

DITA NG

A RelaxiNG implementation of DITA

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Presentation overview

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- Short introduction to DITA

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- Short introduction to DITA
- Short introduction to Relax NG

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- Short introduction to Relax NG
- **Why DITA/Relax NG do not work**

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Presentation overview

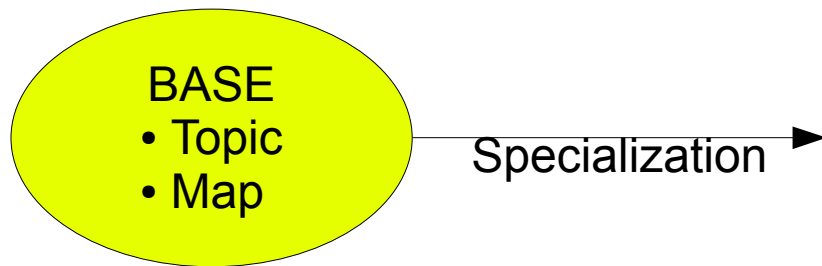
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DITA

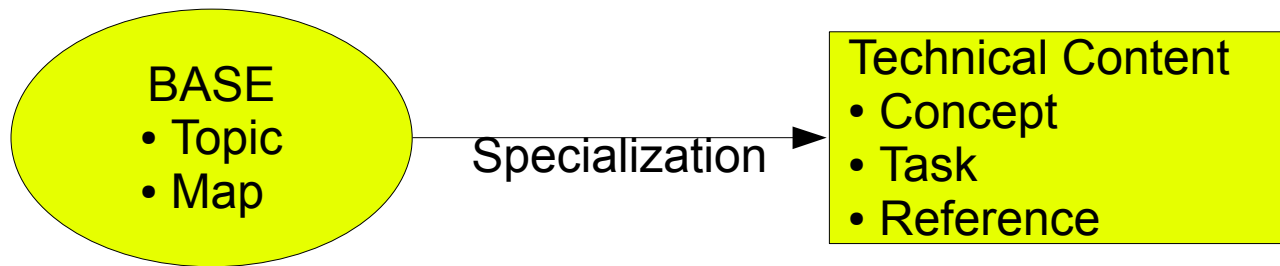
