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XML as a preservation strategy

Experiences with the DiVA document format

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Outline

- DiVA project and its objectives
- DiVA publishing system
- DiVA document format (DDF)
- Experiences with the DDF
- Conclusions and next steps

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DiVA Project

- Start 2000; 2002 DiVA.1; 2004 DiVA.2
  Nine universities in three countries; number increasing
- Objectives:
  - Technical solutions & well functioning work flow supporting fulltext publishing, storage and dissemination of university research (theses, dissertations, working and research papers…)
  - Explore ways to ensure the future use and understanding of digital objects in the archive

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… solutions focusing on

- Services
  - production
  - storage
  - preservation
  - retrieval
  - dissemination
- **Format** (metadata + stored documents)
- Work flows

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Assumption that storage format is essential

Level of enabled **services** depends on granularity level of structure of the data stored within the system

Level of guarantees given for **future use and understanding** of the digital objects in the archive depends on the format used

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DiVA Publishing System

makes it possible to

- reuse and enhance the data directly from the source document originally created by authors, both for metadata and a digital master for electronic & printed versions
- assign a persistent identifier, store & checksum all files in a local archive
- send a copy to the national library archives and other interested parties

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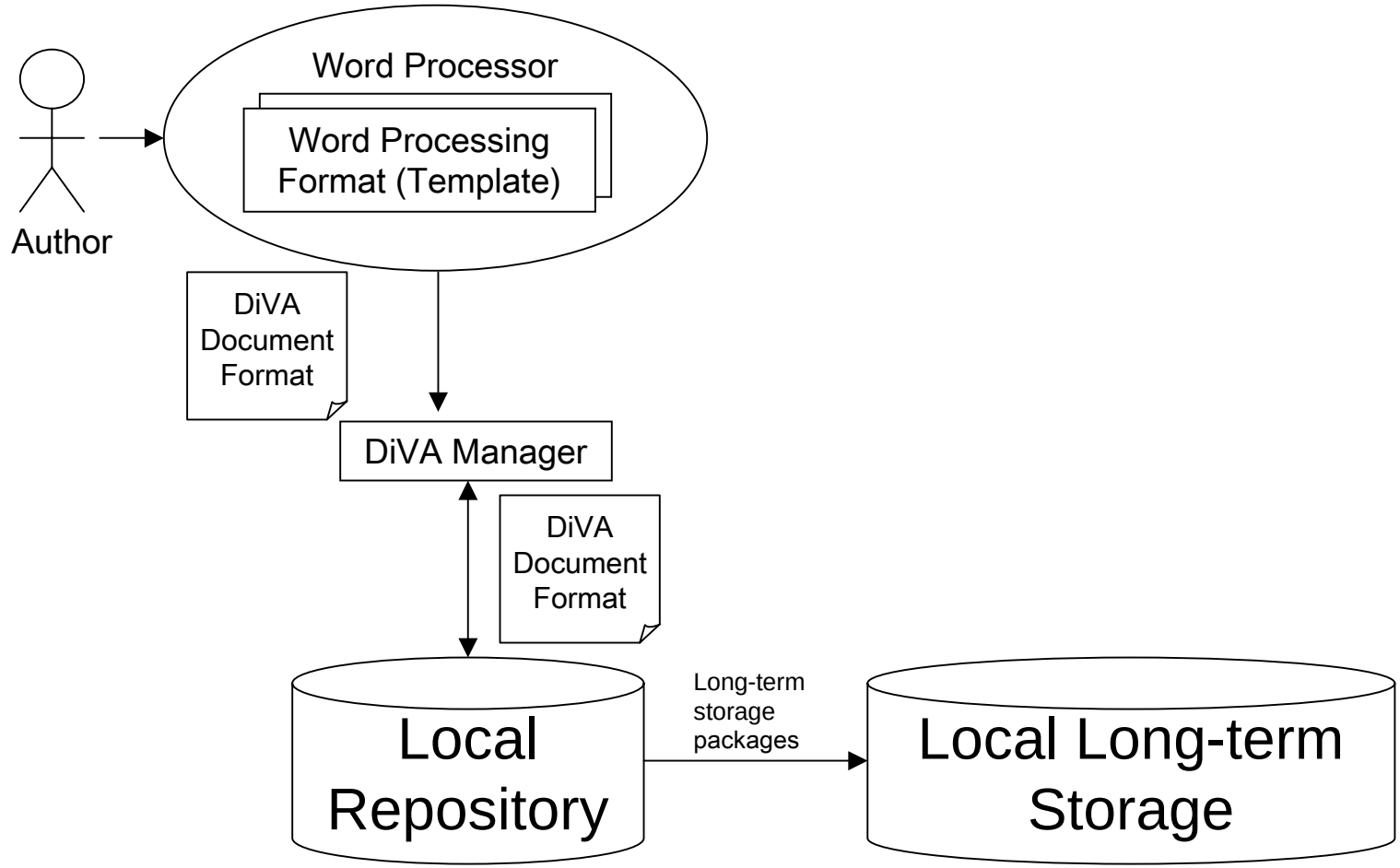

