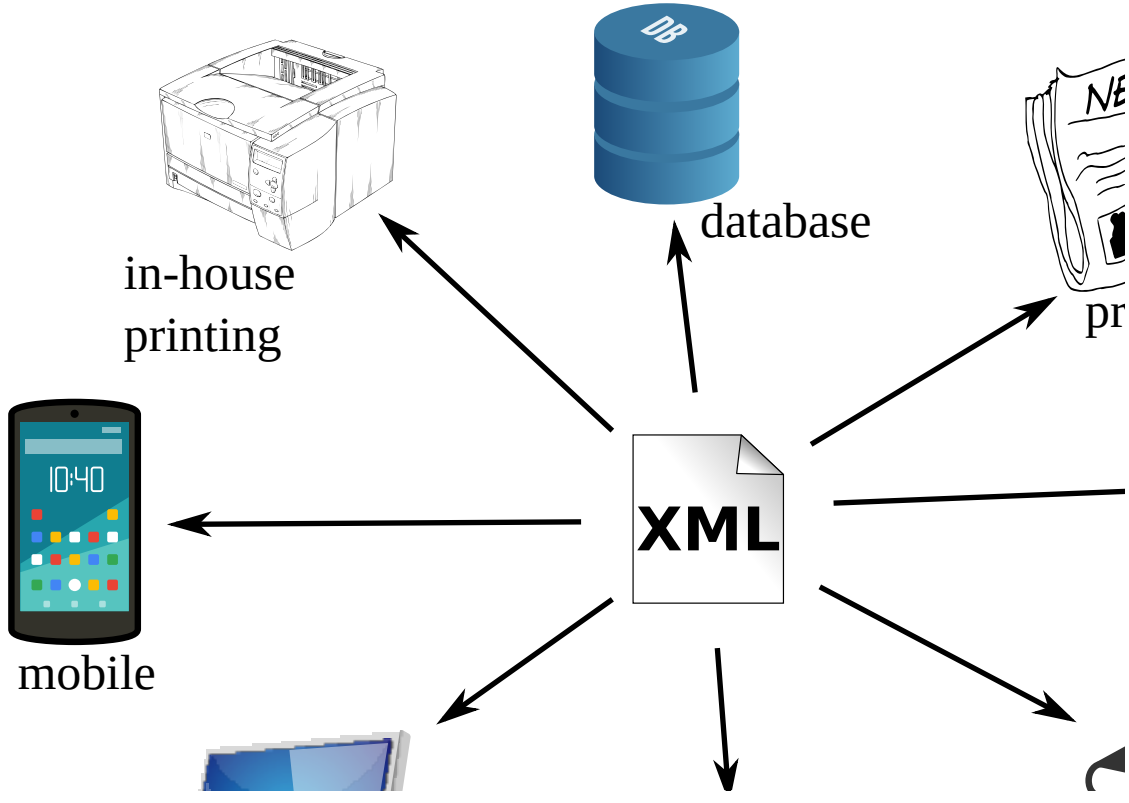
Why XML based publishing?



XML features

- Extensibility
  - Define your grammar
  - XML core extensions (linking,...)
- Interoperability
  - Cross-platform software support
- Open standard, no vendor lock-in
- Tons of (processing) frameworks / APIs

Editors, compositors, designers ...

Quote from How and Why Are Companies Using XML?.

It's Not about You! It is about publishers.

- they think it's “their” content
- they want
  - to use it, re-use it, slice it, and dice it
  - to own it and control it
  - to have access to it and be able to move it

Promises in publishing

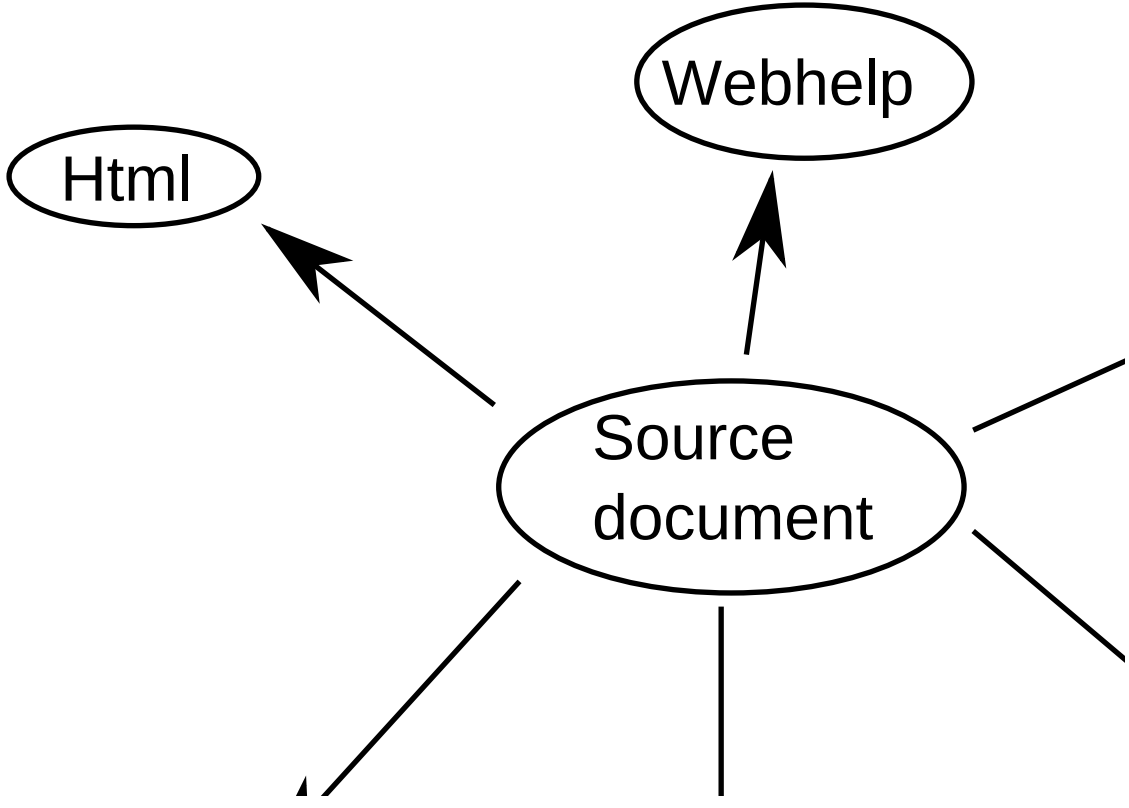
XML for publishing ...

- saves time and money
- is platform independent
- avoids vendor lock-in
- can be validated for QA
- allows for creating different target formats

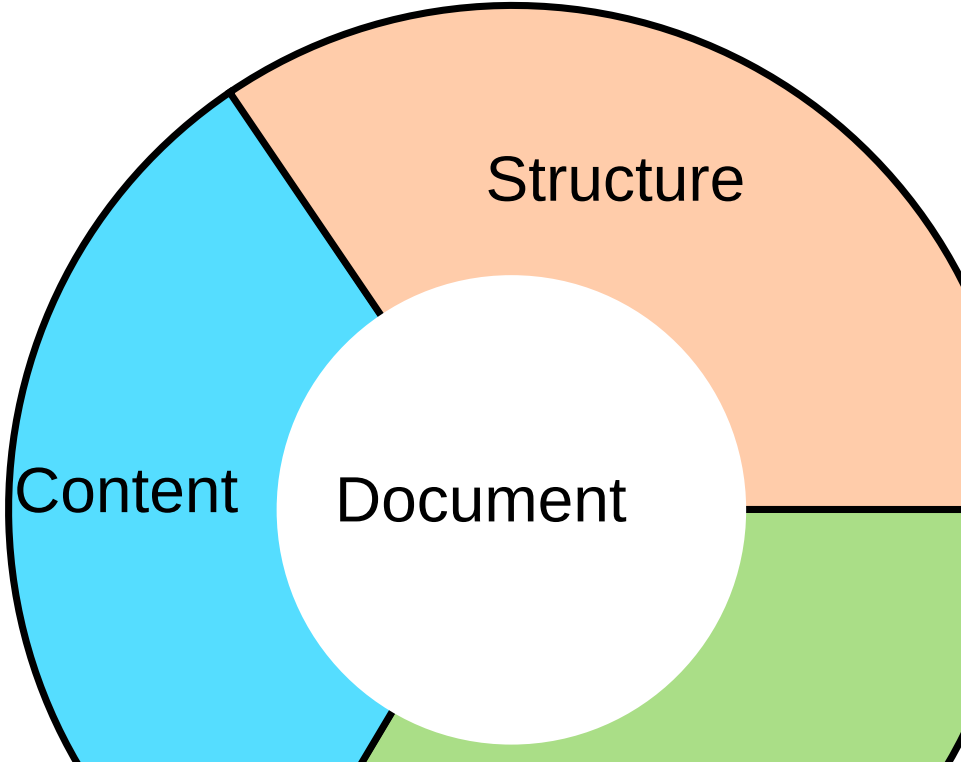
Publishing reality

- Refrain from fancy catalogs
- Stick to simple layouts
  - Technical documentation
  - Law publications

Single source publishing



Separating Structure, content and format



Separating concerns

Content	Words, images, audio / video
Structure	Chapters / sections, tables, lists
Presentation	Physical formatting (boldface, text size/color, ...)

