Meta Data Driven Website Generation
Tools for Describing Projects

Robert Roggenbuck & Wolfram Sperber
Konrad-Zuse-Zentrum für Informationstechnik Berlin

Workshop: Preservation and DC-Tools: Standards and Standardisation activities

01.03.2005
Göttingen
Agenda

1. About Math&Industry
2. Generation of Websites
3. MIPMPers
4. MIPMGlossary
About Math&Industry - Aims

Basic Ideas

- publish applied mathematics at work
- make mathematics understandable
- meeting needs of different customers (science, industry / services, administration, broader public)
- be up to date
- be multi media based

This Leads to Math&Industry

- creation of project websites
- offer central services to give an easy access to the project information
About Math&Industry

History

- BMBF (German Ministry of education and Research) decides to support the field of applied mathematics
- started 1993 with the 1\textsuperscript{st} funding period
- Math&Industry began 2001 (3\textsuperscript{rd} period)
- 2004 the 4\textsuperscript{th} period started
- more then 200 projects were funded
About Math&Industry

Structure

- central and local

Central Services

  - project lists
  - full text search
  - overall glossary
About Math&Industry - The Portal

Future Services

- database with experts in mathematics
- software database
- database for general products
- publication search

To Enable all these Services, Structured Data is Needed

- Meta data -> RDF
1. About Math&Industry
2. Generation of Websites
3. MIPMPers
4. MIPMIGlossary
Generation of Websites

The Websites of the Projects Must be Structured

--> layout for easy access (navigation)

--> meta data for detailed retrieval

Development of the WebSiteMaker

- to minimise the effort to make a website
- to guarantee correct meta data
Generation of Websites

The WebSiteMaker

- web-application
- generates the homepage of a project (general data)
- organises the creation of other pages
- website is stored at a server and can immediately accessed
- download of website is possible
Generation of Websites - MIPM

Math&Industry Page Maker - Principle

- web-pages in XHTML and RDF/XML
- form based
- standalone modules
- 2 types:
  - „single page MIPM”
  - „deeper structured MIPM”
Generation of Websites

MIPMs - Overview

▪ design principle:
  ▪ „You can enter all relevant information, but You must enter only a minimum.”

MIPMTExt

▪ type „single page”
▪ for content which can not structured usefully
▪ big text field for content (allowing XHTML)
▪ minimal set of meta data
Generation of Websites

MIPMLinks

- type „single page”
- list with commented links

MIPMPub

- type „deeper structured”
- all data to describe and classify publications can be entered
Generation of Websites

MIPMSoftware

- similar to MIPMPub
- but software specific requirements are met (like version numbers, system requirements,...)
- different versions can be described

MIPMPers

- homepage maker
- (details later)
Generation of Websites

MIPMOrg

- homepage maker for institutions / companies

MIPMEvents

- description of events like workshops, conferences, presentations, meetings
- part events can be described too
Generation of Websites

MIPM Glossary

- for generation of term descriptions and their relations
- very different from all other MIPMs
- (details later)
Agenda

1. About Math&Industry
2. Generation of Websites
3. MIPMPers
4. MIPMGlossary
MIPMPers

General

- homepage maker
- derived from a Math-Net solution MMM.Persons
- but extended; e.g.:
  - project relevant address part
  - assignment of expertise fields
MIPMPers

Program Flow

1. start page
2. select
3. input form
4. view
MIPMPers

Generation of XHTML and RDF/XML

- (almost) all entered data is visible in XHTML
- all data is represented in RDF
  (and some more; e.g. creation / modification date)
- RDF s treated as a database for editing
- XHTML and RDF/XML are separated in 2 files, linked to each other

--> MIPMPers at Work
MIPMPers

Expert Database

- idea: people can search for mathematicians with expertise in special application fields
- the members are the experts (at least the project leaders)
- external experts can become part of db
- project members deliver their information through the homepages
- data of external experts must entered in a “common data base”
MIPMPers

Expert Database - Query

- query must ask this „common data base”
  --> MIPMPers stores its data in RDF/XML and in this data base
- query interface
- example query result
- (general result structure)
Agenda

1. About Math&Industry
2. Generation of Websites
3. MIPMPers
4. MIPMGMGlossary
MIPM Glossary

General

- glossary is needed to understand the website
- remember: „meet the needs of different customers”
- = to break language barriers
- special: not only terms are described / defined, but also relations can be assigned
- additional: subjects from classification systems can be commented (MSC, PACS, CCS)
MIPMGl ossary

Program Flow

1. start page (edit, view)
2. form (add, edit, delete)
3. view (sub glossaries)
MIPMGlossary

Sub glossaries

- term assignment to
  - application field (without specification)
  - scientific discipline
- resulting view structure: up to 3 pages
  - application area
  - scientific fields
  - mathematics
MIPMGlossary

Relations

- 2 types:
  - internal (same sub glossary)
  - external (other sub glossary)

- external are less relations possible

- 1 relation has often 2 labels, depending on the order of the related terms:
  - 'Physics' is broader then 'Magnetism'
  - 'Magnetism' is narrower then 'Physics'
MIPMGlossary

--> MIPMGlossary at Work

Overall Glossary

- resulting central service: glossary of the terms of all projects
Meta data Driven Website Generation

Thank You!
## Vocabulary List MIPMPers

### DCMI Elements
- creator
- format
- identifier
- language
- rights
- subject
- title

### DCMI Terms
- abstract
- bibliographicCitation
- created, modified
- extend
- IMT
- isPartOf, isVersionOf
- source
### Vocabulary List MIPMGlossary

#### DCMI Elements
- relation
- subject

#### DCMI Terms
- created
- isPartOf
- isVersionOf
- modified

#### iwi-Properties
(Subproperties of DCMI Elements: relation)
- relevant
- similarTerm
- hasMetadataAbout
- hasAsMethod
- hasAsClassificationSystem