Metadata and XML

Improving the Findability of Information

Peter J. Bogaards (BogieLand.com)
Information Designer & Information Architect
"Sharing knowledge is better than having it."

EIDC 2004 - Wiesbaden
10 november 2004

Introduction

- Background in instructional design. (1987)
- Design of (tech) facilities to enhance human learning processes.
- Interface, document and information designer. (@Informaat ‘90-‘97).
- W3: Electronic documentation and user interface design merger.
- Information designer and information architect. (@Razorfish EU 2000-2003).
- BogieLand (2003): Information design & information architecture consultancy.
- InfoDesign: Understanding by Design (>1997).

informationdesign.org

Agenda

- Purpose: To paint the landscape
- Findability of information
- XML and metadata
- Subject-based classification:
  Controlled vocabularies, Thesaurus, Taxonomy, and Ontology
- Faceted classification (XFML)
- Technologies: Topic maps and RDF
- A vision for the future
- ?&!

Findability of Information

Finding anyone or anything from anywhere at anytime

Findability of information

- A wealth of information = a poverty of attention
- Structure versus chaos
- Information architecture: How to organize information in order to let people find things?
- Applying concepts, methods and techniques from Library and Information Science
- How to improve information retrieval?
- Documents are for humans, data is for machines

XML

eXtensible Markup Language

XML: eXtensible Markup Language

- SGML -> HTML/XHTML -> XML
- A language for making <tag> sets.
- Meaningful tags for search and information retrieval.
- Machine understandable information.
- Document structure: XML schema
- Document content: XML name spaces
- Document presentation: XSL(T), SVG et al.

Metadata

Data about data

Metadata: Data about Data, not Code

- Information about objects on subjects - metadata describes objects.
- Purposes: Information management and discovery.
- Metadata enables content to be retreived, tracked, and assembled automatically.
- Metadata is machine understandable information about (web) resources and is the foundation of all information retrieval.
- Metadata is any statement about an information resource.
- Metadata is a writing skill.

Email document: Attribute value pairs

From: Peter J. Bogaards (pjb@bogieland.com)

To: Michael Fritz (michael@tekom.de)

Date: Nov. 10, 2004

Hi Michael,

How are you?

Best,

Peter

Dublin Core Metadata Initiative: 15 Elements

- Title, Subject/Keywords*, Description
- Creator, Publisher, Contributor
- Date, Type, Format
- Relation, Coverage, Rights
- Source, Language, Identifier

  <meta name="DC.Identifier" scheme="URI" content="http://www.informationdesign.org" />

  *Meaning in the SUBJECT/KEYWORDS tag, other tags are for document management.

  See also: dublincore.org

Controlled vocabularies

Organizing words and phrases

CVs: Organized Words and Phrases

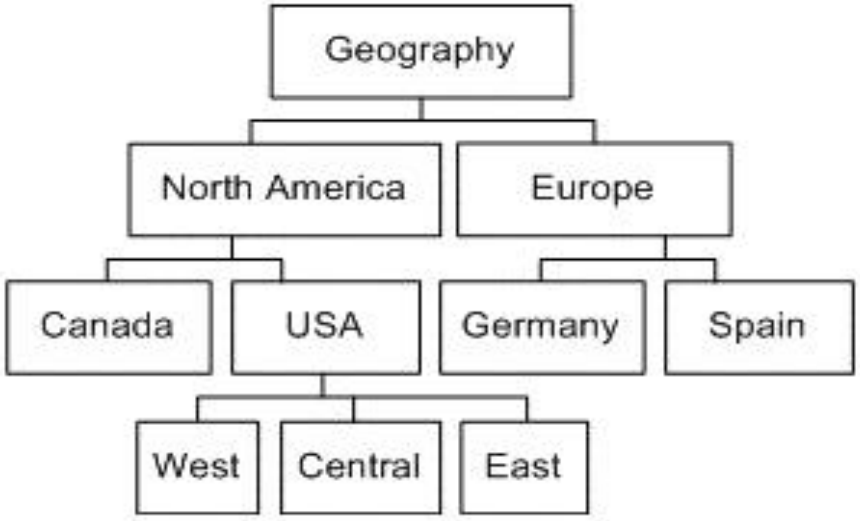
- "… ***organized lists of words and phrases (…) that are used to intially tag content, and than to find it through navigation or search***." (Amy Warner)
- No CV: multiple ***terms*** for identical ***concepts*** -> chaos
- Closed list of named subjects, which can be used for classification.
- Creating a common language between user and system.
- A type of metadata that functions as a subset of natural language.