Content

When on board H.M.S. 'Beagle,' as naturalist, I was much struck with certain facts in the distribution of the inhabitants of South America, and in the geological relations of the present to the past inhabitants of that continent. These facts seemed to me to throw some light on the origin of species—that mystery of mysteries, as it has been called by one of our greatest philosophers. On my return home, it occurred to me, in 1837, that something might perhaps be made out on this question by patiently accumulating and reflecting on all sorts of

Hierarchical structure

<?xml	version="1.0" encoding="UTF-8"			
<?x...	href="http://docbook.org/xml/5.0/rng/docbook.rng" schematypens="http://relaxng.org/ns/structure/1.			
<?x...	href="http://docbook.org/xml/5.0/rng/docbook.rng" type="application/xml" schematypens="http://purl.oclc.org/dsdl/schematron"			
book	@xmlns	http://docbook.org/ns/docbook		
	@xmlns:xlink	http://www.w3.org/1999/xlink		
	@version	5.0		
	part	title		
		chapter	title	A Chapter
			sect1	title	A section

Hierarchical structure, XML source

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-model href="http://docbook.org/xml/5.0/rng/docbook.r
    schematypens="http://relaxng.org/ns/structure/1.0"?>
<?xml-model href="http://docbook.org/xml/5.0/rng/docbook.r
    type="application/xml" schematypens="http://purl.oclc.
<book xmlns="http://docbook.org/ns/docbook"
    xmlns:xlink="http://www.w3.org/1999/xlink" version="5.
    <part>
        <title/>
        <chapter>
            <title>A Chapter</title>
            <sect1>
                <title>A section</title>
                <para>some content</para>
```

Presentation

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>CSS sample</title>
    </head>
    <body>
        <p>Something <span
            style="color:red;font-weight:bold;"
            >big</span></p>
    </body>
</html>
```

Example 1: HTML 5, pure structure

Structure	Presentation

`<html xmlns="http://www.w3.org/1999/xhtml">`
`  <head>`
`  <title>Test</title>`
`  </head>`
`  <body>`
`  <section>`
`  <h1>Intro</h1>`
`  <p>Some content</p>`
`  </section>`
`  </body>`
`</html>`
	

Example 2: TeX / LaTeX

Structure / content	Presentation (PDF)

`\documentclass[12pt]{article}`
 	
`\begin{document}`
`  A nice LaTeX formula:`
 	
`  \begin{displaymath}`
`  e^x = \sum_{i=0}^{\infty}{x^i \over i!}`
`  \end{displaymath}`
 	
`\end{document}`
	A nice LaTeX formula:
	
	$$e^x = \sum_{i=0}^{\infty} {x^i \over i!}$$

Separating structure and presentation(s)

Pros	Cons
• Separation of editing / formatting concerns • Focus on content rather than formatting • Oblivious to format evolution (e.g. Epub) • Well suited for SCM, “diff-ing”	• No “true” WYSIWYG • Fixed formatting rules, no flexibility • Less layout control, especially in print

To set up your Raspberry Pi you will need:

	Item	Minimum recommended specification & notes
1	SD card	• Minimum size 4Gb; class 4 (the *class* indicates how fast the card is). • We recommend using branded SD cards as they are more reliable.
2a	HDMI to HDMI / DVI lead	• HDMI to HDMI lead (for HD TVs and monitors with HDMI input). **OR** HDMI to DVI lead (for monitors with DVI input). • Leads and adapters are available for few pounds -- there is no need to buy expensive ones!
2b	RCA video lead	• A standard RCA composite video lead to connect to your analogue display if you are not using the HDMI output.
3	Keyboard and mouse	• Any standard USB keyboard and mouse should work. • Keyboards or mice that take a lot of power from the USB ports, however, may need a powered USB hub. This may include some wireless devices.
4	Ethernet (network) cable [optional]	• Networking is optional, although it makes updating and getting new software for your Raspberry Pi much easier.

Observations

- Well structured documents
- Focus on content rather than style
- Clearly defined semantics
- Automated generation supporting multiple output channels

Pros and cons of TeX / LaTeX

Pros	Cons

• Excellent typography
• Large community
• Mature engine
• Excellent platform support
• Multiple problem domain support
• Extensible vocabulary
	• Focus on print
	• Bad “office” authoring tool support
	  • Steep learning curve
	  • Inverse editing
	  • Cryptic error messages
	• Bloated vocabulary

Tools of the trade

XMLMind Editor	• Strictly validating, near WYSIWYG, DocBook / DITA / MathML / XHTML editor. • Plugin architecture • Cross-platform Java™ based.	OxygenXML Editor	• Full-fledged XML IDE. • Strictly validating, near WYSIWYG, DocBook / DITA / MathML / XHTML ... editor. • Eclipse based

Inline formatting

HTML	`<p><b>Very</b> tiny</p>`
Docbook	`<para><emphasis>Very</emphasis> tiny.</para>`
LaTeX	`\textbf{Very} tiny.`
Rendering	**Very** tiny

Paragraphs

HTML	`<p>A paragraph</p>`	Docbook	`<para>A paragraph</para>`
LaTeX	`A paragraph\par`	Rendering	A paragraph

Lists

HTML	`<ul>`
	`  <li>One</li>`
	`  <li>Two</li>`
	`</ul>`
		Docbook	`<itemizedlist>`
			`  <listitem>`
			`  <para>One</para>`
			`  </listitem>`
			
			`  <listitem>`
			`  <para>Two</para>`
			`  </listitem>`
			`</itemizedlist>`

LaTeX	`\begin{itemize}`
	`  \item One`
	`  \item Two`
	`\end{itemize}`
		Rendering	• One
			
			• Two

Tables

<table>
<tr>
<td>HTML</td>
<td>
<table>
<tr>
<td>a1</td>
<td>a2</td>
</tr>
<tr>
<td>b1</td>
<td>b2</td>
</tr>
</table>
</td>
<td>Docbook</td>
<td>
<informaltable>
<tr>
<td>a1</td>
<td>a2</td>
</tr>
<tr>
<td>b1</td>
<td>b2</td>
</tr>
</informaltable>
</td>
</tr>
<tr>
<td>LaTeX</td>
<td>
\begin{tabular}{ll}
a1 & a2 \\
b1 & b2 \\
\end{tabular}
</td>
<td>Rendering</td>
<td>
<table>
<tr>
<td>a1</td>
<td>a1</td>
</tr>
<tr>
<td>b1</td>
<td>b2</td>
</tr>
</table>
</td>
</tr>
</table>

Images

HTML	`<img src= 'smoke.png'/>`	Docbook	`<mediaobject> <imageobject> <imagedata fileref ="smoke.png"/> </imageobject> </mediaobject>`

Images

LaTeX	`\includegraphics {smoke.png}`	Rendering	

Mathematical formulas

HTML / Docbook	`<m:math>`
	`  <m:mrow>`
	`  <m:munderover>`
	`  <m:mo>∫</m:mo>`
	`  ...`
	`  <m:msqrt>`
	`  <m:mi>π</m:mi>`
	`  </m:msqrt>`
	`  </m:mrow>`
	`</m:math>`

LaTeX	`\begin{equation}`
	`  \int\limits_{-\infty}^{+\infty}`
	`  e^{-x²} dx = \sqrt{\pi}`
	`\end{equation}`

Rendering	

Cross references

HTML	<h1 id="start"> >First section</h1> A remark. <h2>A subsection</h2> See >remark.	Docbook	<section xml:id="start">> <title>First section</title> <para>A remark.</para> <section> <title>A subsection </title> <para>See <link linkend="start"> >remark</link>.</para> </section> </section>
LaTeX	\section{\label{start }First section} A remark. \subsection{A subsection} See remark at page \pageref{start}.	Rendering	First section A remark See remark at page 1.