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Implementation

- Java – XML technologies
- Currently an Oracle database used for indexing and searching
- Architecture: component-based design
  - Modularity and reusability of the components
  - Possibility to seamlessly replace modules with improved implementations of the component

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DiVA Document Format (DDF)

- Internal format developed for, but not limited to, academic publications
- Version 1.0 (defined by an XML Schema)
  - http://publications.uu.se/schema/ddf/
  - Component based
  - Extensible
  - Administrative metadata elements are combined with descriptive elements
  - Elements conforming to DocBook DTD are used for the content part of the document

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Why a customized format?

DiVA document – the result of a practical approach demanding

- self-description
- clear structure
- support for export to other formats/schemas
- compatibility with a number of metadata formats/schemas
- easy reuse of data

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Why XML?

- Open and established notation
- Support for international character sets (UNICODE)
- A simple and human readable text format

… characteristics facilitate data migration and the documents are likely to have longevity

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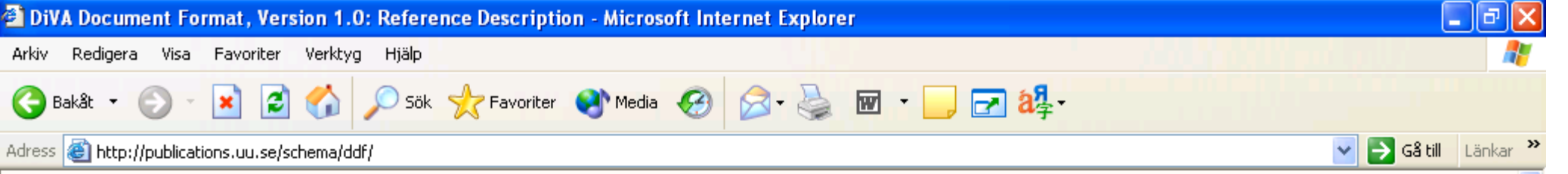
Why XML Schema rather than DTD?

"XML schema provides means for defining the structure, content and semantics of XML documents"

- It's written in XML
- It supports data types, self-defined data types and namespaces
  - validation, restriction definition, data format definition …



DiVA Document Format

Version 1.0: Reference Description (Draft)

Table of Contents

http://publications.uu.se/schema/ddf/

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The global structure of the DiVA document

Metadata description of publication, which may contain fulltext document

- Root element documents to allow many documents to be included in a single file
- Each individual document is described within document element
- If the fulltext is included it appears within the contents element

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…global structure of the DiVA XML document

```
<documents>
  <date type="creation" timezone="UTC+1">
    <year>2004</year>
    <month>01</month>
    <day>27</day>
  </date>
  <time type="creation"
   timezone="UTC+1">14:28</time>
  <document>
     ...the metadata ...
    <contents>...the fulltext contents...</contents>
  </document>
</documents>
```

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Metadata

http://publications.uu.se/schema/ddf/divametadata.html#DocumentStructure

- Common elements

  [e.g. properties, identifiers, specifics, languages, creators, contributors, titles, abstracts, contents, note ..]