Taxonomy

Carl Linnaeus Goes Digital

Taxonomy: Carl Linnaeus (1700's) Goes Digital

- A taxonomy is a complex CV
- One type of relation between terms: broader/narrower term in the ***hierarchy***.
- A subject-based classification that arranges the terms in the CV into a hierarchy.



Thesaurus

BT/NT, RT, SN, and USE/UF

Thesaurus: BT/NT, USE/UF, SN and RT

- Extend taxonomies to describe the world better.
- ISO standard 2788 - Properties:
  - BT: Broader term - one level up in the hierarchy
  - NT: Narrow term / Inversed with BT
  - SN: Scope note (Explanation of meaning of the term)
  - RT: Related term (No synonym or BT/NT: ‘See also’)
  - USE: Other term preferred/synonym /Inversed with UF
- To provide a much richer vocabulary for describing the terms than taxonomies do.

Thesaurus: Example (Karl Fast et al.)

Jeans

- BT Pants
- NT Levis
- NT Wranglers
- UF Dungarees
- UF Waist Overalls
- RT Denim
- RT Overalls

Denim

- BT Fabrics
- NT Ring Spun
- NT Dark Indigo
- NT Stonewash
- RT Jeans

Ontology

A Specification of a Conceptualization

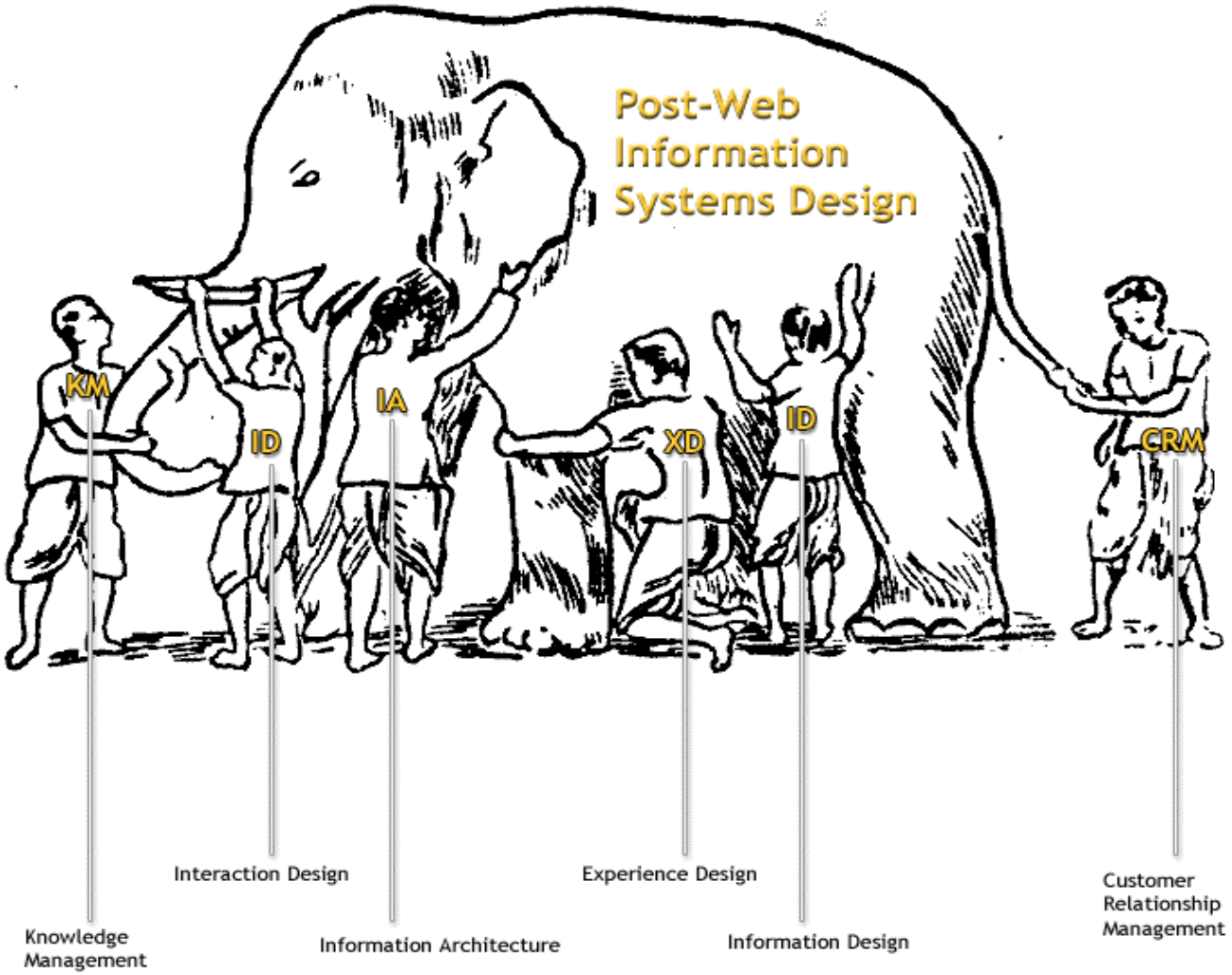
Ontology: A Specification of Conceptualization

