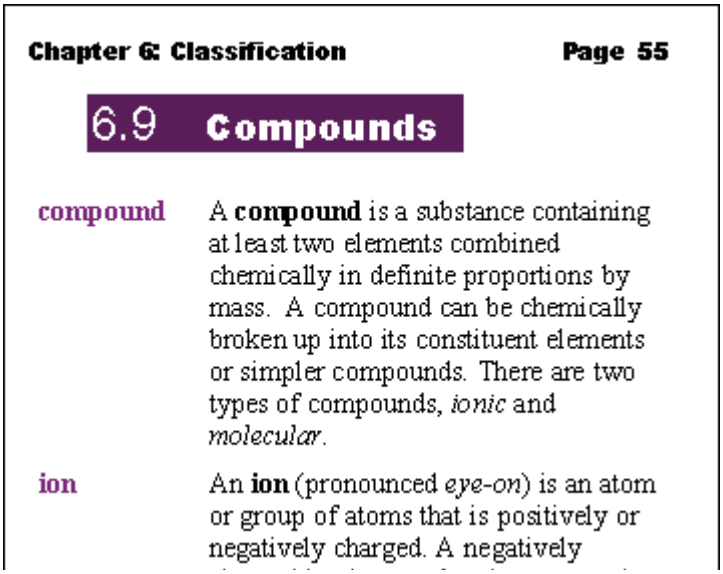
(recombination)

```
<section id="F8493842" lastupdate="2001-05-22">
<title>Compounds</title>
<para>
A <keyterm>compound</keyterm> is a
substance containing at least two elements combined
chemically in definite proportions by mass. A compound
can be chemically broken up into its constituent elements
or simpler compounds. There are two types of compounds,
<term>ionic</term> and <term>molecular</term>.
<question-and-answer>
Testbank <testgroup>GDW</testgroup>
<question-group>
<question>6</question><question>7</question>
<question>9</question><question>54</question>
</question-group>
</question-and-answer>
</para>

<para>An <keyterm>ion</keyterm>
(<pronunc>eye-on</pronunc>) is an atom or group of
atoms that is positively or negatively charged. A
negatively charged ion is an <keyterm>anion</keyterm>
(pronounced <pronunc>an-eye-on</pronunc>) while a
positively charged ion is a <keyterm>cation</keyterm>
(pronounced <pronunc>cat-eye-on</pronunc>). An
<keyterm>ionic compound</keyterm> is a compound that
is held together by the attractive forces between
positively and negatively charged ions.
<question-and-answer>
Testbank <testgroup>GDW</testgroup>
<question-group><question>6</question>
<question>7</question> ionic compounds</question-group>,
<question-group><question>9</question> cations<question-group>.
<question-group><question>25</question>
<question>26</question> anions<question-group>
</question-and-answer>
</para>
```