- Manifestations - container for one or more manifestation elements that contain metadata about a particular format of the document

  [e.g. properties, date, time, edition, publisher, distributors, archivers …]

- Mappings

  [DC/RDF, MARCXML, METS, MODS, TEI Header, Endnote, MARC21…]

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Components

For example

- addressType
- personType
- organisationType

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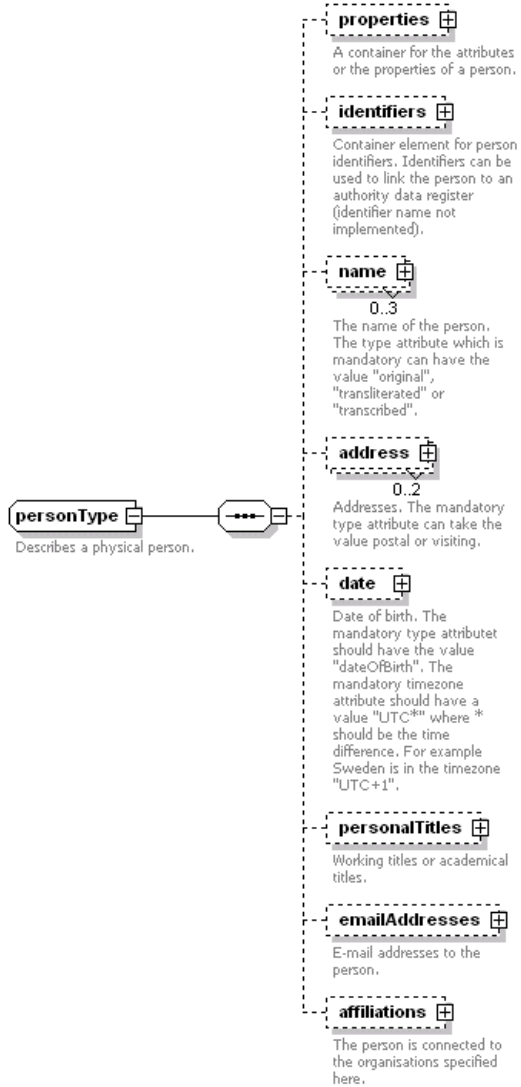

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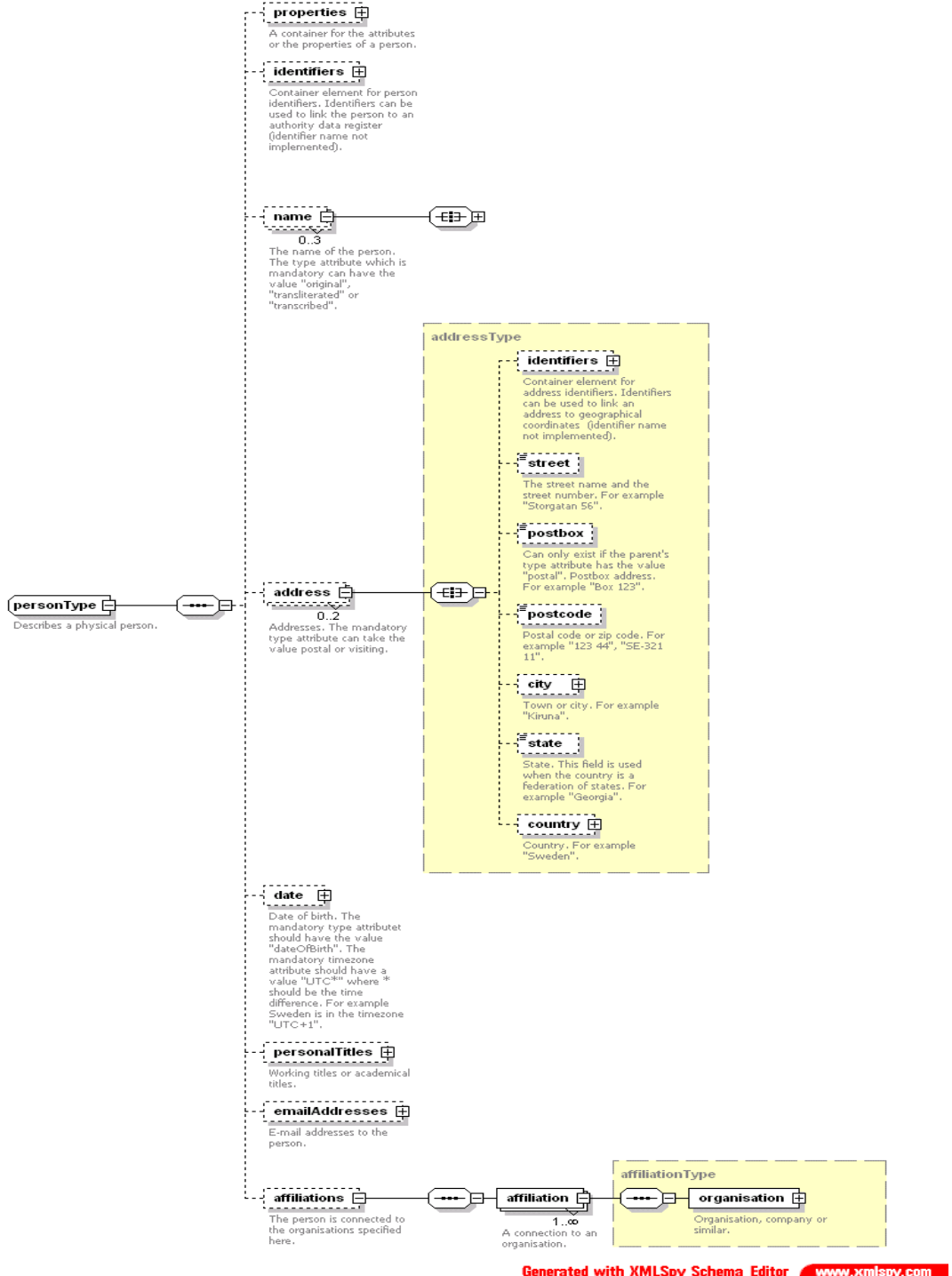