- Derivate of artificial intelligence (Logical inferencing)
- "… a formal explicit description of ***concepts*** in a domain of discourse (classes (sometimes called concepts)), ***properties*** of each concept describing various features and attributes of the concept (slots (sometimes called roles or properties)), and ***restrictions*** on slots (facets (sometimes called role restrictions))."
- There is no one correct way to describe a domain.
- A model for describing the world that consists of a set of topics, properties, and relationship ***types***.
- Fixed versus ***open*** vocabularies.

Faceted Classification

Analysis and Synthesis

Faceted Classification: The Elephant



Faceted Classification: Analysis and Synthesis

- S.R. Ranganathan (1892-1972)
- Facet: '***a clearly defined, mutually exclusive, and collective exhaustive aspects, properties or characteristics of a class or specific subject***.'
- Describing documents from various perspectives.
- A special purpose controlled vocabulary.

eXchangable Faceted Metadata Language

- A language to exchange metadata between websites.
- XFML Core aka XFML 1.0 (Peter van Dijck et al. 2002)
- Categories, subcategories, and faceted metadata.
- Open XML format for publishing and connecting faceted metadata of websites.
- An XFML file contains TOPICS, organized in FACETS.
- Effectively seperating navigation from content.

See also: xfml.org

XFML: Example

```
<?xml version="1.0"?>
<xfml version="1.0" url="http://xfml.org/spec/example.xml" language="en-us">
    <mapInfo>
        <managingEditor>
            <name>Peter Van Dijck</name>
            <email>peter@poorbuthappy.com</email>
        <url>http://petervandijck.net</url>
        </managingEditor>
    </mapInfo>
    <facet id="place_to_go">places to go</facet>
    <!-- TOPICS -->
    <topic id="bogota" facetid="place_to_go" parentTopicid="colombia">
        <name>Bogota</name>
    </topic>
    <page url="http://poorbuthappy.com/colombia/topics.php">
        <title>Guide to Colombia topics page</title>
        <occurrence topicid="diving"/>
        <occurrence topicid="bogota"/>
    </page>
</xfml>
```

