

## Accessing Cultural Heritage using Semantic Web Techniques

DACH Master, 19 March 2009

Antoine Isaac

Vrije Universiteit Amsterdam, KB  
aisaac@few.vu.nl

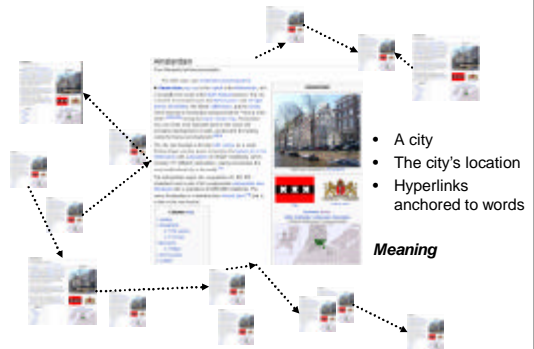
## Background: me

- CATCH (NWO)
  - Continuous Access To Cultural Heritage
  - Computer science research projects applied to CH
- STITCH
  - Semantic Interoperability To access CH
  - Exchanging and integrating metadata
- W3C Semantic Web Deployment Group
  - SKOS

## Topics

- A Web of data
- Smart data
- Demos

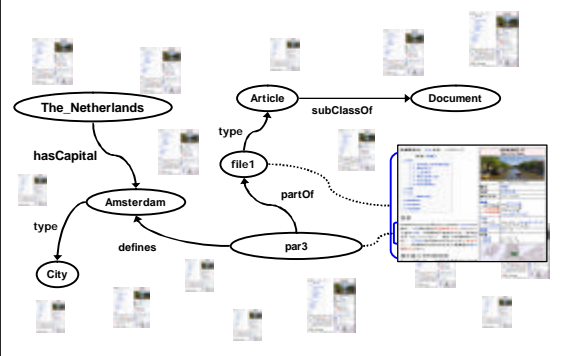
## The Web for humans

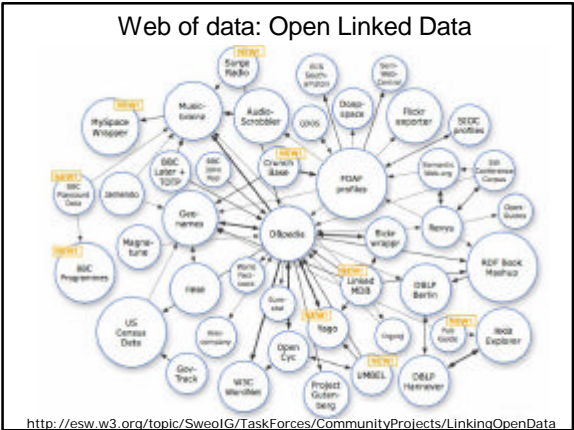
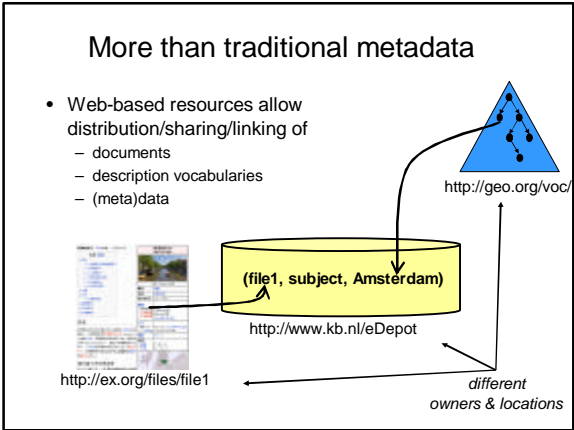
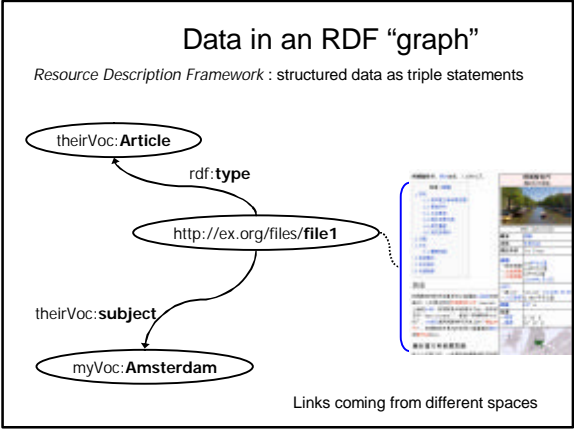
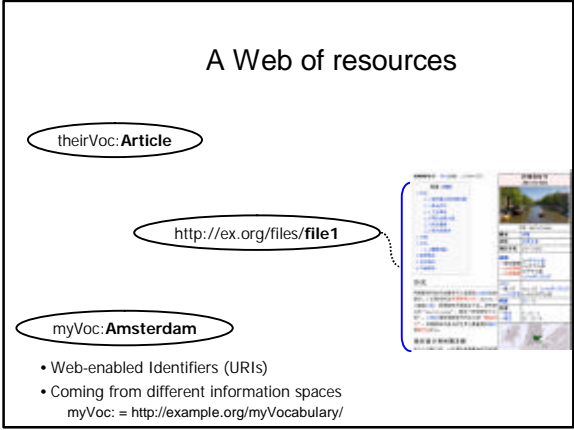