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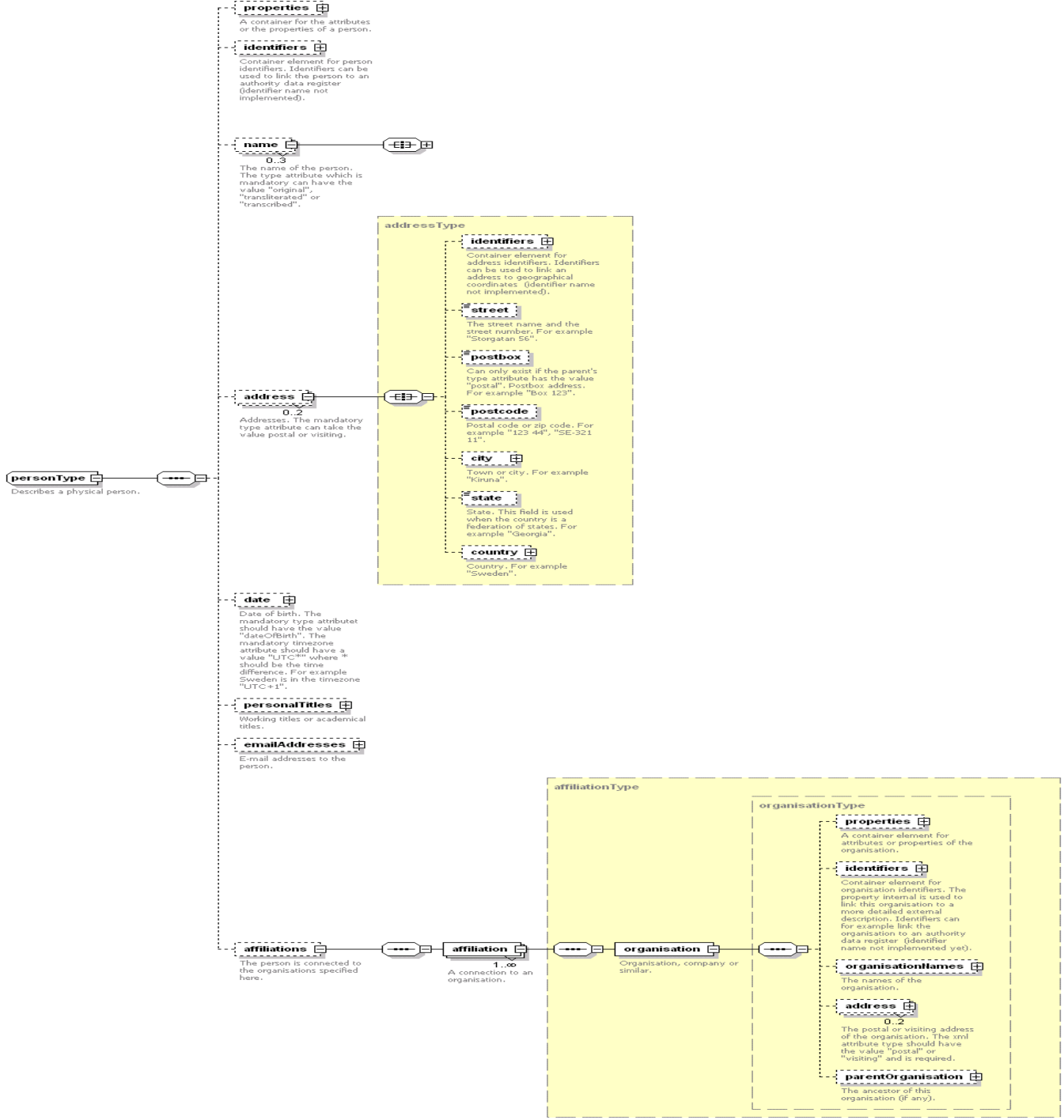