Document sectioning

HTML		LaTeX	Docbook	
<h1>	`<section>` recursive	\chapter	<part>	
<h2>		\section	<book>	
<h3>		\subsection	<chapter>	
<h4>		\subsubsection	<sect1>	`<section>` recursive
<h5>		\paragraph	<sect2>	
<h6>		\subparagraph	<sect3>	

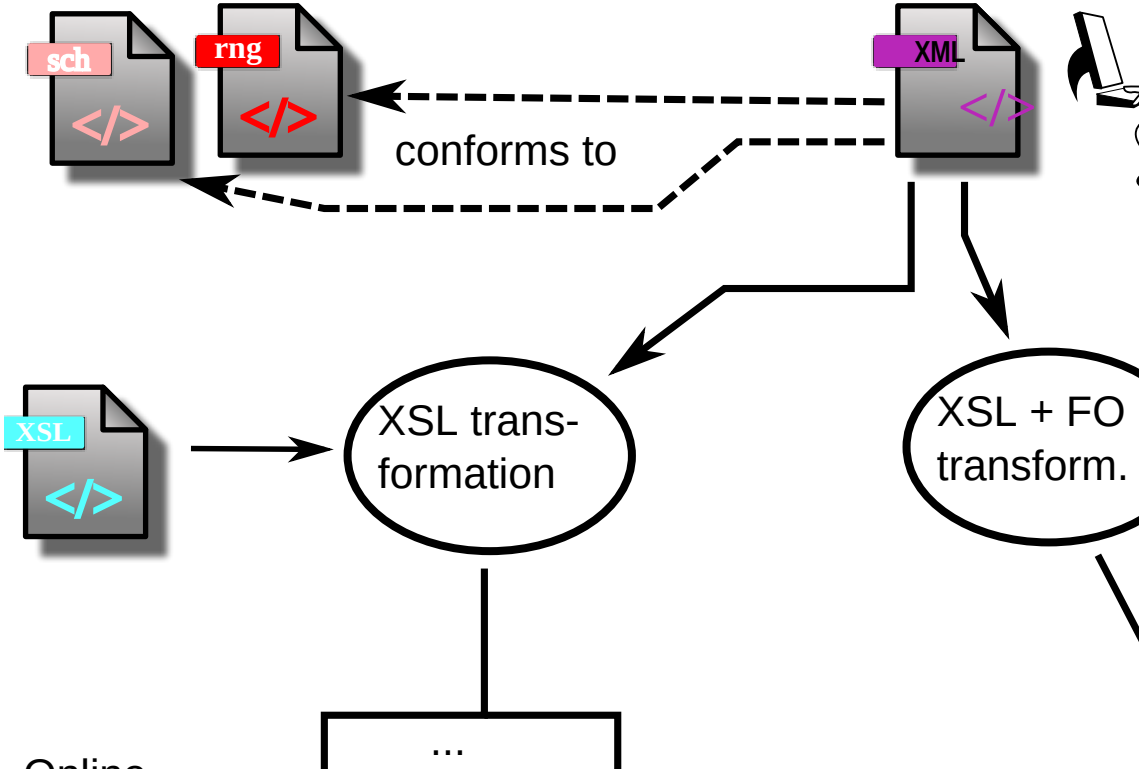
Modular document components

HTML	<body> ... <object name="foo" type="text/html" data="table.html"/ ... </body>
Docbook	<part xml:id="sd1"> <title>Software development 1</title> <xi:include href="Sd1/gettingStarted.xml" xpointer="el <xi:include href="Sd1/languageFundamentals.xml" xpoint ...
LaTeX	\documentclass{article} \input{mydefs.tex} \begin{document} ... \include{math.tex} ... \end{document}

What is Docbook?

• Focus on technical documentation • Excellent authoring user interface • Semantic markup language • XML based	• Modular document xinclude support • Topic support (Assemblies) • MathML support:

Authoring and publishing



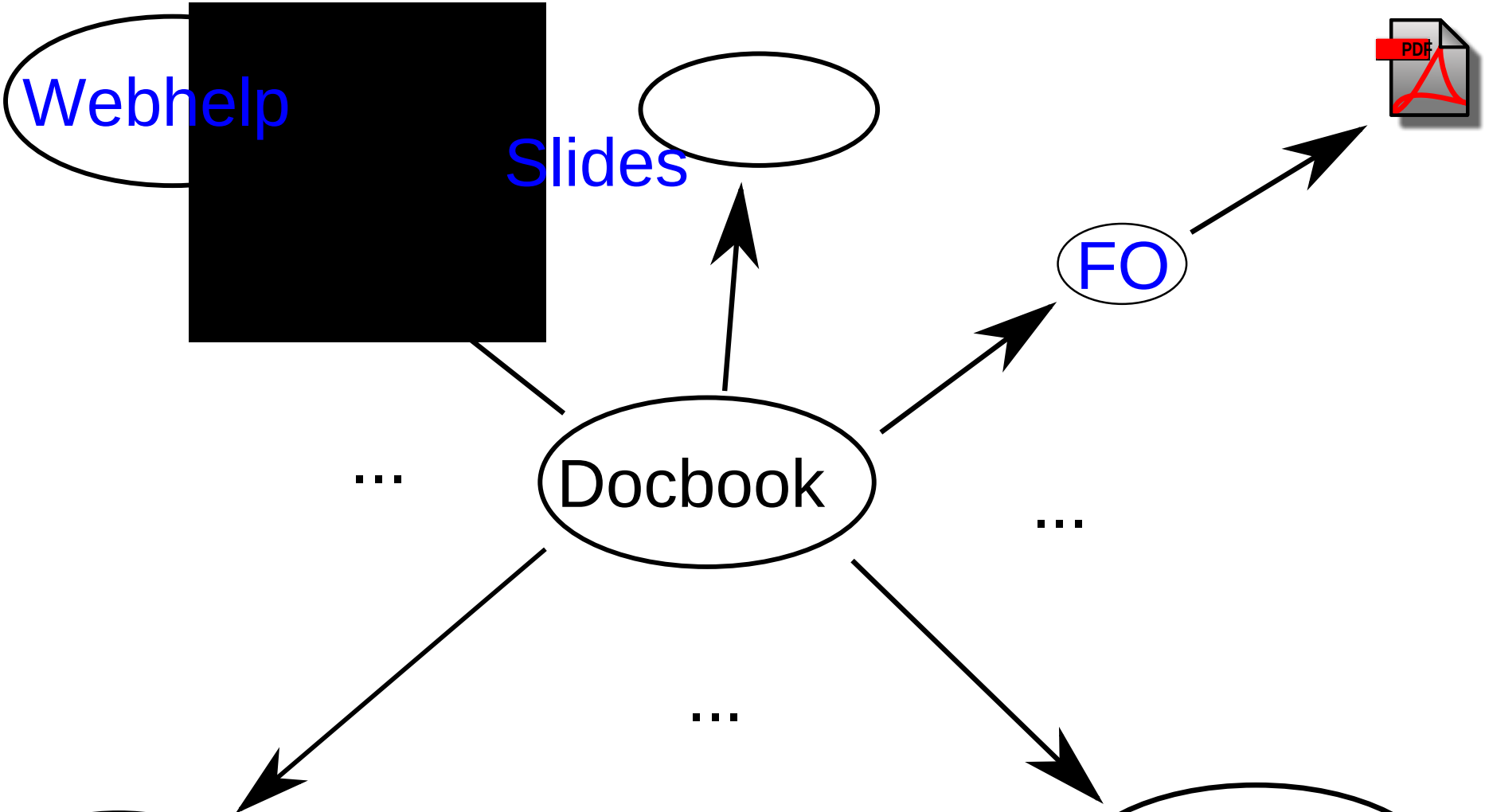
Document representation

```
<section version="5.1"
  xmlns="http://docbook.org/ns/docbook"
  ...>

  <title>A Title</title>

  <para>A paragraph</para>
</section>
```

Software centric schema

```
<xsl:stylesheet ❶ xmlns:xsl ❷ ="http://www.
                version="2.0" ❸ >

  <xsl:output method="text" ❹/>

  <xsl:template ❺ match ❻ ="/memo">
    <xsl:value-of ❼ select ❽ ="from" />
  </xsl:template>

</xsl:stylesheet>
```

Document targets



Docbook components

• Document grammar
  • RelaxNG based schema
  • Schematron rules
	• Target format generators
	  • XSL style sheets targeting HTML and FO
	  • CSS and JavaScript for generated HTML

Target format overview

• HTML
  • Standard
  • Webhelp
  • Mobile friendly
  • ...
• Eclipse help, e.g. “Oxygen” documentation
	• PDF
	• Epub(3)
	• Slides
	• ...