slide 8

The Print Textbook



Chapter 6: Classification Page 55

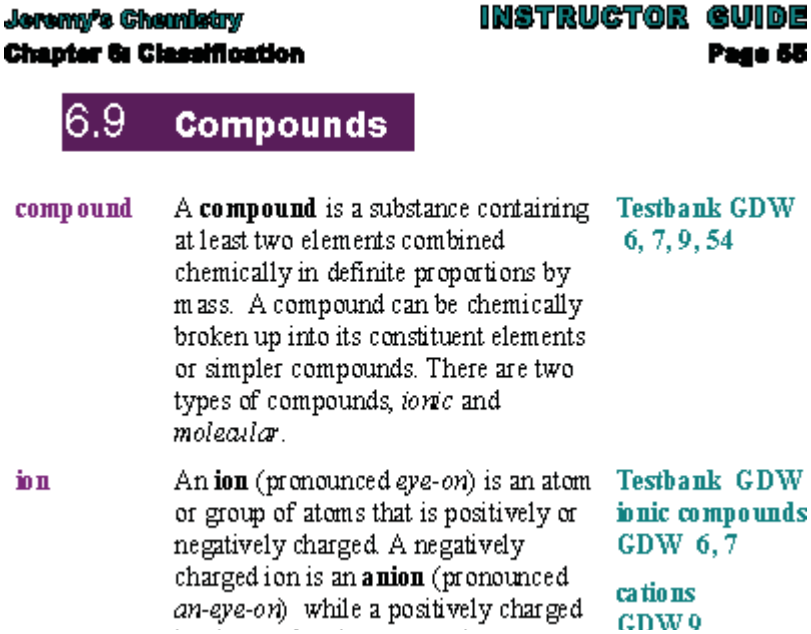
6.9 Compounds

compound — A **compound** is a substance containing at least two elements combined chemically in definite proportions by mass. A compound can be chemically broken up into its constituent elements or simpler compounds. There are two types of compounds, *ionic* and *molecular*.

ion — An **ion** (pronounced *eye-on*) is an atom or group of atoms that is positively or negatively charged. A negatively

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The Instructor's Manual (Print and Web)



Jeremy's Chemistry INSTRUCTOR GUIDE
Chapter 6: Classification Page 55

6.9 Compounds

compound — A **compound** is a substance containing at least two elements combined chemically in definite proportions by mass. A compound can be chemically broken up into its constituent elements or simpler compounds. There are two types of compounds, *ionic* and *molecular*.

Testbank GDW 6, 7, 9, 54

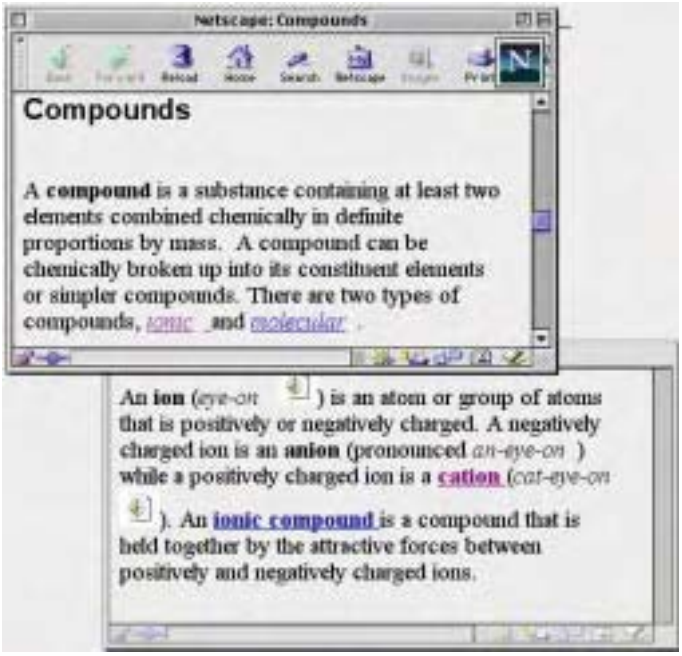
ion — An **ion** (pronounced *eye-on*) is an atom or group of atoms that is positively or negatively charged. A negatively charged ion is an **anion** (pronounced *an-eye-on*) while a positively charged