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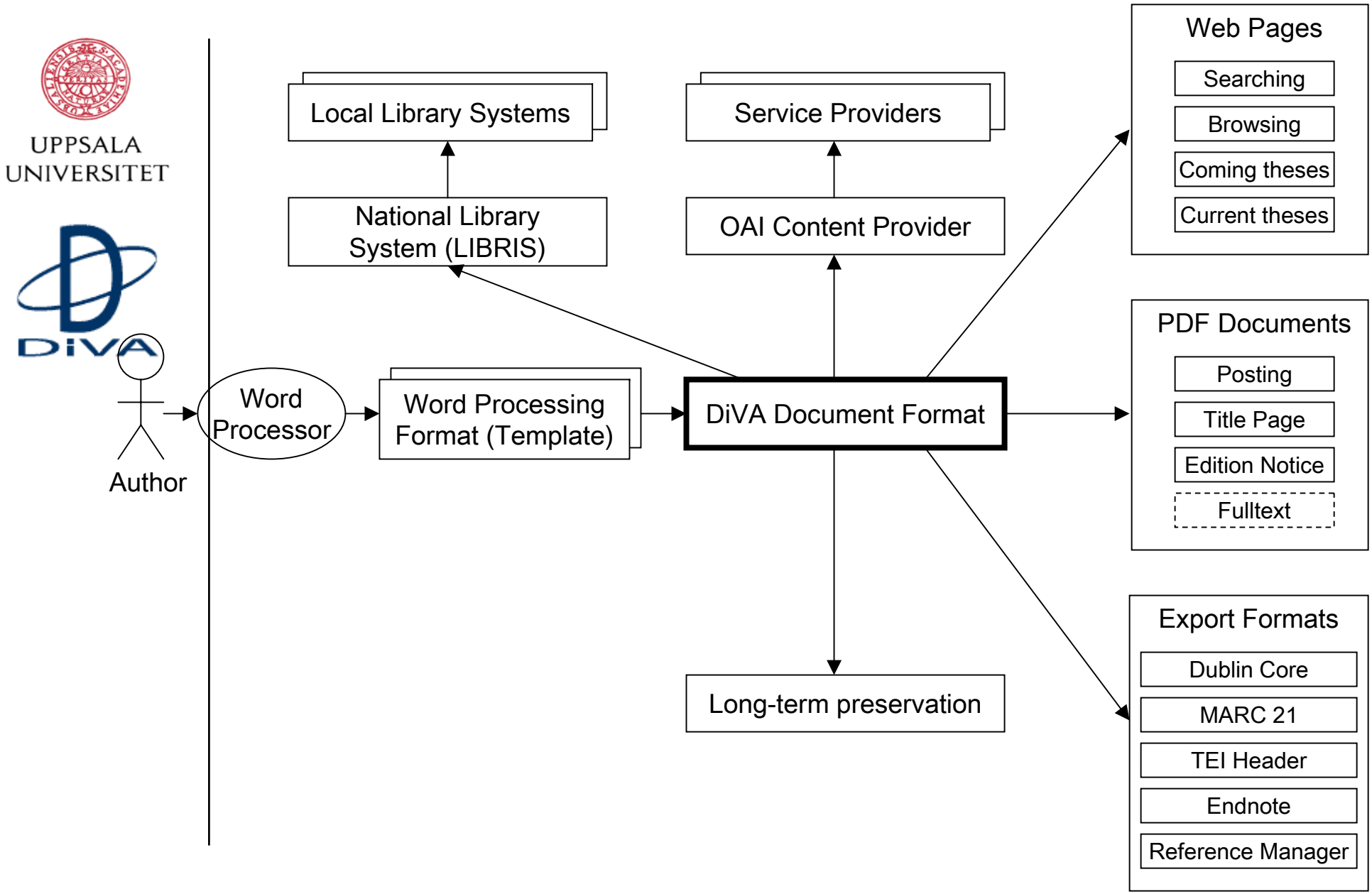
DDF in the DiVA system