Tooling / Software

Editing / office	• XMLmind XML Editor • Oxygenxml XML Author	XSLT processors	Saxon 6.5.5, Xalan, ...
Editing / programming	emacs, vi, notepad, XML IDE, ...	FO (PDF) processors	• Apache FOP (Open Source) • RenderX xep • Antenna House formatter

Different schema languages

Docbook 5.x	Based on RelaxNG grammar
Docbook 4.x (old / outdated)	Based on DTD grammar

Plain HTML

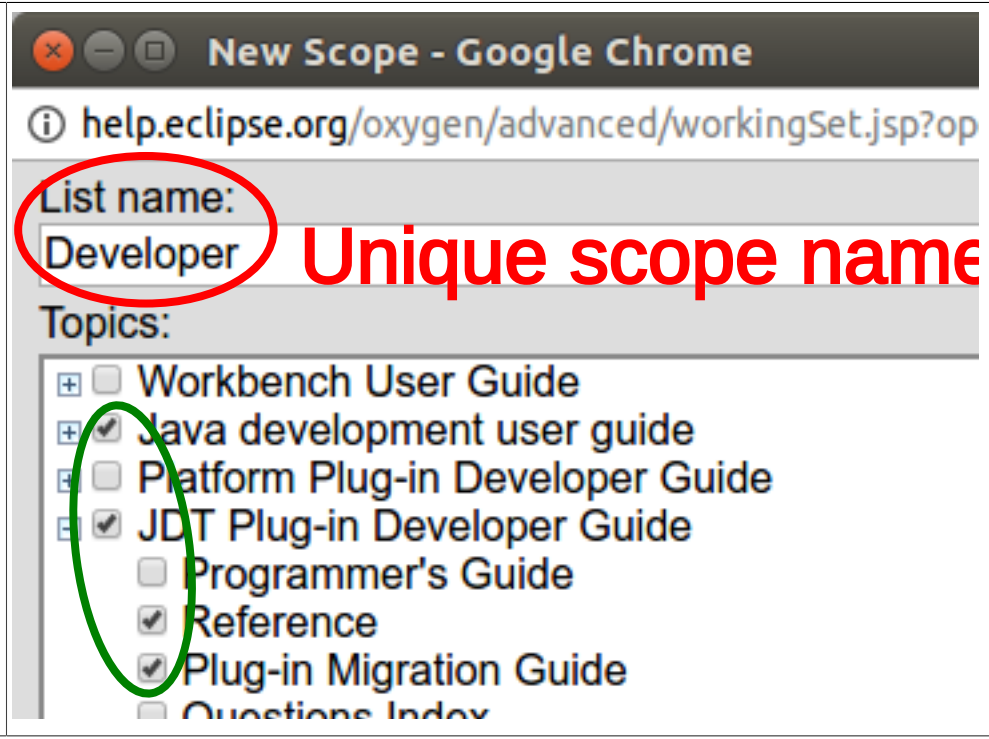
- Different HTML versions
- Static text
- Single or chunked output
- No full text search

Web help

- HTML 5 based
- Client side full text search index by virtue of JavaScript (Apache Lucene)
- JavaScript based navigation
- 3-rd party tool integration e.g. MathJax

Eclipse help

- Application server based
- Server based full text search
  - Search scope definitions
- Standalone or centralized
- Plugin model, Web App deployable



Printed output

- Focus on Formatting Objects
- Multiple formatting engines
- Multiple print formats

Paragraph

View	Docbook	HTML
Some text.	`<para>Some text</para>`	`<p style='color:red' >Some text.</p>`

Caution: No style / formatting related parameters in Docbook.

This is by design and on purpose.

Reference: See Paragraph elements.

Itemized list

View	Docbook	HTML

.
 	
• Bee
 	
• Ant
	`<itemizedlist>`
	`  <listitem>`
	`  <para>Bee</para>`
	`  </listitem>`
	`  <listitem>`
	`  <para>Ant</para>`
	`  </listitem>`
	`</itemizedlist>`
		`<ul>`
		`  <li>`
		`  <p>Bee</p>`
		`  </li>`
		`  <li>`
		`  <p>Ant</p>`
		`  </li>`
		`</ul>`

Ordered list

View	Docbook	HTML

””.
 	
1. Bee
 	
2. Ant
	<orderedlist>
	  <listitem>
	  <para>Bee</para>
	  </listitem>
	
	  <listitem>
	  <para>Ant</para>
	  </listitem>
	</orderedlist>
		
		  Bee
		
		  Ant

Glossary list

View	Docbook	HTML

.
 	
Bee Insect
 	
Mouse Mammal
	`<glosslist>`
	`  <glossentry>`
	`  <glossterm>Bee</glossterm>`
	`  <glossdef>`
	`  <para>Insect</para>`
	`  </glossdef>`
	`  </glossentry>`
	`  <glossentry>`
	`  <glossterm>Mouse</glossterm>`
	`  <glossdef>`
	`  <para>Mammal</para>`
	`  </glossdef>`
	`  </glossentry>`
	`</glosslist>`
		`<dl>`
		`  <dt>Bee</dt>`
		`  <dd>Insect</dd>`
		`  <dt>Mouse</dt>`
		`  <dd>Mammal</dd>`
		`</dl>`

Nested lists

View	Docbook	HTML

.
 	
1. Coffee
 	
2. Tea
 	
• black
 	
• green
	`<orderedlist>`
	`  <listitem>`
	`  <para>Coffee</para>`
	`  </listitem>`
	`  <listitem>`
	`  <para>Tea</para>`
	`  <itemizedlist>`
	`  <listitem>`
	`  <para>black</para>`
	`  </listitem>`
	`  <listitem>`
	`  <para>green</para>`
	`  </listitem>`
	`  </itemizedlist>`
	`  </listitem>`
	`</orderedlist>`
		`<ol>`
		`  <li>`
		`  <p>Coffee</p>`
		`  </li>`
		`  <li>`
		`  <p>Tea</p>`
		`  <ul>`
		`  <li>black</li>`
		`  <li>green</li>`
		`  </ul>`
		`  </li>`
		`</ol>`

Reference

See List elements.

A table

View	Docbook	HTML
.		

Col 1	Col 2
A1	A2
B	

```
<informaltable border="1">
  <tr>
    <th>Col 1</th>
    <th>Col 2</th>
  </tr>
  <tr>
    <td>A1</td>
    <td>A2</td>
  </tr>
  <tr>
    <td colspan="2">B</td>
  </tr>
</informaltable>
```

```
<table border="1">
  <tr>
    <th>Col 1</th>
    <th>Col 2</th>
  </tr>
  <tr>
    <td>A1</td>
    <td>A2</td>
  </tr>
  <tr>
    <td colspan="2">B</td>
  </tr>
</table>
```

A MathML equation

View	Docbook	HTML

	`<informalequation>`
	`  <m:math display="block">`
	`  <m:mrow>`
	`  <m:mi>E</m:mi>`
	`  <m:mo>=</m:mo>`
	`  <m:mrow>`
	`  <m:mi>m</m:mi>`
	`  <m:msup>`
	`  <m:mi>c</m:mi>`
	`  <m:mi>2</m:mi>`
	`  </m:msup>`
	`  </m:mrow>`
	`  </m:mrow>`
	`  </m:math>`
	`</informalequation>`
		`<math display="block">`
		`  <mrow>`
		`  <m:mi>E</m:mi>`
		`  <m:mo>=</m:mo>`
		`  <m:mrow>`
		`  <m:mi>m</m:mi>`
		`  <m:msup>`
		`  <m:mi>c</m:mi>`
		`  <m:mi>2</m:mi>`
		`  </m:msup>`
		`  </m:mrow>`
		`  </mrow>`
		`</math>`

A TeX equation

Docbook	HTML

<informalequation>
  <mathphrase>
  $ |x| = \left\{
  \begin{array}{rl}
  -x & \mbox{if $x<0$} \\
  x & \mbox{otherwise}
  \end{array}\right.$
  </mathphrase>
</informalequation>
	>
	  $ |x| = \left\{
	  \begin{array}{rl}
	  -x & \mbox{if $x<0$} \\
	  x & \mbox{otherwise}
	  \end{array}\right.$

$ |x| = \left\{ \begin{array}{rl} -x &\mbox{if $x<0$} \\ x &\mbox{otherwise} \end{array} \right.$	

Reference

See Formal elements.

