

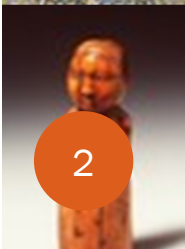
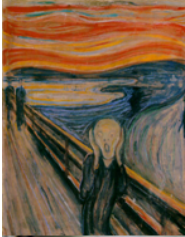
MultimediaN

MultimediaN N9C Eculture Project

Towards a Culture Web

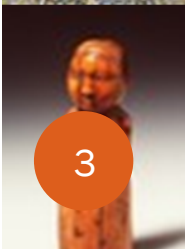
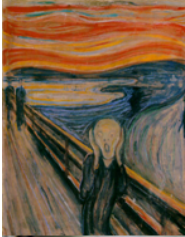
The MultimediaN E-Culture Demonstrator

Victor de Boer -- Knowledge-based Media Systems
with slides from Jacco van Ossenbruggen



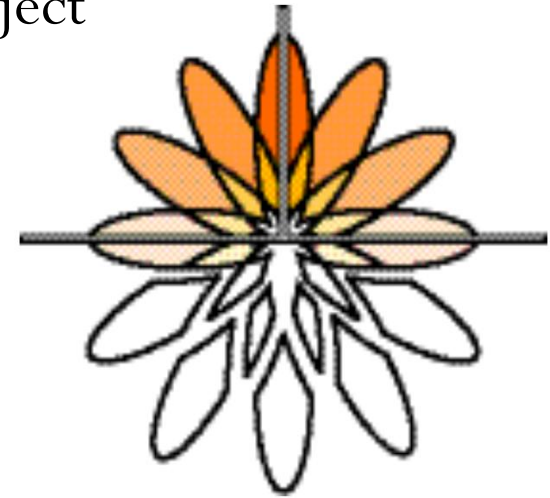
Interoperability: tearing down the walls between collections

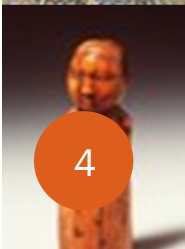
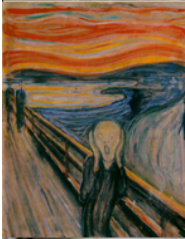
- Musea have increasingly nice websites
- But: most of them are driven by stand-alone collection databases
- Data is isolated, both syntactically and semantically
- If users can do cross-collection search, the individual collections become more valuable!



e-culture.multimedian.nl

- Part of the Dutch knowledge-economy project **MultimediaN**
- Partners: VU, CWI, UvA, DEN, ICN
- Artchive.com, Rijksmuseum Amsterdam, Dutch ethnology musea (Amsterdam, Leiden), National Library (Bibliopolis)
- The project ended in **2008**
 - Work continued in EuropeanaConnect context