- Subsystem interface
- Source for other formats (DocBook, TEI, Marc 21, DC etc.)
- Long-term preservation format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Author
Word Processor
Word Processing Format (Template)
Local Library Systems
National Library System (LIBRIS)
Service Providers
OAI Content Provider
DiVA Document Format
Long-term preservation
Web Pages
Searching
Browsing
Coming theses
Current theses
PDF Documents
Posting
Title Page
Edition Notice
Fulltext
Export Formats
Dublin Core
MARC 21
TEI Header
Endnote
Reference Manager

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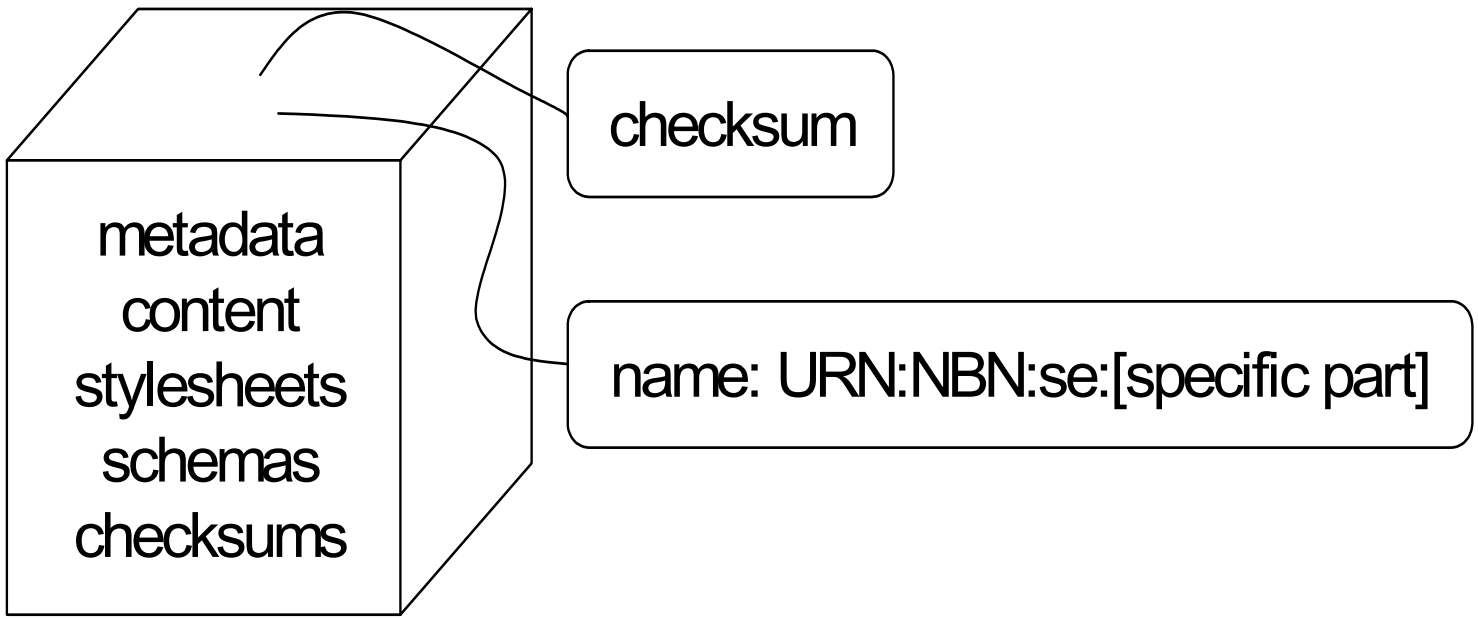
Archiving Package