Figure

Mountain spring	`<figure >   <title>Mountain spring</title>   <mediaobject>   <imageobject>   <imagedata fileref=   "Ref/DbookIntro/mountain.jpg"/>   </imageobject>   </mediaobject> </figure>`

Figure

Image map + calloutlist

.

```
<mediaobject>
  <imageobjectco>
    <areaspec ...>
      <area coords="83,16,340,187"
          xml:id="a1" linkends="c1"/>
      ...
    </areaspec>
    <imageobject>
      <imagedata fileref="recumbent.png.svg"/>
    </imageobject>
    <calloutlist>
      <callout arearefs="a1" xml:id="c1">
        <para>Seat</para>
      </callout>
      <callout arearefs="a1 a2" xml:id="c1">
        <para>Valves</para>
      </callout>
    </calloutlist>
  </imageobjectco>
</mediaobject>
```

Image map + calloutlist

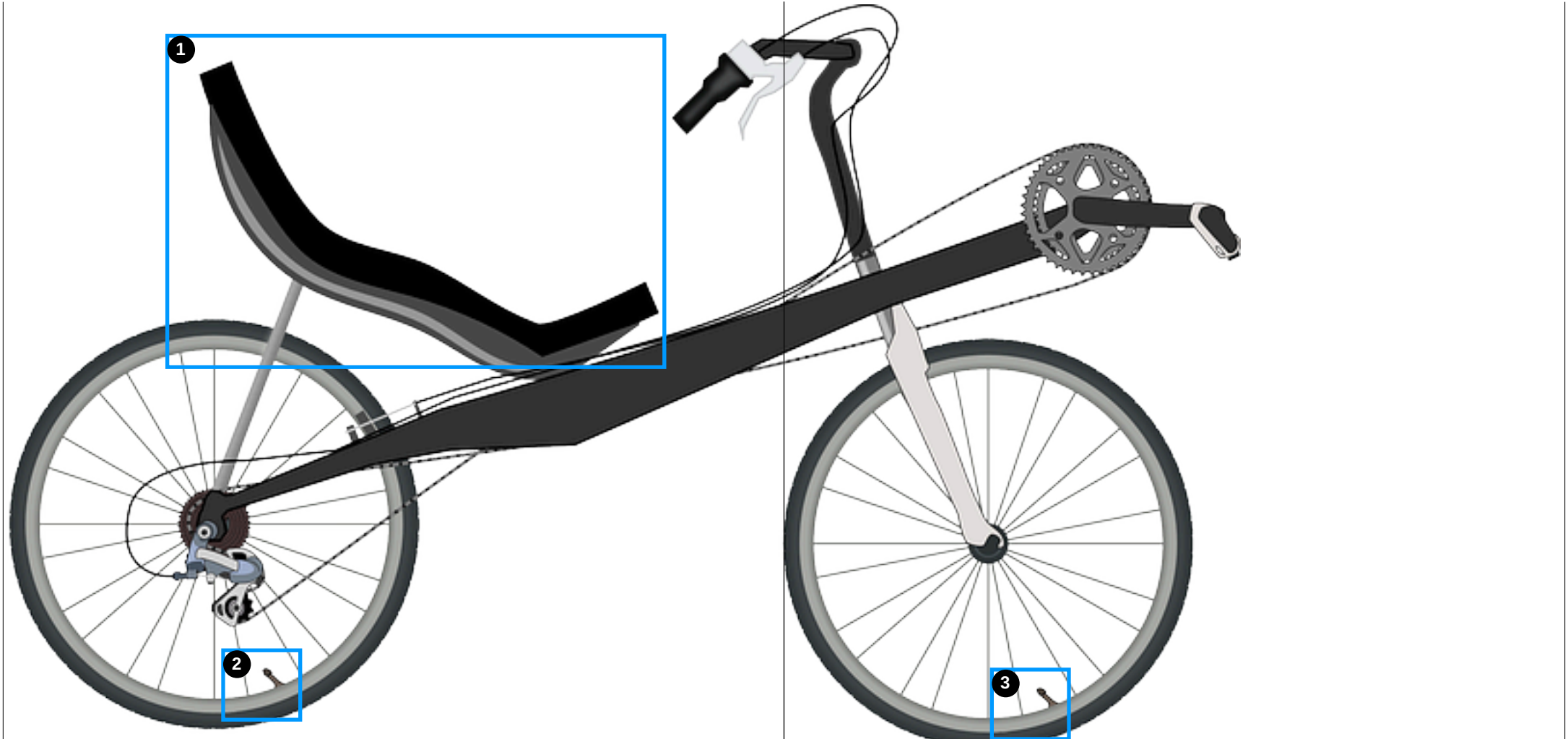


Image map + calloutlist

❶	Seat
❸❷	Valves

Video

Video courtesy of Big Buck Bunny.	<videoobject>
	  <videodata
	  fileref="buckBunny.mp4"
	  format="video/mp4">
	  <multimediaparam
	  name="controls"
	  value="controls"/>
	  </videodata>
	</videoobject>

A warning

View	Docbook

Caution
 	
Beware of overheating!
	`<caution>`
	`  <para>Beware of overheating!</para>`
	`</caution>`

Reference

See Admonition elements: important, note, tip, warning.

Recursive sections

```
<chapter version="5.1"
  xmlns="http://docbook.org/ns/docbook">
  <title>Top</title>
  <section>
    <title>Level 1</title>
    <section>
      <title>Level 2</title>
      <section>
        <title>Level 3</title>
        <para>Hello!</para>
      </section>
    </section>
  </section>
</chapter>
```

```
<html>
  ...
  <body>
    <h1>Top</h1>
    <h2>Level 1</h2>
    <h3>Level 2</h3>
    <h4>Level 3</h4>
    <p>Hello!</p></body>
</html>
```

Non-recursive sections

```
<chapter version="5.1"
  xmlns="http://docbook.org/ns/docbook">
  <title>Top</title>
  <sect1>
    <title>Level 1</title>
    <sect2>
      <title>Level 2</title>
      <sect3>
        <title>Level 3</title>
        <para>Hello!</para>
      </sect3>
    </sect2>
  </sect1>
</chapter>
```

```
<html>
  ...
  <body>
    <h1>Top</h1>
    <h2>Level 1</h2>
    <h3>Level 2</h3>
    <h4>Level 3</h4>
    <p>Hello!</p></body>
</html>
```

See `<chapter>`, `<section>`, `<sect1>`, `<sect2>`, `<sect3>`, `<sect4>`, `<5>`, `<sect5>`, `<sect6>`, `<simplesect>`, `<refentry>`.

Two different link flavours

Internal document links

Referential integrity by ID / IDREF constraints:

```
<chapter id="intro">
...
<chapter> ...
See <xref linkend="intro"/> ...
```

External links

These are “usual” hypertext links:

```
<para>See
<link href="http://tdg.docbook.org">Docbook</link>
.</para>
```

Related exercises

Exercise 1: Internal document links

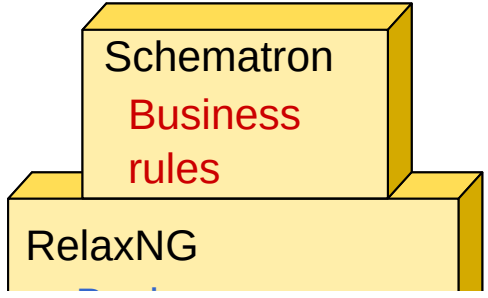
Choosing a top level element

- Root element is purpose dependent
- Schema based options in Docbook 5.x (RelaxNG) requiring an `<info>` child in 5.1.
- No limitation in Docbook 4.x (DTD).

Allowed 5.1 top level elements

Structure	chapter section (recursive), sect1, sect2, sect3, sect4, sect5 refsection (recursive), refsect1, refsect2, refsect3	**Big**	set, book, part
Component	acknowledgements, appendix, bibliography, colophon, dedication, glossary, index, para, preface, refentry, reference, setindex, toc	**Medium**	article

Schematron on top of RelaxNG



Each <title> r
contain at lea
word

Each <chapte
starts with a

Example: `xml:id` and permalink

```
<chapter id="introduction" ❶> ...
  <section xml:id="firstSection" ❶>
    <title>First section</title>
    <para>A stable link</para>
  </section>
  <section> <!-- no xml:id attribute-->
    <title>Second section</title>
    <para>No stable link</para> ...
```

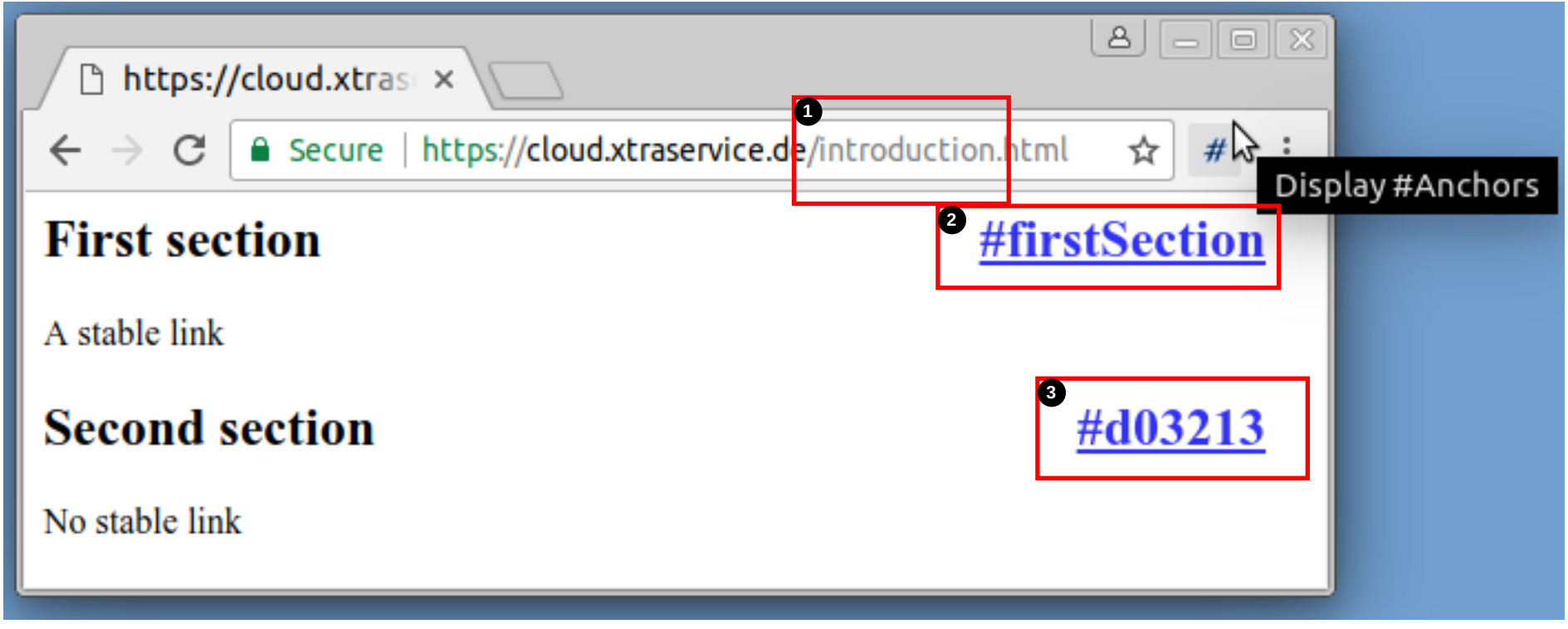
```
<!-- file introduction.html -->
<html>
  ...
<h2 id="firstSection" ❶>First section</h2>
<p>A stable link</p>

<h2 id="d03213" ❷>Second section</h2>
<p>No stable link</p>
```