## SW problem: the Web for computers?

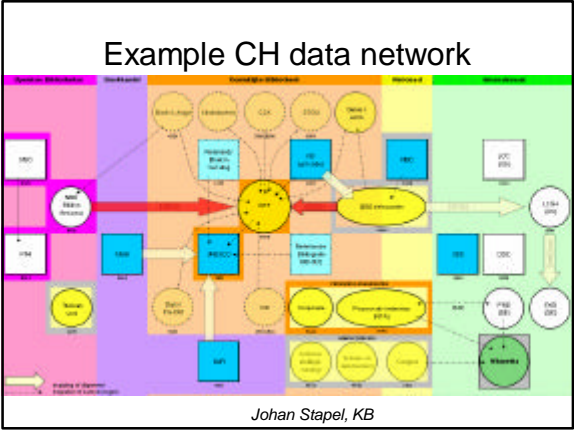


## The Semantic Web vision: a web of (smart) data



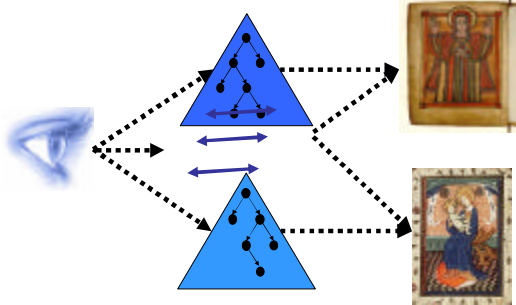


### Interesting for CH?





## Semantic alignment as a solution

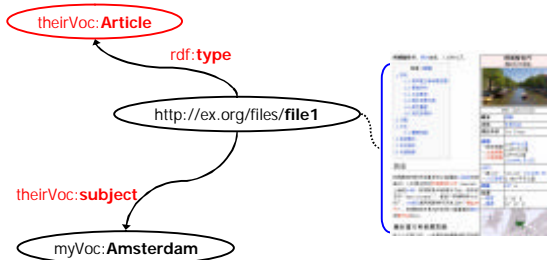


Cf. Manuscript demo: [http://stitch.cs.vu.nl/BNF\\_KB\\_demo.html](http://stitch.cs.vu.nl/BNF_KB_demo.html)

## Can we have more?

- Web of data
- Smart data: more "semantics"

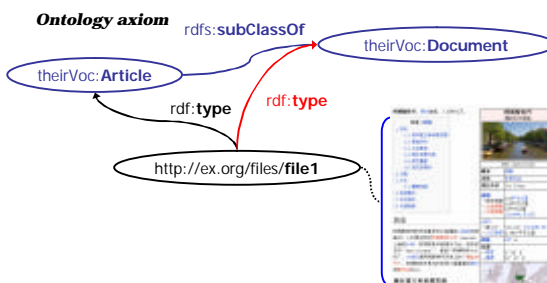
## Creating vocabularies of "building blocks" for RDF graphs



## Ontologies

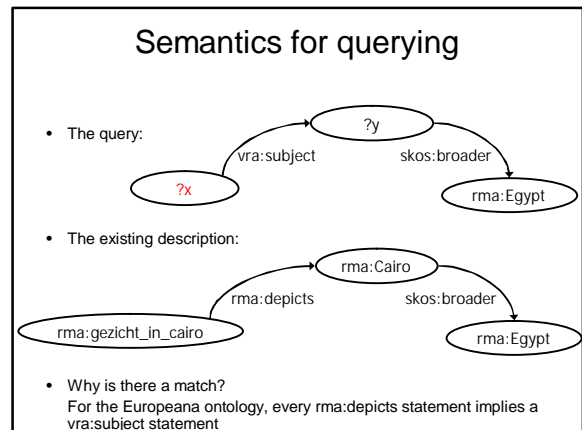
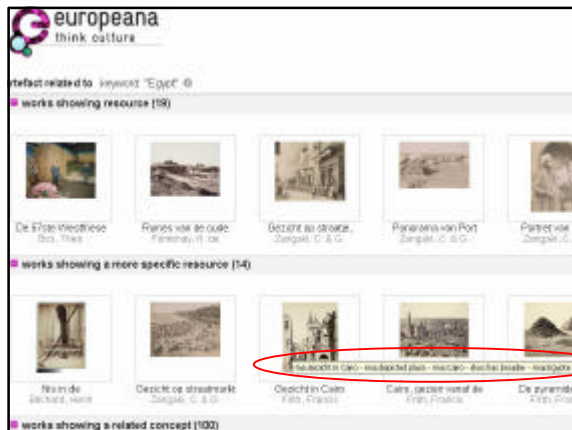
- Ontologies specify description vocabularies which can be shared
  - **subject**, **Article**
- Give formal definition to vocabulary elements
  - Every **Article** is a **Document**