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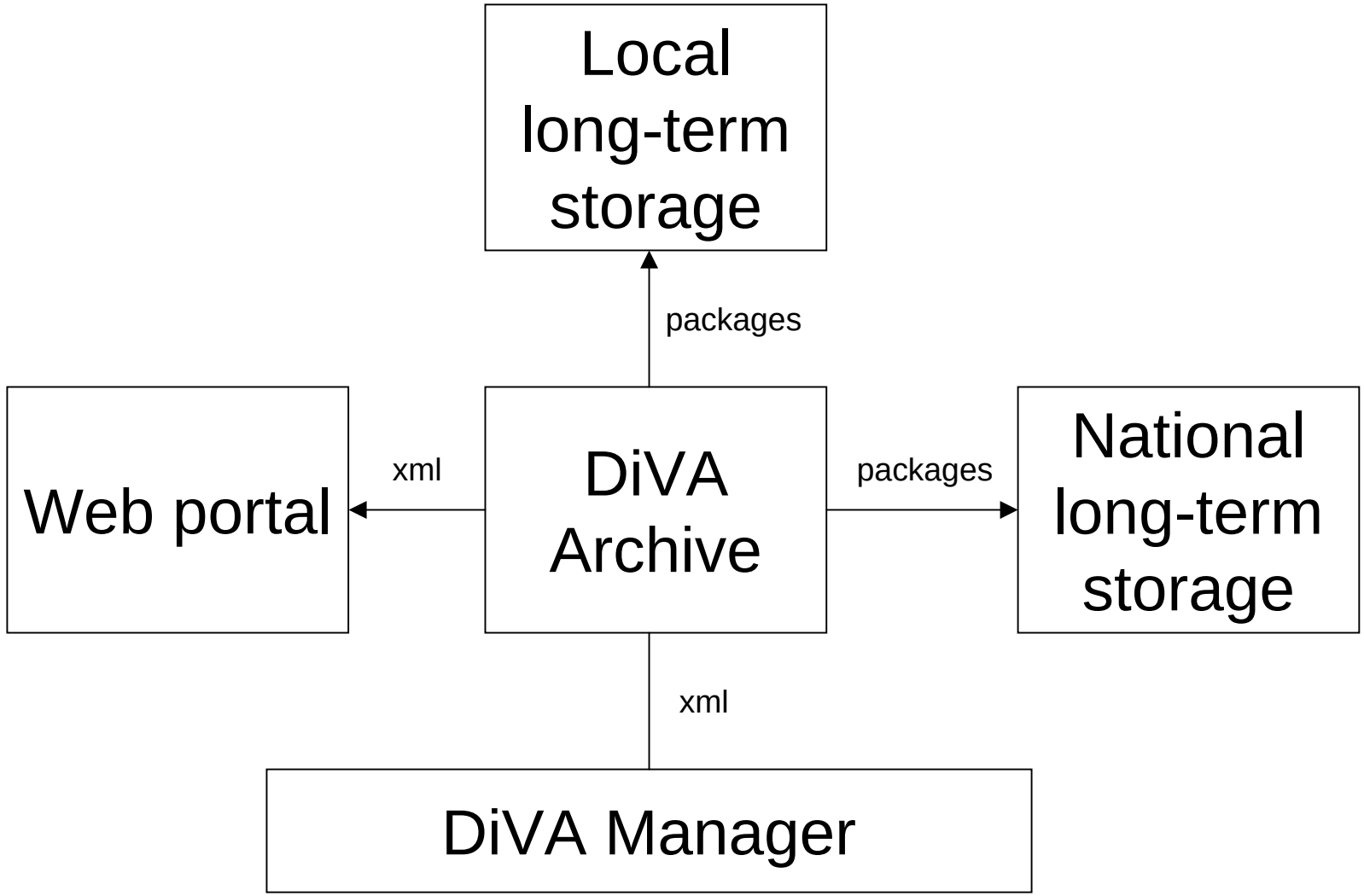