DITA

- 
- BASE
- Topic
 - Map

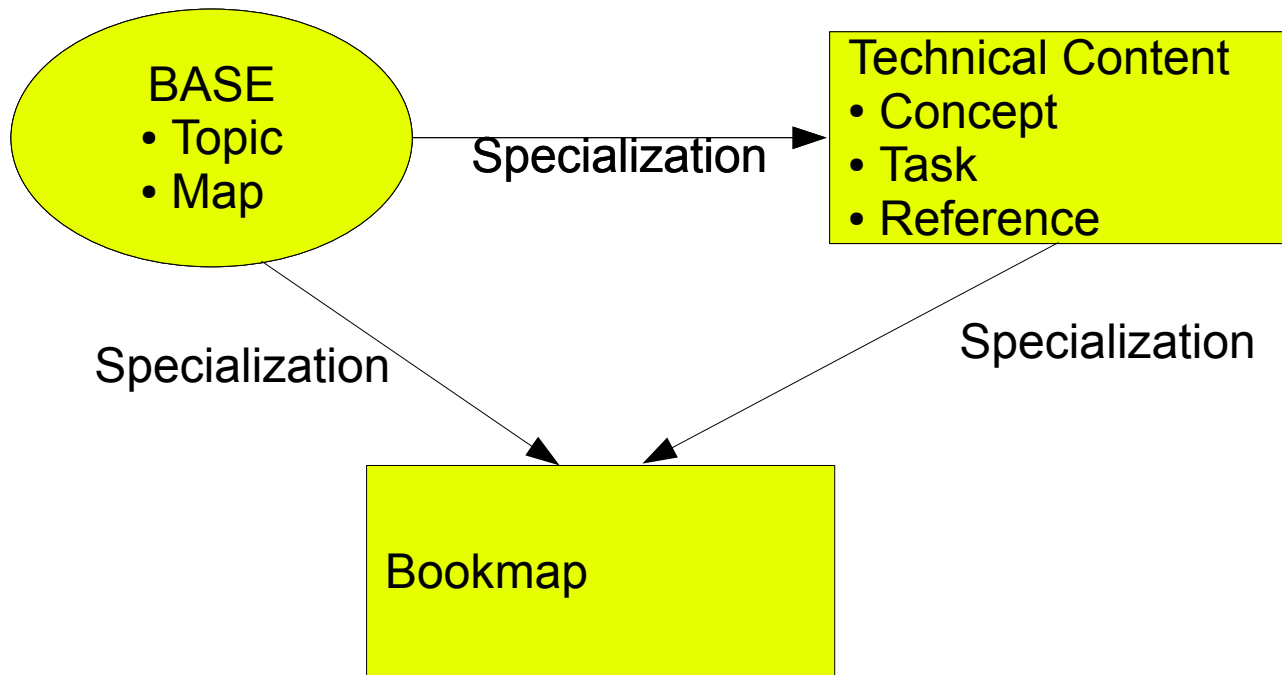
DITA



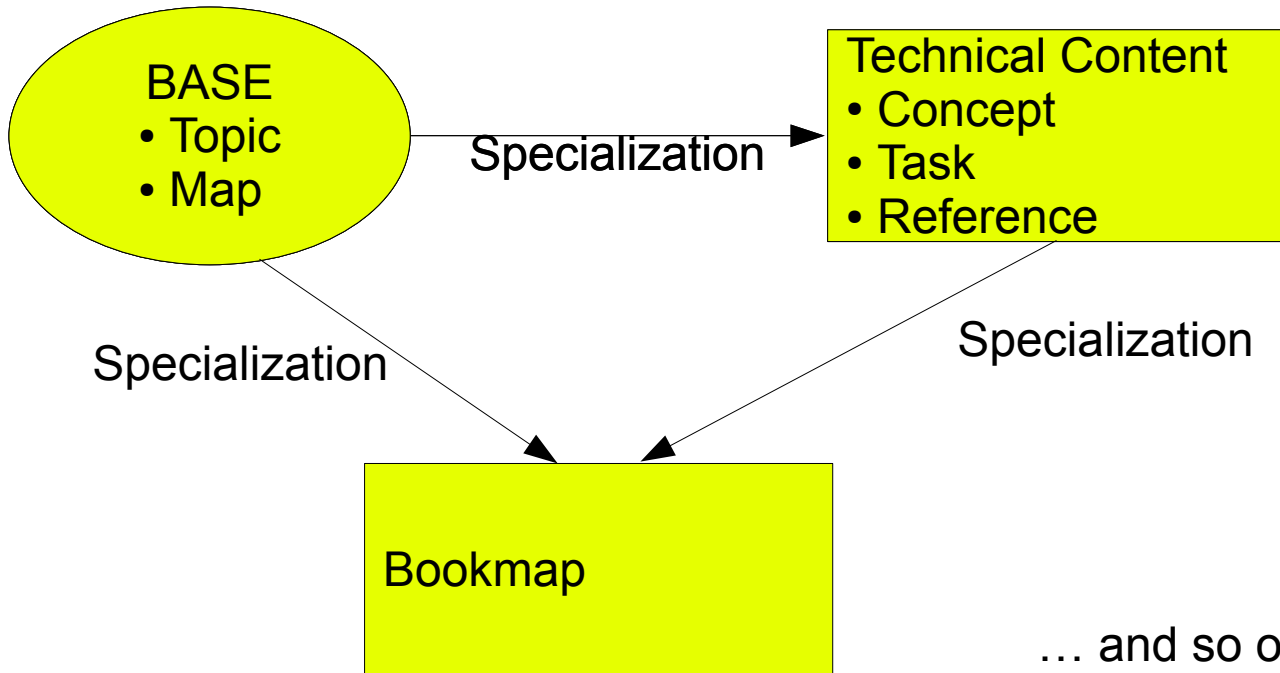
DITA



DITA

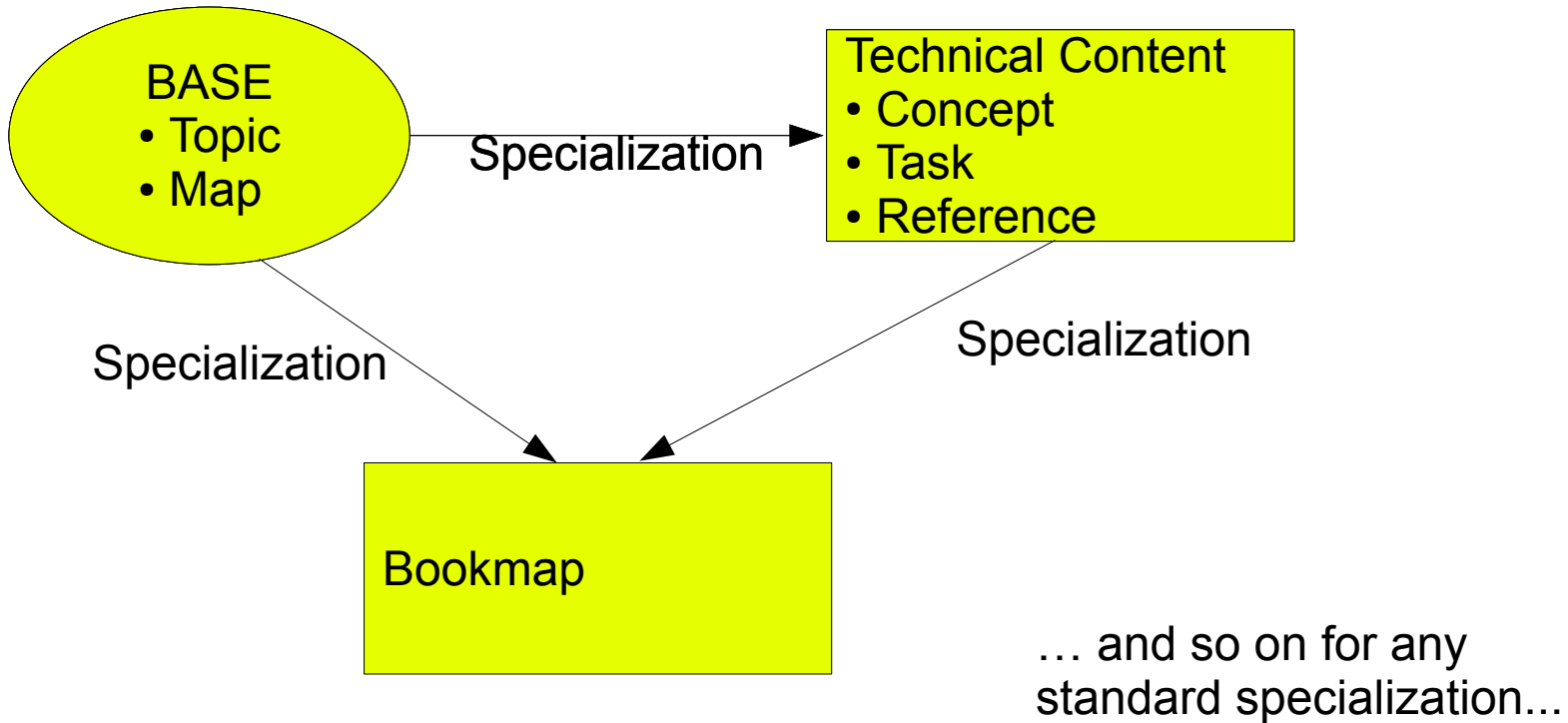


DITA



... and so on for any standard specialization...

DITA



The same mechanism is applied also for user defined specializations

DITA samples - concept

```
<!DOCTYPE concept PUBLIC "-//OASIS//DTD DITA Concept//EN"
"http://docs.oasis-open.org/dita/v1.1/OS/dtd/concept.dtd">
<concept id="toolsconcept" xml:lang="en-us">
  <title>Tools</title>
  <shortdesc>Invest in a good set of tools for doing all kinds of tasks around the house.</shortdesc>
  <conbody>
    <p>Useful tools include the following items:</p>
    <ul>
      <li>Hammer</li>
      <li>Screw driver set</li>
      <li>Wrench set</li>
      <li>Nails and screws</li>
      <li>Level</li>
      <li>Saws</li>
      <li>Drill</li>
      <li audience="expert">Air pressure gauge</li>
      <li>Spade</li>
      <li>Rake</li>
    </ul>
    <p>Keep your tools organized in a tool box which you can store in the garage.</p>
  </conbody>
  <related-links>
    <link href="toolbox.xml" format="dita" type="concept"/>
    <link href="../tasks/organizing.xml" format="dita" type="task"/>
  </related-links>
</concept>
```