Testbank GDW ionic compounds GDW 6, 7

cations GDW 9

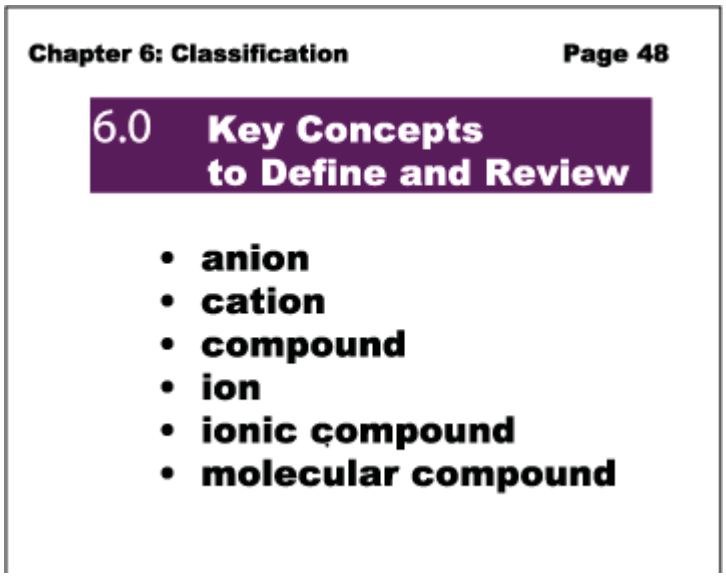
slide 10

Student Web Page and eBook



slide 11

Automatically Generated for the Same Textbook



slide 12

In Other Words

- Recombination
- Reuse
- Repurposing
- Slice and dice publishing
- Selection, extraction, and sorting

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Print is Not Just One Product

- To many folks, print means making one QuarkXPress file
- Taking that file through to 4-color glory
- If that's a true and you make *one* product, XML is probably overkill
- But *for much of the world* one product simplicity has never been true

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Variety of Print Publications

- **War Story 1984** — The Boeing Company
  - 8 ½ by 11 Computer Manuals
  - computer small-books for the "new" PC market
  - helicopter and airline pilots manuals
- **War Story 2006** — Major magazine publisher
  - magazines major revenue stream
  - books reuse magazine recipes, boxes, "how-to"s
  - newsletters to specific audiences
  - recipe cards and how-to kits

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Customization

(change, assemble, or adapt based on customer)

- Mix and match components
- Send each large customer
  - same information
  - packaged and formatted to their specs
- Create a distinct look and feel
  - for a class of users (long-distance runners, corporate executives)
- based on demographics, customer databases

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Personalization

(tailor a product to an individual person)

- To a particular user (based on purchase history)
- Personalized stock reports
- Personal Wall Street Journal (customer interest-profile)
- Rules-based filtering of material
- Collaborative filtering (your personal preferences and those of similar subscribers)

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Internationalization

(adapting a product for potential use everywhere)

- Must support
  - multiple languages
  - multiple scripts and writing directions
  - various date-time formats and currency
- Needs flexibility (components that take readily to different design)

War Story: Large manufacturer of consumer electronics

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Localization

(adapting product look and content to a specific locality/region)

- Must consider
  - cultural sensitivities and values
  - design and aesthetics
  - local dialect as well as language
- May include
  - special local content
  - removing content as well as adding
  - replacement graphics

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What Else can Print Production Gain from XML Processing?

- Vendor independence
- Simple (powerful) XML transforms
- QA methods and quality gains
- Processing and production gains

Vendor-specific Files are a Trap

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Most Print Today is Produced Using

- Page layout / composition software
- Desktop publishing package
- Word processor
- Graphics program

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Vendor-specific Formats Belong to the Vendor

- Embed “codes” in the data to create formatting
- Codes only work with that vendor’s software
- Such codes:
  - *can be changed by the vendor at any time.*
  - can’t be changed by you

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Vendor-specific Codes May Make it Difficult to

- Extract data in re-usable form
- Make global style changes
- Produce multiple output products (not just pages)
- Change your material to use it in new ways
  - rearrange
  - extract
  - reuse and repurpose data
- Turn what-you-have into another-product
  - QuarkXPress into MS Word
  - XYvision into HTML
  - brochure into course catalog

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XML Provides True Vendor Independence

- No hardware platform dependencies
- No software dependencies
- No proprietary embedded codes to get rid of
- Change look and feel without recoding
- Make many publications without recoding

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Part of XML's Independence is XSLT

(Extensible Stylesheet Language Transformation)

- Transformation and manipulation functions for XML files
- A programming language (of a sort)
- Transforms *from* XML *into* something else
- Is one *really good* mechanism for the rearrangement and reuse

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XSLT Reads XML Documents and Writes

- HTML for browsers
- XML in a different tag set
- typesetting driver files (InDesign, QuarkXPress, FrameMaker)
- interchange files (RTF, EDI, etc.)
- flat text files (plain text, comma separated, ASCII, etc.)