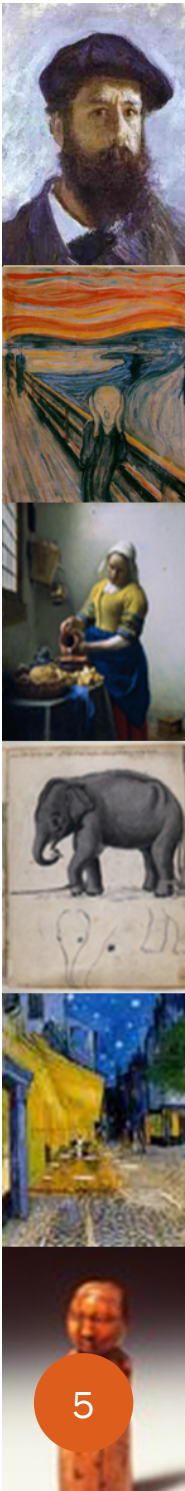




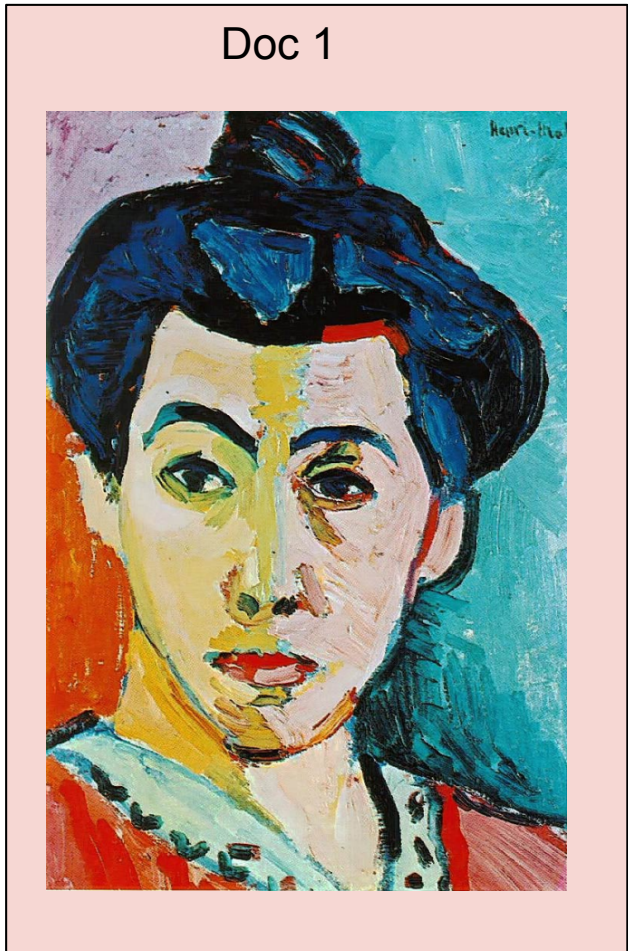
e-culture.multimediant.nl

- Use Semantic Web techniques to facilitate interoperability between cultural heritage institutes
- Distributed collections, accessible through Web
- (Re)Use distributed background knowledge for search and *linking of resources*
- Use (Semantic Web) Standards
- Multilinguality