DITA samples – learning overview

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE learningOverview PUBLIC "-//OASIS//DTD DITA Learning Overview//EN"
"../../../../frameworks/dita/DITA-OT/demo/dita12/dtd12/learning/dtd/learningOverview.dtd">
<learningOverview id="overview">
  <title>Learning Overview topic</title>
  <shortdesc>Working outline for learning overview topic design</shortdesc>
  <learningOverviewbody>
    ...
    <lcObjectives>
      <title>Objectives</title>
      <lcObjectivesStem>When you complete this lesson, you'll know how to do the
      following:</lcObjectivesStem>
      <lcObjectivesGroup>
        <lcObjective>Creating a good learning overview topic.</lcObjective>
        <lcObjective>Identifying clear learning objectives.</lcObjective>
        <lcObjective>Adding good test items to assess knowledge gained.</lcObjective>
      </lcObjectivesGroup>
    </lcObjectives>
    ....
    <section>
      <title>Additional sections</title>
      <p>You can add additional sections to cover any other content you'd like to include in a learning
      Overview.</p>
    </section>
  </learningOverviewbody>
</learningOverview>
```

Understanding DITA

Understanding DITA

There is **one** key feature

Understanding DITA

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element names are not important, all processing
relies on **class** attribute values

Understanding DITA

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```

lcObjectivesGroup/@class default value

- topic/ul learningBase/lcObjectivesGroup

lcObjectivesGroup/@class default value:

- topic/li learningBase/lcObjective

Understanding DITA

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lcObjectivesGroup/@class default value:

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Understanding DITA

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</lcObjectivesGroup>
```

will be processed by a tool that does not have special processing for the learning and training specialization as:

```
<ul>  
  <li>Creating a good learning overview topic.</li>  
  <li>Identifying clear learning objectives.</li>  
  <li>Adding good test items to assess knowledge gained.</li>  
</ul>
```

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Relax NG

Relax NG

Defines the structure of a document in terms of patterns, the grammar is the pattern that matches a valid document.

Understanding Relax NG validation

There is **one** key concept

Understanding Relax NG validation

There is **one** key concept
derivative based validation

Understanding Relax NG validation

Input: abcabc

Pattern: (a,b,c)+

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(a,b,c)+ → **a**bcabc → (b, c), (a,b,c)*

Understanding Relax NG validation

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(a,b,c)+	→	abcabc	→	(b, c), (a,b,c)*
(b, c), (a,b,c)*	→	abcabc	→	c, (a,b,c)*

Understanding Relax NG validation

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c, (a,b,c)*	→	abcabc	→	(a,b,c)*

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(b, c), (a,b,c)*	→	abcabc	→	c, (a,b,c)*
c, (a,b,c)*	→	abcabc	→	(a,b,c)*

(a,b,c)* is emptiable so the pattern (a, b, c)+ accepts the abcabc input!

Understanding Relax NG validation

The same ideas apply to Relax NG, the schema is the initial pattern and the input is the XML document split as:

- Start element tag
- Attribute name
- Attribute value
- The end of the start element tag
- Element value/text
- End element tag

Understanding Relax NG validation

There is **one** key concept

derivative based validation:

the schema pattern is successively derived against the input document

a document is valid if the resulting pattern at the end of the document is empty

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Why DITA/Relax NG do not work

There should be some reasons why a Relax NG implementation of DITA was not available before

DITA class values

The DITA class attribute values are specified in the DTD/Schema as default values

(it would not be practical to request each author to enter those values for each element)

Some Relax NG design decisions

Some Relax NG design decisions

- No specified way to associate a document with a schema

Some Relax NG design decisions

- No specified way to associate a document with a schema
- No infoset contributions, that means no default values

We identified the main issue

- DITA needs default values for class attributes in order to work in the real life
- Relax NG does not provide neither schema association nor default values