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What Organizations Do with XSLT

- Simple business transforms
- Making HTML from richer XML
- **Single Source and Reuse Publishing**
- Transforms for editorial QA
- XML to XML transforms
- XSLT as the middle component in XSL-FO

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Example: Making HTML From Richer XML

Read in semantically rich XML tagging

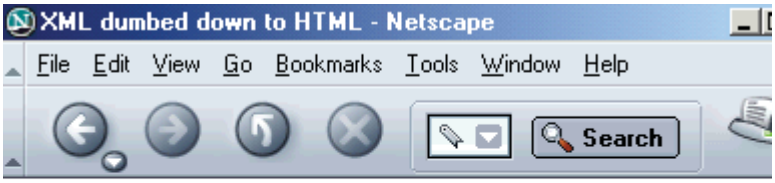
```
<COMPUTER CLASS="Portable">
<MFR>GCA</MFR><FAMILY>Laptop</FAMILY>
<SPEED UOM="GHz">3.2</SPEED>
<LINE>Thinkie</LINE><MODEL>520XL</MODEL>
<DISK UOM="GB">80</DISK>
</COMPUTER>
```

Simplify it to HTML for display in any browser

```
<H2>Laptop Computer</H2>
<UL>
<LI>GCA Thinkie 520XL</LI>
<LI>3.2GHz</LI>
<LI>80GB</LI>
</UL>
```

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Which Displays As



Laptop Computer

- **GCA Thinkie 520XL**
- **3.2GHz**
- **80GB**

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Better Example: XSLT Makes Single Source and Reuse Publishing Happen

(transformations build products)

- Print on Demand (different users = different order or different stuff)
- Select / Extract / List / Omit
  - Pull the metadata to put into the catalog
  - Extract article titles and abstracts for the advertising webpage
  - Extract the CME material for a special site for nurses
  - Collect environmental impact material
  - Publish this report with all the **SECRET** material removed
  - Send just the citations to a link matching service

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XML Brings Processing and Production Gains

- Processing speed
- Time to market
- Enhanced content quality
- XSL-FO (print directly from XML)

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Processing Speed

(The XML Cliché)

There is always a

- Faster
- Cheaper
- Easier

way to do any *one* thing than XML

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XML can be Significantly Faster

- Eliminate parallel creation and update
- Lights-out publishing (e.g., invoices, medical records, catalogs)
- Separates work on format from writing content
- Validation finds surprises early
- Automate tedious and repetitive handwork
- Citation and cross-reference checking
- Automated formatting virtually eliminates "check that every X is formatted as Y"

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QA and Quality Gains

- Consistency of formatting look and feel
- Content checking for increased quality
- Fewer surprises removes last-minute production glitches
- Semantically meaningful components
  (UNIX command, product name, genus-species)
- Generated text (autonumbering, "Figure 3.", Table of Contents)
- New proofing and checking methods (see next slide)

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New Proofing and Checking Methods

limited only by imagination and programmers

- Lists of …
- False-color proofs
- Content checking
- Cross-checking

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List of “Figures” / List of “Tables”

- List any Element
- Determine
  - how many
  - list them for human checking
  - automated authority file checking
- Show location within text

[country (check code), product (check for trademark),
abbreviated journal title (check authority file), price (correct units)]