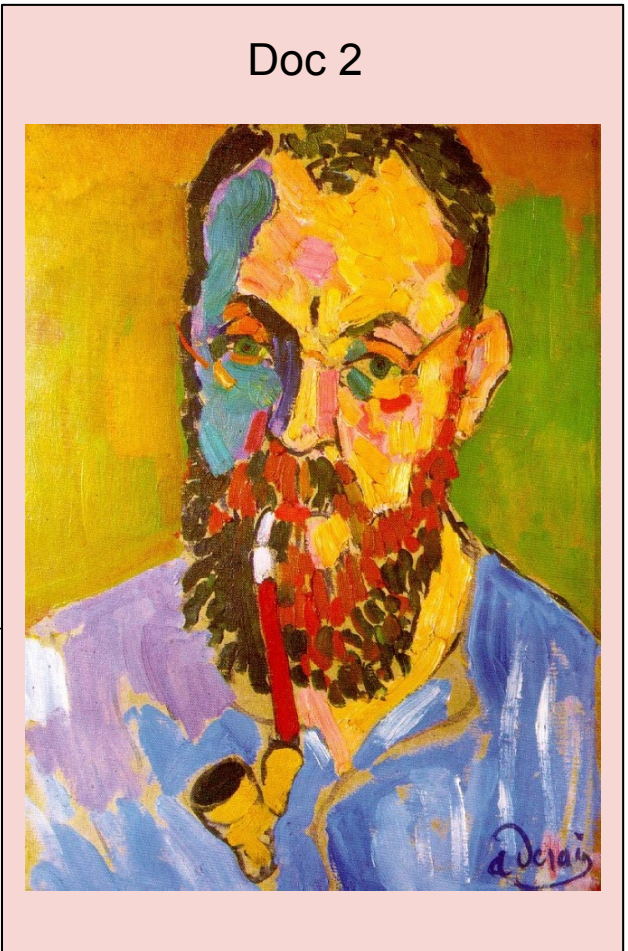


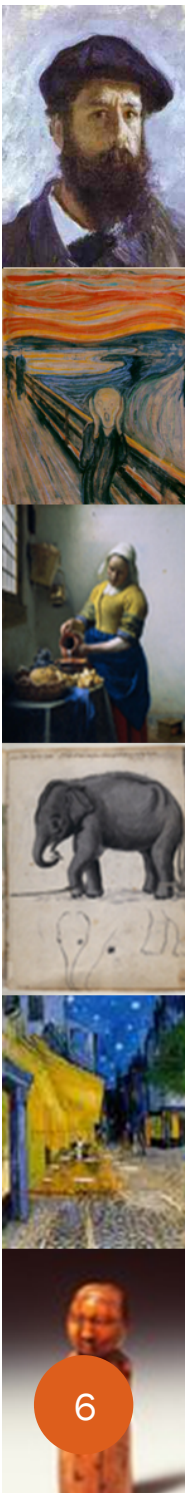


The Web: “open” documents and links



Web link



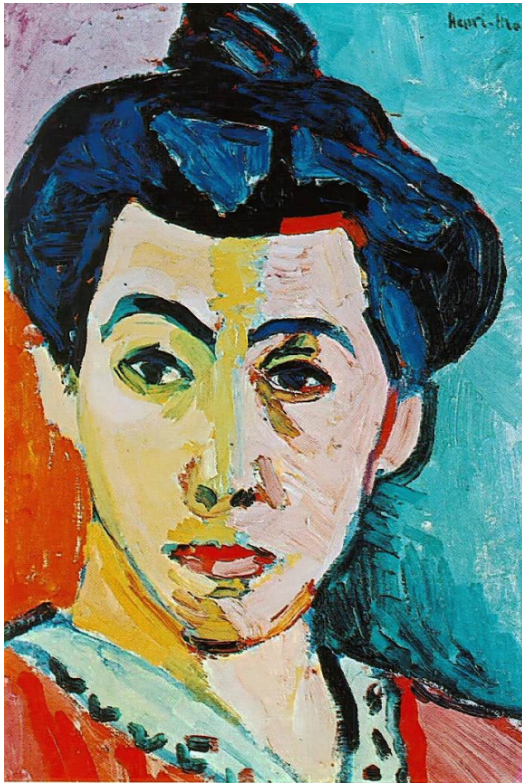


The Semantic Web: “open” data and links

Painting

“Green Stripe (M^{me} Matisse)”

Royal Museum of Fine Arts, Copenhagen_



URL

creator

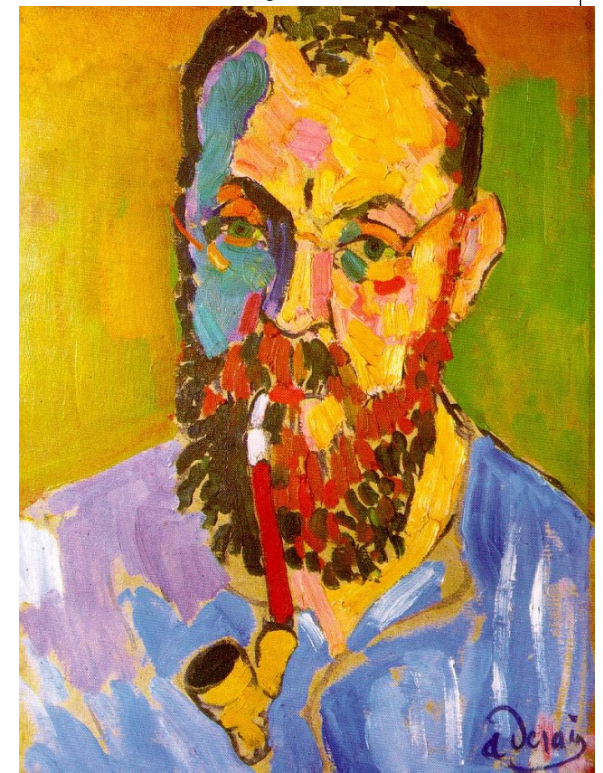
Dublin Core

Web link

Painter

“Henri Matisse”

Getty ULAN



URL

Union List of Artist Names® Online

Full Record Display

[New Search](#) [Previous Page](#)

Click the  icon to view the

ID: 500017300

 **Matisse, Henri** (French

Related People or Corporate Bodies:

- apprentice was [Jolin, Einar](#) 1911-1913
..... (Swedish painter, 1890-1990) [500014093]
- parent of [Duthuit, Marguerite Matisse](#)
..... (French painter, born ca. 1900) [500075813]
- patron was [Barnes, Dr. Albert C.](#)
..... (American collector, 1872-1951) [500057478]
- student of [Cormon, Fernand](#)
..... (French painter and teacher, 1845-1924) [500115385]
- student of [Moreau, Gustave](#)
..... (French painter, 1826-1898) [500115776]
- teacher of [Burdorff, Selma Hesterman](#)