❶ Defining chunk's base name `introduction.html`.

❶ Stable target `http://...introduction.html#firstSection`.

❷ Instable target `http://...introduction.html#d03213`.

Using Display #Anchors



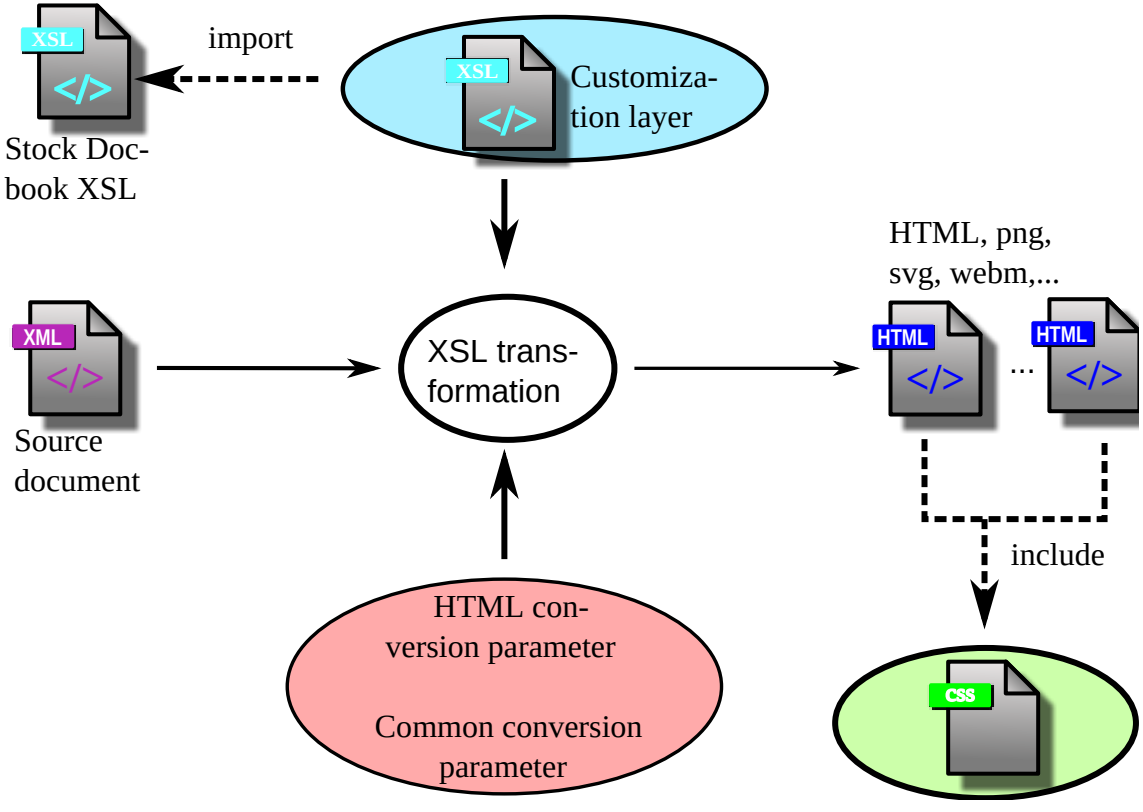
Considerations author based permalink

Requirement	Important elements (`<chapter>`, `<section>`, `<table>`...) must provide an xml:id value.
Implementation choices	• Modify underlying RelaxNG schema. Result: Restricted schema (Inheritance relationship) • Add Schematron integrity rule on top of schema.

Schematron permalink rule

```
<s:pattern>
  <s:title>Mandatory Id definition constraint</s:title>
  <s:rule context="db:chapter|db:section|db:table|db:qandaset">
    <s:assert test="@xml:id"
       >Each chapter,section, table ... must have a unique id.</s:assert>
  </s:rule>
</s:pattern>
```

HTML customization overview



Target specific configuration

- XSL transformation configuration parameters.
- Separate categories:
  - HTML
  - FO
  - Slides
  - Website
- Tool support (XMLMind, OxygenXml, ...)

Link stability

```
<book ...>
  <title>XML for Newbies</title>
  <chapter xml:id="intro">
    <title>Introduction</title>
    <para>...</para>
  </chapter>
  <chapter xml:id="work">
    <title>Working with objects</title>
    <para>...</para>
  </chapter>
</book>
```

Navigation structure.

- Index.html
- Per chapter:
  - **ch01**.html
  - **ch02**.html

Synthetically generated filenames.

use.id.as.filename = 1

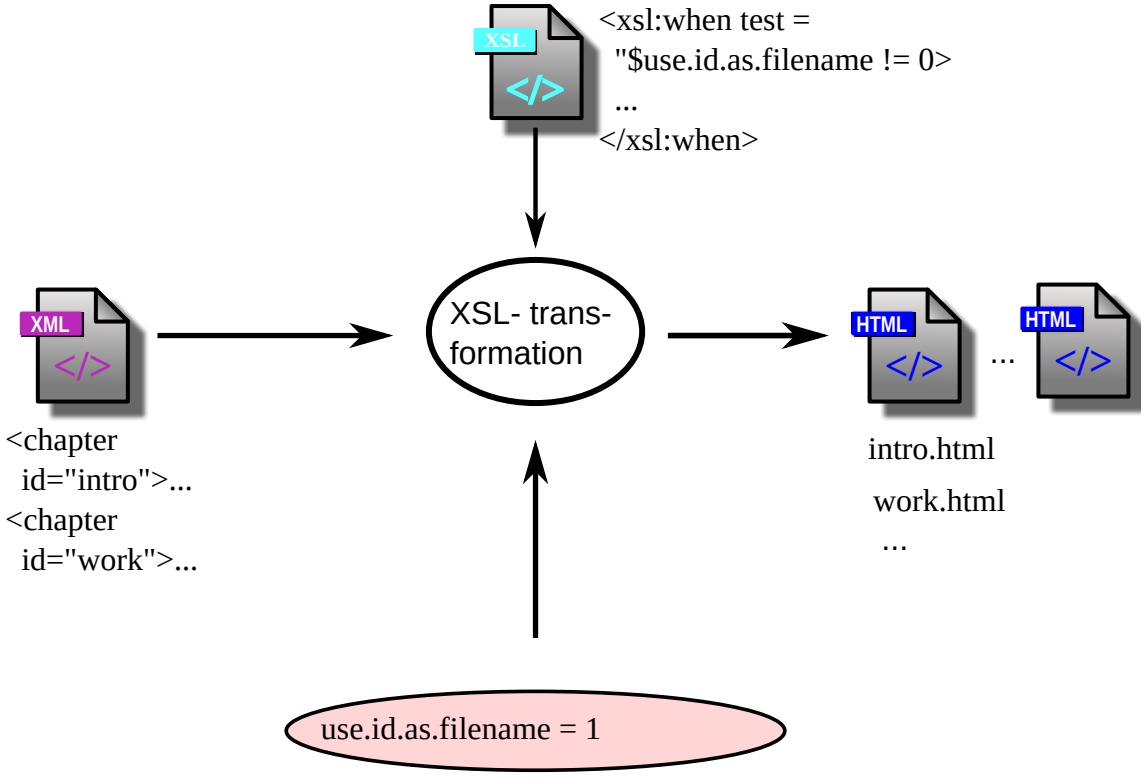
```
<book ...>
  <title>XML for Newbies</title>
  <chapter xml:id="intro">
    <title>Introduction</title>
    <para>...</para>
  </chapter>
  <chapter xml:id="work">
    <title>Working with objects</title>
    <para>...</para>
  </chapter>
</book>
```

Navigation structure.