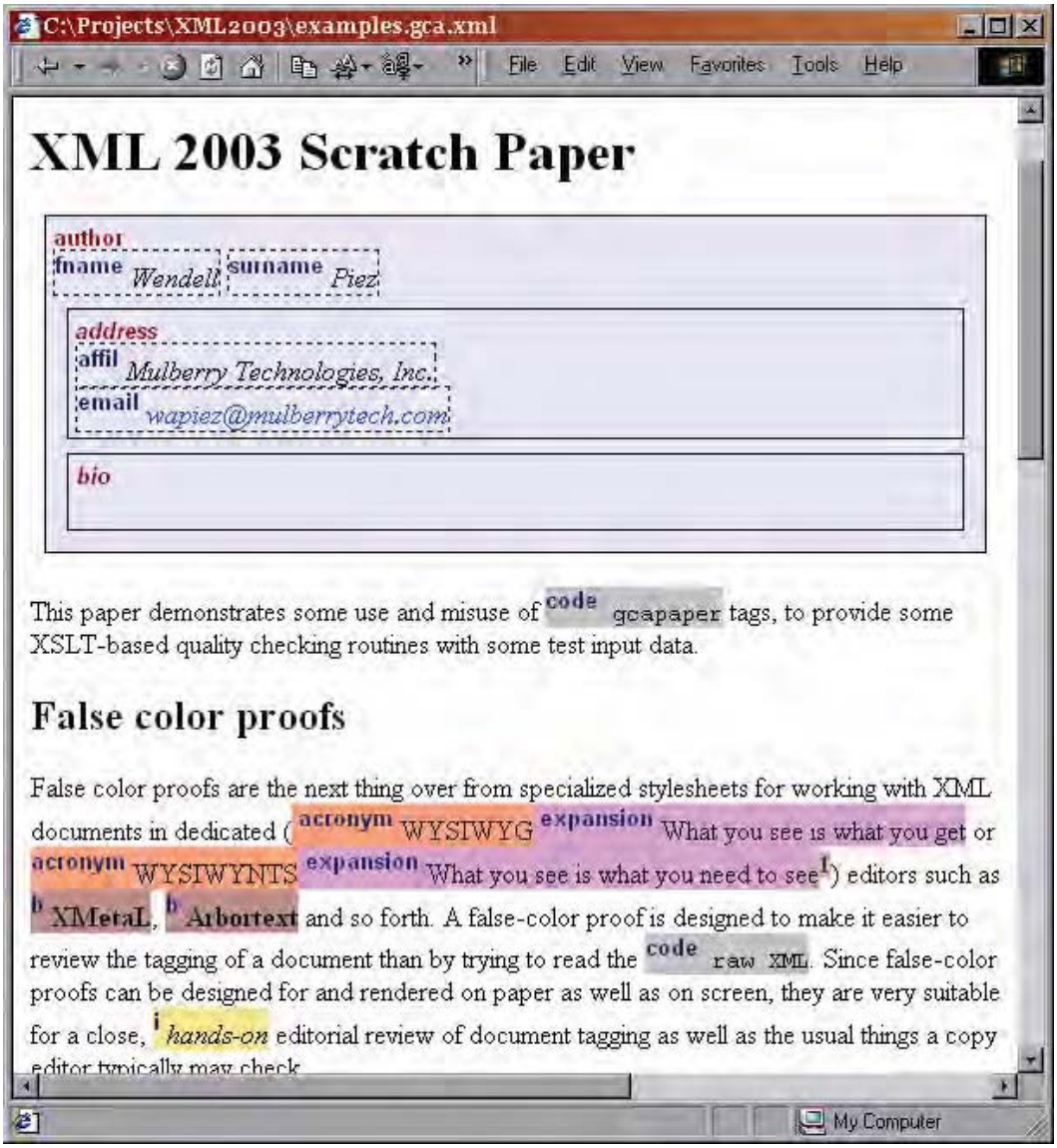
slide 36

False-color Proof

human checking with computer assistance

- “Electronic galley proof”
- Display text in format designed for checking by eye
- Make different elements different colors
- View on screen (HTML) or print
- Especially useful when
  - high-quality “semantic” tagging
  - tag sets subject to tag abuse

An XML 2003 Conference Paper in False-color Proof



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Content and Tag Abuse Checking

- Can work
  - over a single document
  - (more usefully?) over sets of documents
- Check metadata, bibliographies and other semi-structured information
- For example
  - which first-mention `acronyms` lack `expansions`
  - Report for a group of papers
    - authors whose `bio` has no content
    - list the `bios` you have

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Example: Filtering for Unfinished Bios

(with links to e-mail the authors)



See `examples/biolist.html`

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Two Major Validation Strategies

- Check against XML model (DTD or schema) for
  - missing elements (no title for news article)
  - badly positioned elements (footnotes in the bibliography)
- Test for certain properties of the content
  - locate all codeblocks with lines too long
  - are all figures referenced at least once?
  - do all list items begin with an upper-case letter?
  - do all cross-references point to something?
  - are all part numbers in the database?
  - are dates reasonable? Do death dates follow birth dates?