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How can we make DITA/Relax NG work

Schema association solutions

Schema association solutions

- application specific processing instructions

Schema association solutions

- application specific processing instructions
- application level user preferences

Schema association solutions

- application specific processing instructions
- application level user preferences
- xml-model processing instruction from W3C

Default values

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The Relax NG DTD compatibility specification

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- `a:defaultValue` annotation to specify default values

Default values

The Relax NG DTD compatibility specification

- a:defaultValue annotation to specify default values
- but there was no implementation available

Make DITA work with Relax NG

Make DITA work with Relax NG

Provide support for default values

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Write the Relax NG schemas and specify the default values using `a:defaultValue` annotations

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Provide support for default values

Write the Relax NG schemas and specify the default values using `a:defaultValue` annotations

Update the processing workflow to use the support for default values based on Relax NG

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Support for default values

Support for default values

a:defaultValue annotation example:

```
<attribute name="test"  
  a:defaultValue="value"/>
```

Access to annotations

Access to annotations

- Two options

Access to annotations

- Two options
 - Trang
 - Jing

Access to annotations

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 - Converts from Relax NG to other schemas preserving the annotations
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The model from Jing is parsed/simplified so extracting annotations is easier than with Trang

Extracting annotations from Jing

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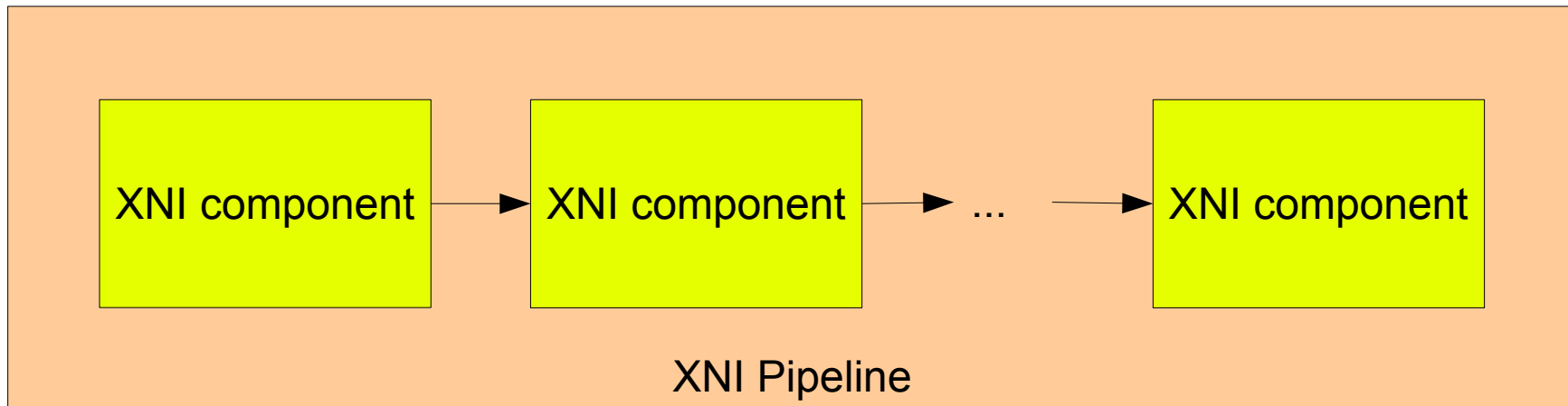
- Change Jing to store attribute default values annotations