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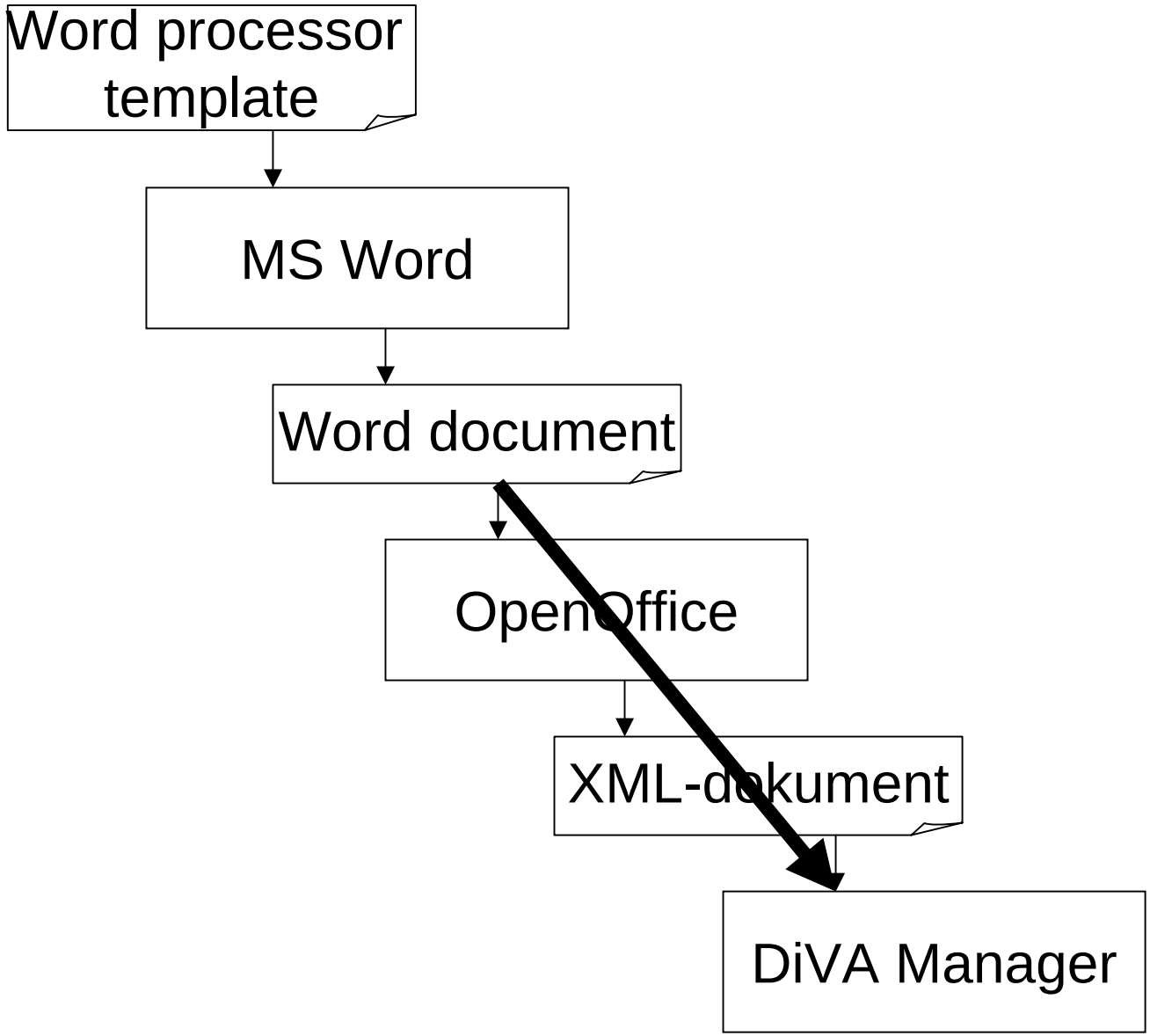
How is the format produced?

- Automated work flow based on delivery of information in templates
- Tools for conversion from Word processing templates (MS Word/Open Office – XML)
- Work in progress – MathML + images
- Demo – http://

Import


Word processor template
MS Word
Word document
OpenOffice
XML-dokument
DiVA Manager

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Next steps

- Revisions and extensions of DDF
  - Multiple file manifestations
  - Rights metadata
  - Extended preservation metadata
  - Relations to other resources
- DiVA.2 scheduled January 2005
  - open for comments

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More information

- **The DiVA Project - Development of an Electronic Publishing System** [English]
(D-Lib Magazine, (9)2003:11)
http://www.dlib.org/dlib/november03/muller/11muller.html
- **Archiving Workflow Between a Local Repository and the National Archive** [English]
(2003-08-18: ECDL 2003, Web Archives, Workshop)
http://publications.uu.se/epcentre/conferences/ecdl2003/archiving_ECDL_2003.pdf
- **Using XML for Long-term Preservation : Experiences from the DiVA Project** [English]
(2003-05-22: ETD 2003: Next Steps - Electronic Theses and Dissertations Worldwide, Berlin)
http://publications.uu.se/etd2003/papers/LongTermPreservation.pdf
- DiVA portal – http://www.diva-portal.org/