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XSL-FO: Format Directly from XML

(For many, a reason to embrace XML)

- Extensible Stylesheet Language-Formatting Objects
- Automated formatting from XML-structured data
- Straight from XML into PDF or Postscript
- Lights-out high-volume production of pages

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The *Idea* of XSL-FO

- The language defines layout and styles
  - platform-independent
  - vendor-independent

The Dream: high quality, high volume, content-driven publishing
(Not for layout-driven publishing!)

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How XSL-FO Formatting Works

- XSL provides a tag set into which XML documents may be transformed (using XSLT)
- The tag describe
  - the layout geometry of the page (into which you pour content)
  - a set of *formatting objects*
    - that say how to put content on the page
    - that describe how the document should be rendered
- An XSL-FO *rendering engine* makes pages / display from these tags
- An XSL-FO document is
  - an XML document
  - with text and graphic content wrapped in formatting object tags

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XSL-FO for Internationalization, Localization, Accessibility

- XML character set is internationalized (Unicode)
- XSL-FO supports non-Western writing direction
  - Left-to-right-top-to-bottom
  - Top-to-bottom-right-to-left
- Set up XSL-FO programs (style specs) once and flow different languages in

slide 45

XSL-FO is a Great Report Writer

(where pagination is not a problem)

- Credit card and bank statements
- Investment portfolios
- Hospital records and patient medical records
- Insurance policies and claims
- State legislatures for bills, resolutions, and reports
- Directory and catalog products

(Anybody where lights out works is a good candidate)

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In Conclusion
Some Myths Concerning XML and Print

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Canard: XML Doesn't Need Skilled Designers/Typographers

- They say that XML
  - has stylesheets instead
  - can't look good anyway
- Truth: XML has no look, but it can take on many looks
- Truth: We need more designers than ever before!
  for different designs for web, print, interactive, personalized, etc.
- Truth: If the presentation is ugly, then we designed ugly.

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Semi-Myth: Lights Out Production

The Rumor: Formatting based strictly on tags is good enough;
we can do *lights-out* composition
(This last is usually said by composition vendors.)

Truth:

- Works *really well* with short or repetitious data in large quantities
  - invoices, lists, reports
  - medical records, insurance, financial statements
- Works *pretty well* for web publishing (elastic pages)
- *Can* work (with rerunning) for desktop-publishing quality
- Does *not* work for real high-end composition-system quality
- Repeat: Does *not* work for high-end typographic quality

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Myth: XML is Difficult

(typesetters could never understand it)

Truth:

- XML is enabling
- Service vendors of all stripes are understanding it
- Doing new things with content *is* more difficult,
  don't blame the XML, it can help
- XSL-FO is typography and works lots better with typographers

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Myth: XML is for Programmers

Truth:

- OK, DTDs and schemas are written by programmers
  (or ought to be)
- Almost anyone can write XSLT transforms
  (programmers write trickier ones)
- Use, re-use, tagging, faster production, and improved QA and quality
  are for the rest of us

(We made this slide show in XML because that was easier and better)

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The Bottom Line: Don't Lock Up My Content

- If the web and all PDAs vanished tomorrow
- If all I ever did was print publication
- I'd still use XML
  - same content with many designs
  - multiple products from one source
  - all the "ations"
    - customiz**ation**
    - internationaliz**ation**
    - personaliz**ation**
    - localiz**ation**

(Almost any business could say this!)

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Colophon

- Slides and handouts created from single XML source
- Slides projected from HTML which was created from XML using XSLT
- Handouts created from XML:
  - Source XML transformed to Open Office XML
  - Open Office XML opened in Open Office
  - Pagination normally adjusted
  - Saved as PDF
- Slideshow materials available at:
  `http://www.mulberrytech.com/slideshow`