Topic Maps

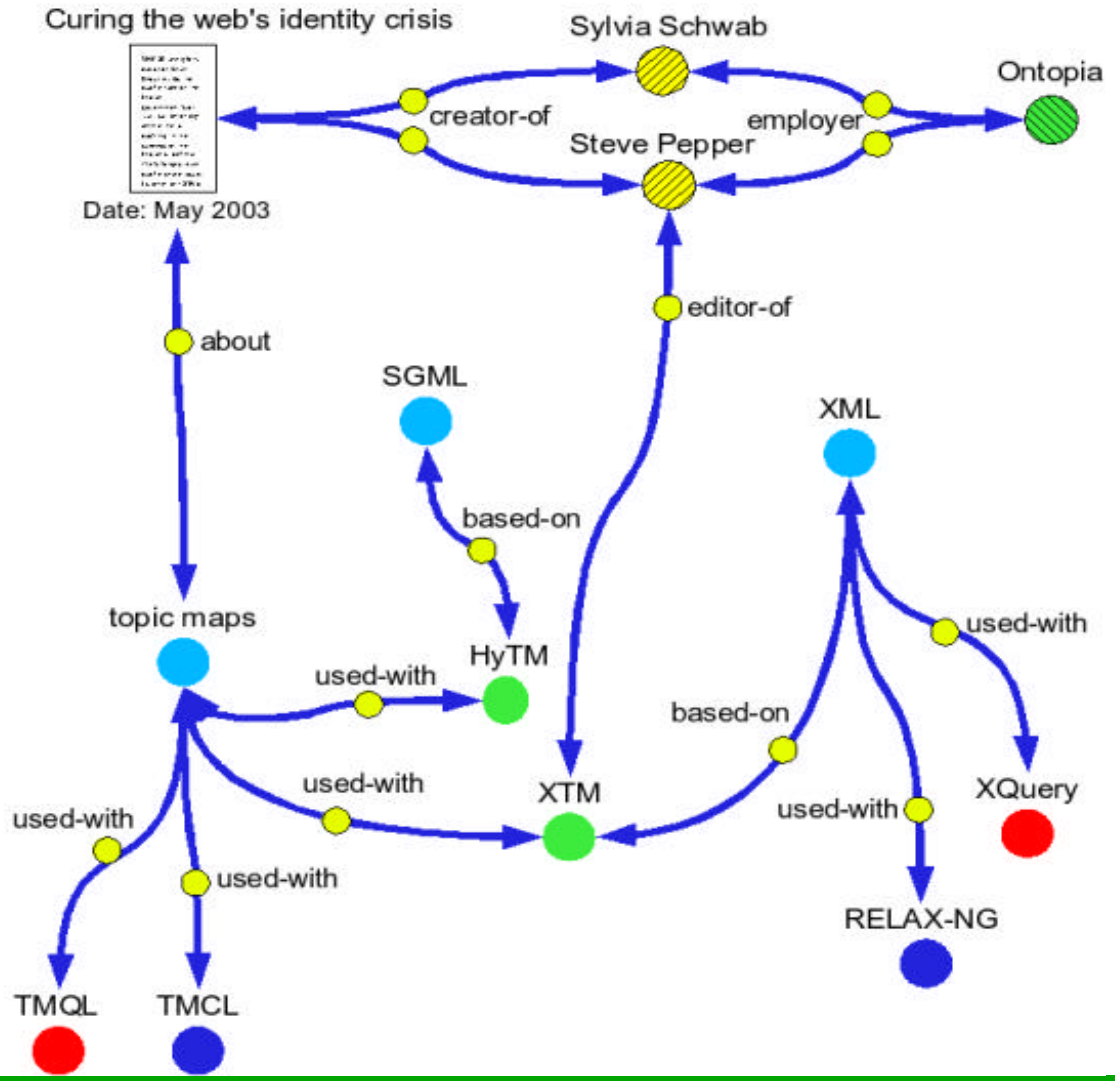
The GPS of the Information Universe

Topic Maps: The GPS of the Info Universe

- "***The purpose of a topic map is to convey knowledge about resources through a superimposed layer, or map, of the resources. A topic map captures the subjects of which resources speak, and the relationships between subjects, in a way that is implementation-independent***."
- A model to describe knowledge structures.
- A topic map is a data structure.
- Key concepts: (typed) Topics, Associations, and Occurences.
- Topic Maps can represents controlled vocabularies, taxonomies, thesauri, and faceted classification.
- XML Topic Maps 1.0 (valid XML)

See also: topicmaps.org

Topic Map: Example (Garshol)



RDF

Resource Description Framework

RDF: Resource Description Framework

- Alternative to Topic Maps.
- R.V. Guha @Apple Meta Content Framework.
- A framework for representing information on the Web.
- XML app -> W3C Recommendation (1999) for the expression of any kind of target.
- Key concepts: Resources, Properties, and Statements.

The Semantic Web

A Vision of the Future

SemWeb: A Vision of the Future

- "***The Semantic Web is an extension of the current web in which information is given well-defined meaning, better enabling computers and people to work in cooperation***." - TBL
- Vision: Well-defined data on the Web that can be used by machines for automation, integration and re-use.
- The Web can reach its full potential: data to be shared and processed by automatic tools.
- Based upon RDF and the Web Onology Language

See also: semanticweb.org

Discussion

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BogieLand

information design & information architecture

http://www.bogieland.com

Peter J. Bogaards
pjb@bogieland.com