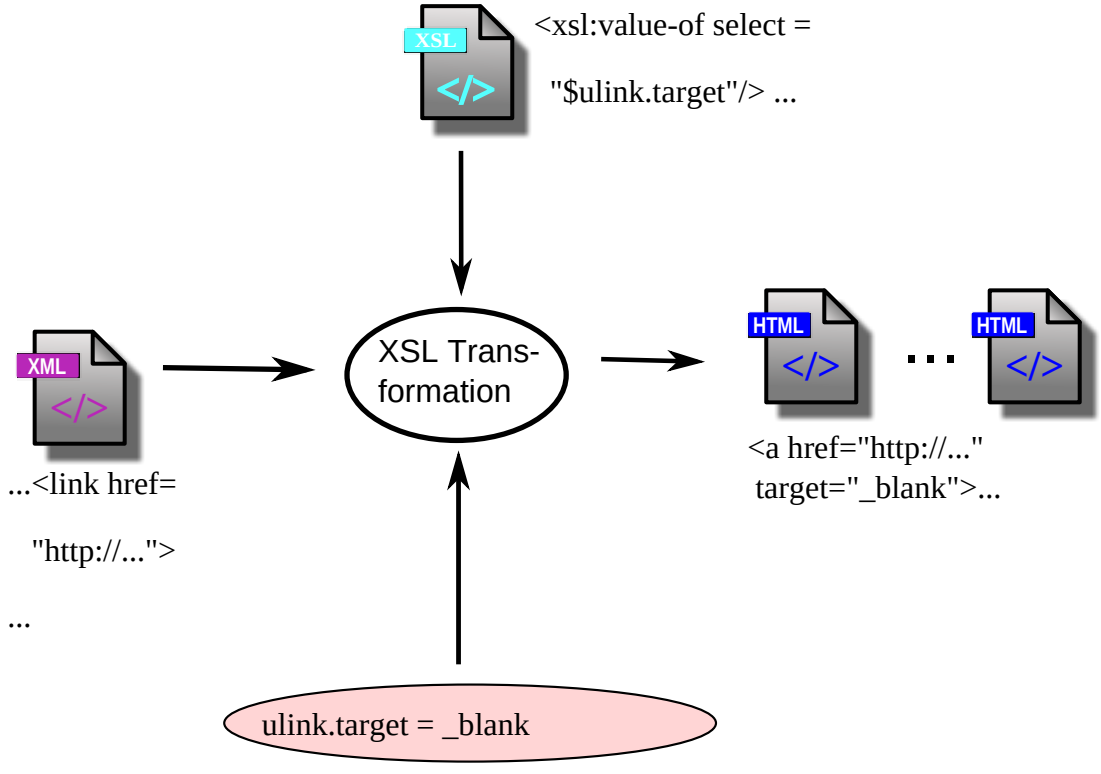
- Index.html
- Per chapter:
  - **intro**.html
  - **work**.html

Providing link stability:

Parameter: use.id.as.filename



Customization parameter ulink.target



```
public class X { ❶

    void y (void) {...} ❷
}
```

❶ Class declaration

Related exercises

Exercise 2: Tweaking Docbook transformation parameter.

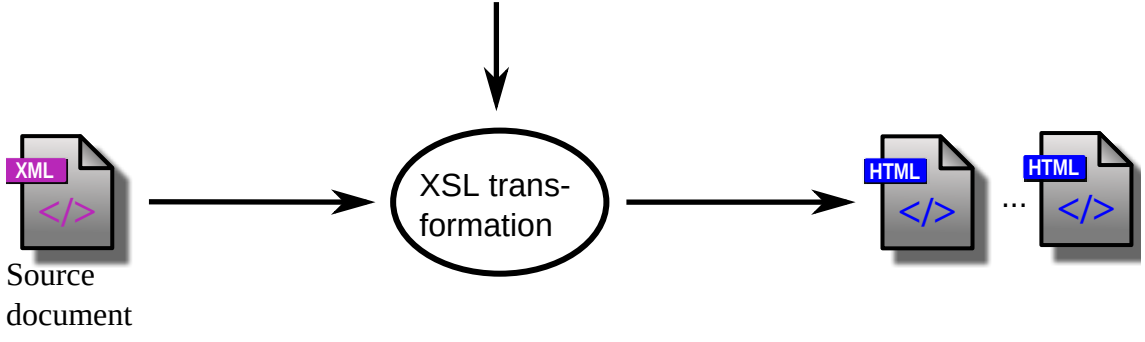
Links

- DocBook XSL Stylesheets User Reference: Parameters

Hooking into XSL

A sample customize.xsl

Stock Docbook webhelp.xsl	**<xsl:import href="../../xhtml/chunk.xsl"/>** **<xsl:include href="webhelp-common.xsl"/>** **<xsl:include href="titlepage.templates.xsl"/>**
Local customi-zation	**<xsl:template** **name="webhelpheader.logo">** **** **</xsl:template>**



Categories

• Adding Javascript
  • Touch gestures
  • Dynamic elements
• Embedded objects
  • Videos
  • MathML / LaTeX
	• Headers and footers
	  • Company logo
	  • Navigation icons
	• Front page

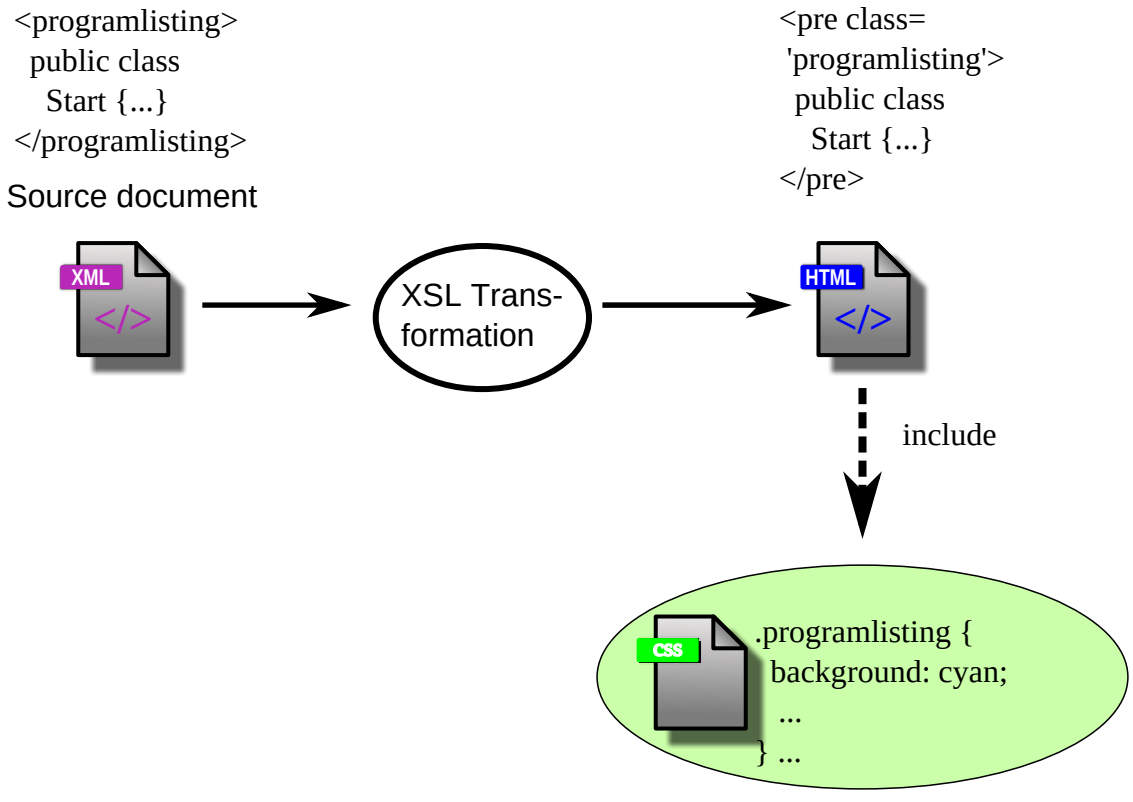
Example: videos

```
<xsl:template match="d:videodata">
  <video controls="controls" preload="auto">
    <xsl:attribute name="title">
      <xsl:value-of select="normalize-space(../../../d:title)"/>
    </xsl:attribute>

    <xsl:variable name="imageFilename">
      <xsl:call-template name="mediaobject.filename">
        <xsl:with-param name="object" select=".."/>
      </xsl:call-template>
    </xsl:variable>

    <source src="{$imageFilename}" type='video/mp4' />
    <source src="{$imageFilename}.ogv"/>
  </video>
</xsl:template>
```