## Machine-readable definitions



Allows deduction of new facts & control of existing facts by reasoning engines

## CH case: Europeana Thought Lab



### More than traditional metadata

- Flexible reasoning:** a same base can be **easily** added with new descriptions from different places, using different ontologies  
`dach09:shows_DACH_Student`
- Requirement:** semantically connect these ontologies  
`dach09:shows_DACH_Student "implies" vra:subject`
- SW principle:** meaning is accessible with the data, not encoded in external programs

### Message

- A web of (meta)data
  - Descriptions of resources
  - Easy to share and interconnect
- Smart data
  - Machine-readable definitions for the data
- Relies on open standards
  - W3C's URI, XML, RDF, OWL, SPARQL, SKOS...
- Can be crucial for CH!

### We can stop here!

- Questions?
- Next slides:
  - Links
  - Intro to SKOS: porting CH vocabularies on the SW

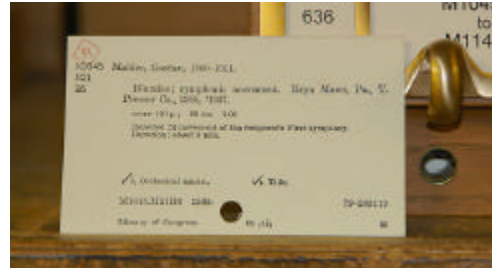
### Links

- Semantic Web at W3C
  - <http://www.w3.org/2001/sw/>
- SKOS
  - <http://www.w3.org/2004/02/skos/>
- Cultural Heritage and Semantic Web projects
  - MuseumFinland, <http://www.museosuomi.fi/>
  - eCulture, <http://e-culture.multimedien.nl/>
  - Libris, <http://libris.kb.se>
  - Europeana Thought Lab: <http://europeana.eu/portal/thought-lab.html>
  - STITCH, <http://stitch.cs.vu.nl/demo/>
  - CATCH, <http://www.nwo.nl/catch>

## Now, how to have SW data?

- Creating born-SW data
  - Annotation of documents
- Porting existing data
- Enriching existing data
  - Information extraction from text

## Example: CH Metadata

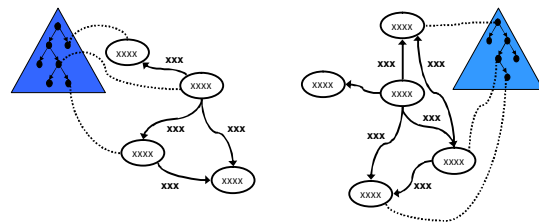


- Use of controlled **documentary languages**
  - Thesauri, classification systems, subject heading lists

## Example: CH vocabulary (Iconclass)

0	Abstract, Non-representational Art	
1	Religion and Magic	
2	Nature	
25	earth, world as celestial body	
25F	animals	<a href="#">show images &gt;25</a>
25F3	birds	<a href="#">show images &gt;25</a>
25F31	groups of birds	<a href="#">show images &lt; 5</a>
25F32	song-birds	<a href="#">show images &gt;25</a>
25F33	predatory birds	<a href="#">show images &gt;25</a>
25F34	owls	<a href="#">show images &lt; 25</a>
25F35	ornamental birds	<a href="#">show images &lt; 25</a>
25F36	water-birds	<a href="#">show images &gt;25</a>
25F37	shore-birds and wading-birds	<a href="#">show images &gt;25</a>
25F38	walker and runner birds	<a href="#">show images &lt; 25</a>
25F39	other birds	<a href="#">show images &gt;25</a>

## Porting controlled vocabularies to the Semantic Web

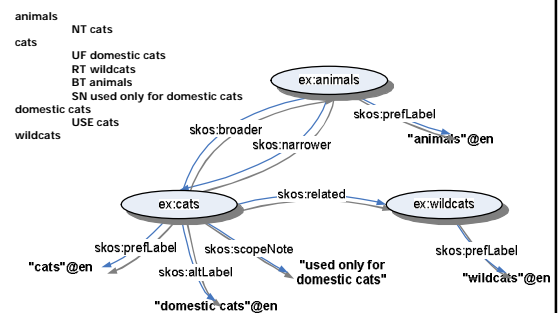


## SKOS

- Observation: there are many KOS models/formats:
  - thesauri, classification schemes, etc...
- But also common features, used by typical applications
  - Lexical information, semantic links
- SKOS (Simple Knowledge Organization System)
- W3C
- Model to represent existing vocabularies on the SW in a *simple way*
  - Comparable to DC, for conceptual vocabularies



## Example: SKOS graph



## Networking controlled vocabularies in SKOS

animals  
cats  
wildcats

animal  
human  
object