Extracting annotations from Jing

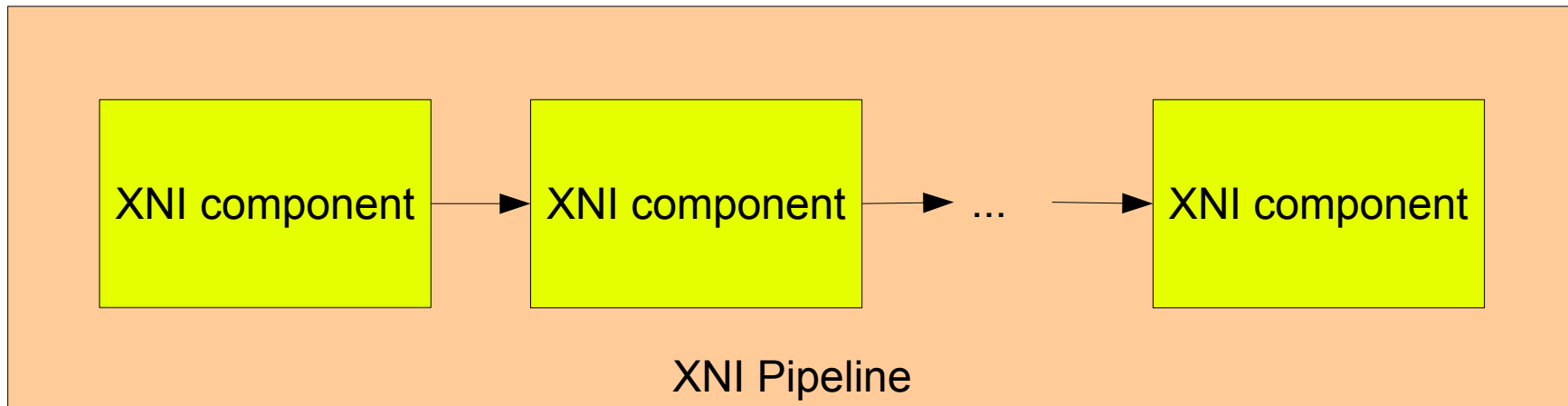
- Change Jing to store attribute default values annotations
- Implement a component that parses a schema and creates a map between attributes and their default values

Xerces parser configurations

Xerces parser configurations



Xerces parser configurations



- Sample components
 - Scanner
 - Validator
 - XInclude handler
- SAX-like events but with more information

Default values XNI component

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- Two roles / operation modes

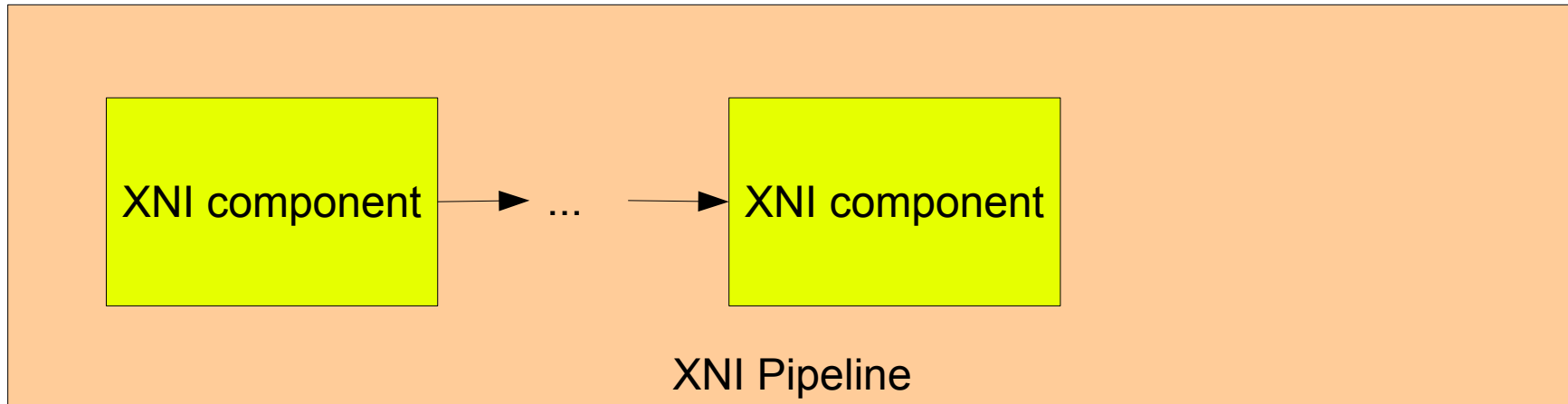
Default values XNI component

- Two roles / operation modes
 - Detect the associated schema and create the attributes to default values map
 - The current implementation looks for oxygen schema association PIs