Links

- Customizing DocBook XSL

Customize by CSS



Example CSS modifications

```
div.example > p.title,
div.figure > p.title,fig
div.table > p.title,
div.procedure > p.title,
div.equation > p.title {
    color: #394986;
    font-weight: bold;
}
```

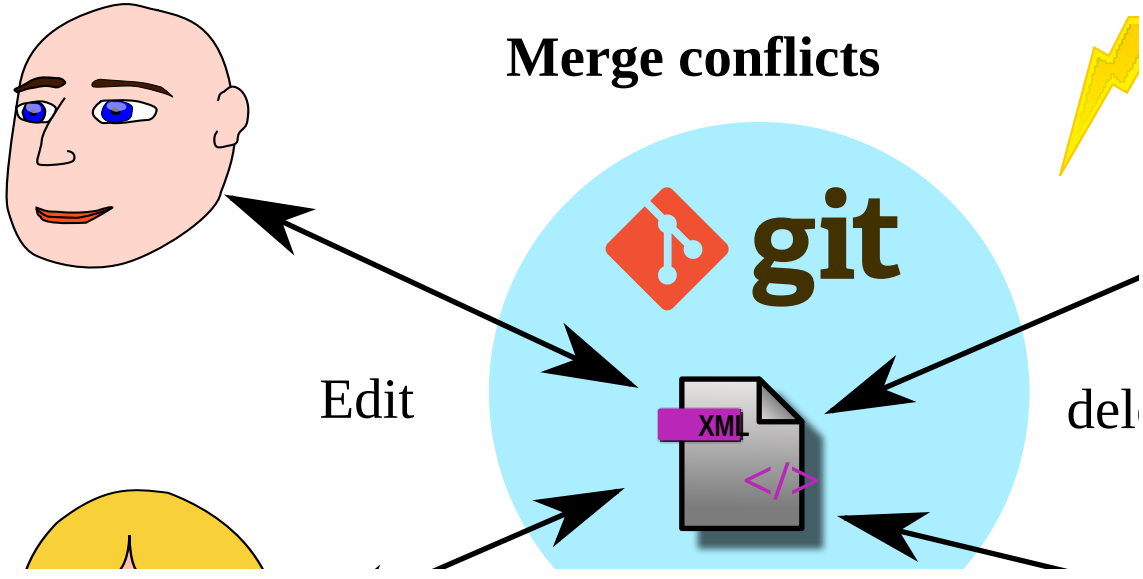
Related exercises

Exercise 3: Tweaking Docbook's default CSS.

Styling the editor

- CSS
- Plugins e.g. representing tables.
- Folding mode by CSS.

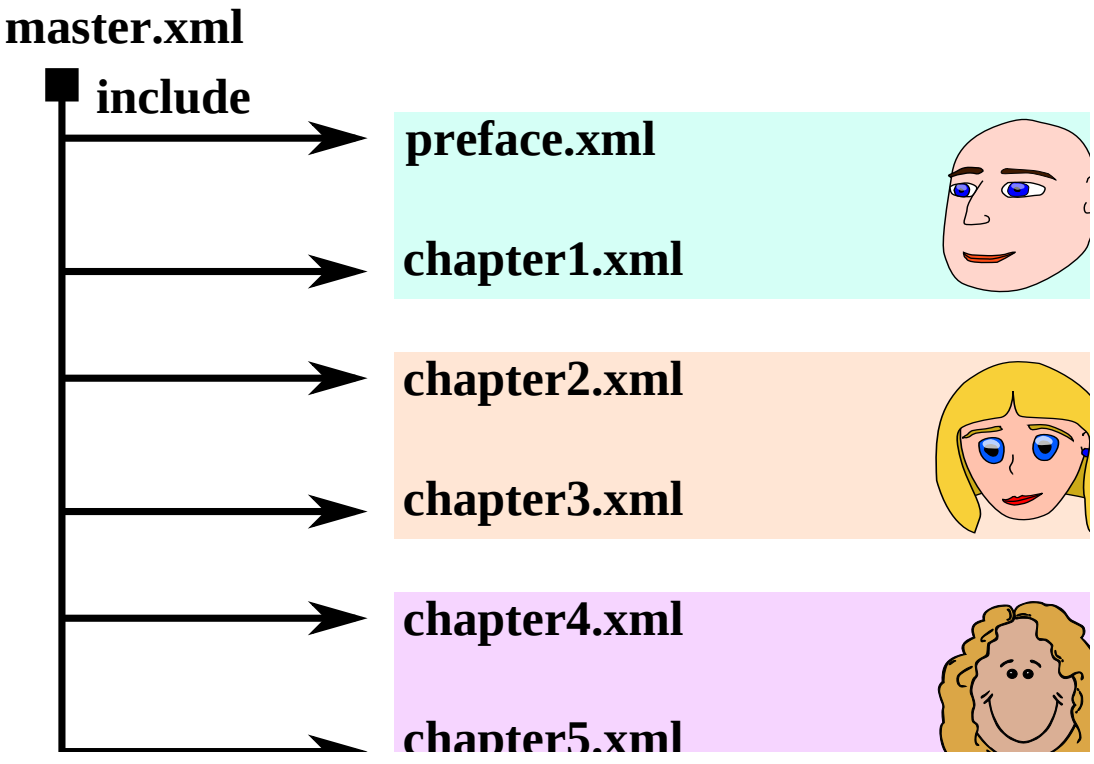
Motivating modular documents



Monolithic document problems

- Multiple author editing conflicts
- User interface limits
- No document component reuse

Document decomposition



A monolithic document

```
<book version="5.1"
  xmlns="http://docbook.org/ns/docbook">
  <chapter version="5.1" xml:id="start">
    <title>Start</title>
    <para>See <xref linkend="intro" ❶/>.</para>
  </chapter>
  <chapter xml:id="intro" ❷>
    <title>Introduction</title>
    <para>Basic stuff.</para>
  </chapter>
</book>
```

❶ An internal link.

❷ Internal link target.

Decomposing documents

master.xml

```
<book version="5.1" ❶
  xmlns="http://docbook.org/ns/docbook"
  xmlns:xi="http://www.w3.org/2001/XInclude"> ❷
  <xi:include href="start.xml" ❸
     xpointer="element(/1)"/> ❹

  <xi:include href="intro.xml" ❺
     xpointer="element(/1)"/> ❻
</book>
```

start.xml

```
<chapter version="5.1" ❶
xmlns="http://docbook.org/ns/docbook">
  <title>Start</title>
  <para>See
     <xref linkend="intro"/>.</para>
</chapter>
```

intro.xml

```
<chapter version="5.1" ❶
xmlns="http://docbook.org/ns/docbook">
<title>Introduction</title>
  <para>Basic stuff.</para>
</chapter>
```

Related exercises

Exercise 4: Internal links and modular documents

XML grammar defining languages

1. **RE**gular **LA**nguage for **X**ML **N**ext **G**eneration (RelaxNG)
2. Schematron
3. XML Schema (XSD)
4. **D**ocument **T**ype **D**efinition (DTD)

Address list schema

Schema	Doc instance
<element name="aBook">
<zeroOrMore>
<element name="person">
<element name="fullName">
<text/>
</element>
<element name="email">
<text/>
</element>
</element>
</zeroOrMore>
</element>	<aBook>
<person>
<fullName>Jim Bone</fullName>
<email>bone@mycity.com</email>
</person>
</aBook>

Related exercises

Exercise 5: Inventing a <book> grammar

Format conversion problem

Problem regarding Figure 14.6, “Single source publishing”:

```
<book version="5.1" ...>
  ...
  <chapter>
    <title>Introduction</title>
    <para>First section.</para>
  </chapter> ...
</book>
```

```
<html>
  <head>...</head>
  <body>
     <h1>Introduction</h1>
     <p>First section.</p> ...
  </body>
</html>
```

XSL template rules

```
<xsl:template match="/book">
  <html>
    <head> ... </head>
    <body>
      <h1>
        <xsl:value-of select="title"/>
      </h1>
    </body>
  </html>
</xsl:template>
```

Example: Formatting `<title>` elements

```
<xsl:template match="title">
  <h1>
    <xsl:value-of select="."/>
  </h1>
</xsl:template>
```

```
<title>Some content</title>
```

gets converted to:

```
<h1>Some content</h1>
```

Related exercises

Exercise 6: Formatting `<book>` instances
Exercise 7: Providing red background indicating foreign phrases
Exercise 8: Splitting your document into chunks

Basic FO introduction

- Further reading starting from Online and print versions.
- “Hello, world ...” style sample FO document.

Related exercises

Exercise 9: Creating a desired FO target example
Exercise 10: Transforming `<book>` instances to PDF