Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski"

Authoring Tools for an Academic Digital Library

Pavel Pavlov,
Maria Nisheva-Pavlova,
Anton Iliev,
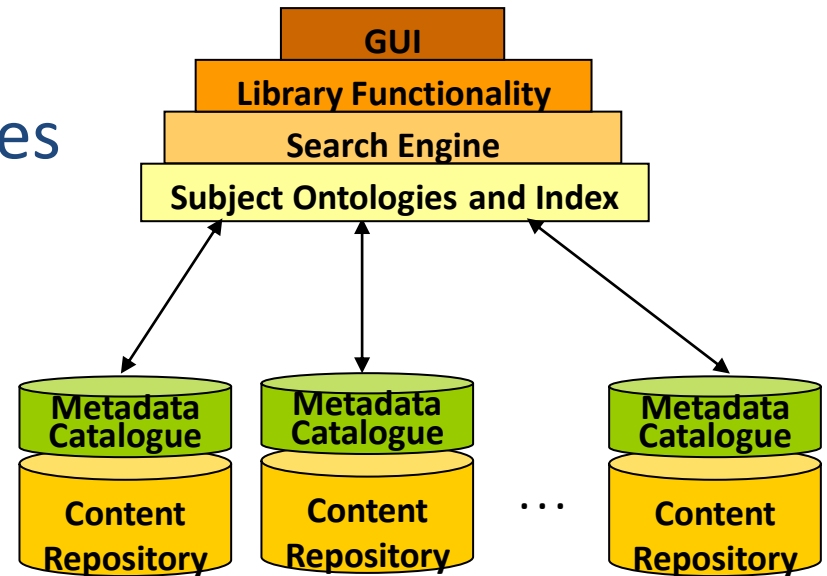Klimentina Ruseva,
Nadezhda Apostolova

Introduction

- Digital library
an online collection of information sources both managed by and made accessible to a community of users

- Functions of academic digital libraries
  – maintain and give access to academic information
  – provide effective knowledge management and discovery
  – encourage wide distribution of information at low costs
  – promote the needs and interests of a diverse community of users

Main Objectives

- To explore the architectural principles, user interfaces and search engines of the most popular academic digital libraries

- To study the various aspects of creation and integration of appropriate ontologies

- To define suitable metadata that supports the needs of a digital library

- To develop a proper framework that applies advanced information and Semantic Web technologies

Architecture of DigLib-CI

- Open access to various types of documents

- Metadata description

- Two subject ontologies based on the ACM curriculum
  - Computer Science
  - Information Systems

Resource Description

- 14 types of documents

- Attribute-based description in XML format

- A set of common attributes:
  type, title, author(s), human and/or programming language(s), digital format, location, date of creation, subject(s), semantic annotation

- Consists of 2 equivalent parts in Bulgarian and English

XML document description

```xml
      </ontologyRefs>
    - <keywords>
        <keyword>дигитална библиотека</keyword>
        <keyword>метаданни</keyword>
        <keyword>семантична анотация</keyword>
        <keyword>онтология</keyword>
        <keyword>семантичен уеб</keyword>
      </keywords>
  </item>
- <item lang="en">
    <type>Статия</type>
    <title>Building a Digital Library with Learning Materials</title>
  - <subjects>
      <subject>Information Systems</subject>
    </subjects>
  - <ontologies>
      <ontology>ontology_IS_en.xml</ontology>
    </ontologies>
  - <authors>
      <author>M. Nisheva-Pavlova</author>
      <author>P. Pavlov</author>
    </authors>
    <file format="pdf">Paper_ElPub2009_MN_PP.pdf</file>
  - <bib_data>
    - <proceedings>
      - <editors>
          <editor>S. Mornati</editor>
          <editor>T. Hedlund</editor>
        </editors>
        <proceedings_title>Rethinking Electronic Publishing: Innovation in Communication Paradigms and Technologies. Proceedings of the 13th International
          Conference on Electronic Publishing (Milan, Italy, June 12-14, 2009)</proceedings_title>
        <isbn>978-88-6134-326-6</isbn>
        <proceedings_publisher>Edizioni Nuova Cultura – Roma</proceedings_publisher>
        <proceedings_year>2009</proceedings_year>
        <proceedings_pages>471-483</proceedings_pages>
      </proceedings>
    </bib_data>
  - <ontologyRefs>
      <ref>Intelligent query processing and query organization</ref>
    </ontologyRefs>
  - <keywords>
      <keyword>digital library</keyword>
      <keyword>metadata</keyword>
      <keyword>semantic annotation</keyword>
      <keyword>ontology</keyword>
      <keyword>semantic web</keyword>
    </keywords>
  </item>
</libraryEntry>
```
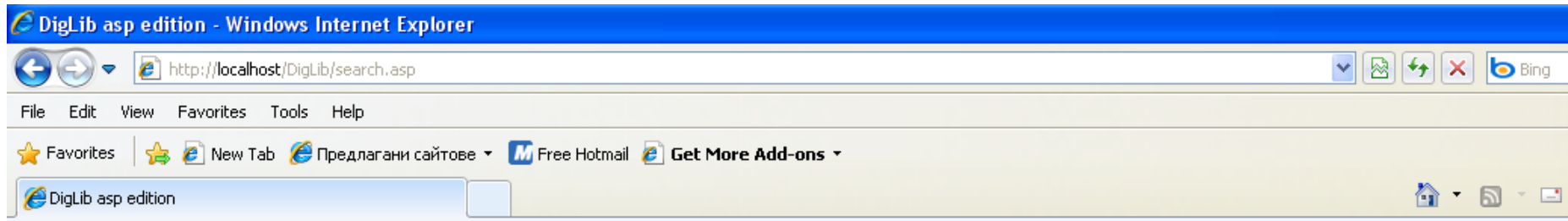
User Interface

- 4 types of users
  - Students
  - Lecturers and researchers
  - Library administrators
  - Guests

- Core functionality:
  - Search for documents
  - Create, edit and view document descriptions
  - Visualize ontology

Search and Retrieval of Documents

Create and Edit Document Descriptions

Conclusion

- Goals achieved:
  - A functional model of an academic digital library was proposed
  - A prototype of DigLib-CI was developed

- The suggested solution offers semantics-oriented access to library resources

- The key to success - adequate catalog metadata and design of proper UI

Thank you for your attention