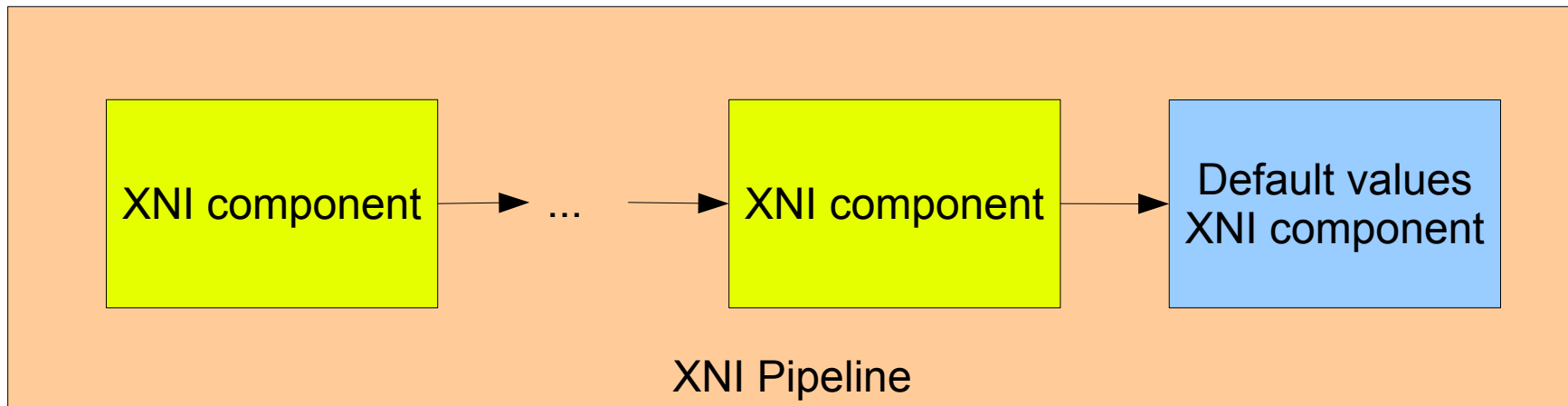
Default values XNI component

- Two roles / operation modes
 - Detect the associated schema and create the attributes to default values map
 - The current implementation looks for oXygen schema association PIs
 - On startElement events add default values when an attribute is not specified but it has a default value

Add the component to the pipeline



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We extend the Xerces parser configuration adding the default values component as the last component in the pipeline

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Relax NG schemas for DITA 1.2

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- multiple versions of the same file are obtained with slightly different content (due to overwritten entities)

so a manual merge is needed

Use Relax NG features

Use Relax NG features

- Combine patterns
- Redefine patterns

Use Relax NG features

- Combine patterns
- Redefine patterns
- Allow domain contributions to stay inside the domain schema, thus simplifying the schema structure

Additional schema checks

- Use Schematron to check that the domains default value matches the included domains
- Additional Schematron checks (todo)
 - Class values follow the specified format

Hint

Show a side by side comparison between Relax NG and DTD (bookmap.rng versus bookmap.dtd for example)

Conversion to RNC

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- Trang can convert each schema but we hit again the Trang limitations wrt preserving folder structure

Conversion to RNC

- Trang can convert each schema but we hit again the Trang limitations wrt preserving folder structure
- Solution:
 - an ant script that invokes Trang and performs the adjusting of the folder structure and fixes schema references

XML Catalogs

- Automatically generated from the Relax NG schemas with XSLT

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Putting everything together...

Demo time!

Some work for the future

Some work for the future

- Support for xml-model PI

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- Support for external specification of the Relax NG schema (with a parser property)

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- More work on the Relax NG schemas

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- Support for xml-model PI
- Support for external specification of the Relax NG schema (with a parser property)
- Automatic conversion to DTDs
- More work on the Relax NG schemas
- Integration in DITA OT

Wrap-up

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- The DITA NG open source project contains the Xerces integration code and the Relax NG schemas – contributions are welcome!

Wrap-up

- DITA processing relies on class attributes
- Relax NG validation based on derivatives
- The DTD compatibility spec enables Relax NG to work with DITA
- Jing was modified to enable default values
- The DITA NG open source project contains the Xerces integration code and the Relax NG schemas – contributions are welcome!
- All processing works with minimal changes

Thank you!

Questions?

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