Names:

- Matis
- Henr
- Matis
- Matis

Roles:

- artist (**preferred**)
- painter
- printmaker
- sculptor
- designer
- writer

Nationality:
French

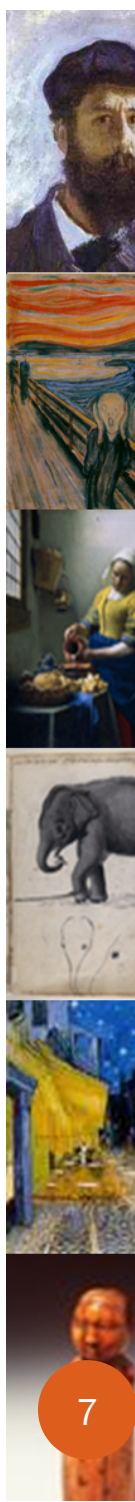
Gender: male

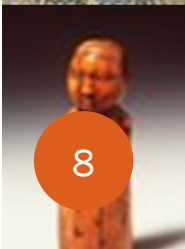
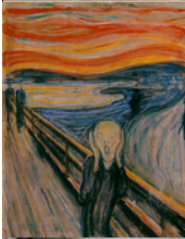
Roles:

- artist
- painter
- printmaker
- sculptor
- designer
- writer

Birth and Death Places:

- Born: [Le Cateau-Cambrésis \(Nord, Nord-Pas-de-Calais, France\)](#) (inhabited place)
- Died: [Nice \(Alpes-Maritimes, Provence-Alpes-Côte d'Azur, France\)](#) (inhabited place)

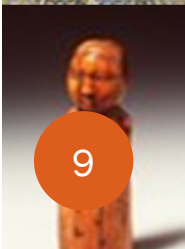
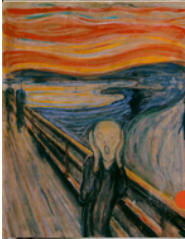




Levels of interoperability

- Syntactic interoperability
 - using data formats that you can share
 - XML family is the preferred option

- Semantic interoperability
 - How to share meaning / concepts
 - Technology for finding and representing semantic links
 - RDF(S) / OWL
 - Shared vocabularies



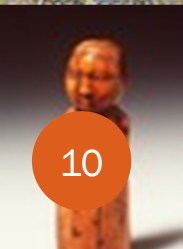
Principle 1: semantic annotation

Description of web objects with “concepts” from a shared vocabulary



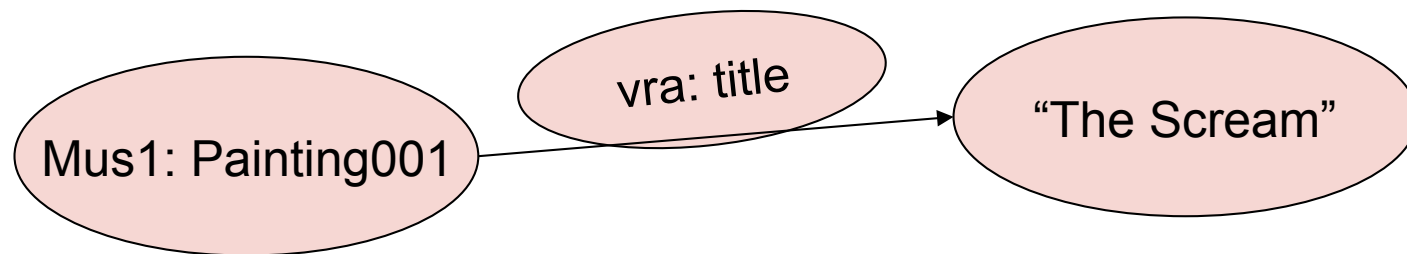
Description:

recordnumber	23727;
timestamp	2001-06-22;
type	cultural;original;
collector	Johannes Frederik van Ov Zeldzaamheden; Utagawa
series	360;
Culture	Japans;
Date	1800-1829;
Description	1883 JAPAN aankoop;
Identifier in Current Repository	360-4564;
Creation Site	Japan;
Current Repository	RMV;
Material	papier;
Measurements.Format	oban, 25.5 cm x 37.5 cm;
Style/Period.Period	Edo;
Title	Edo junisho;
Type	prenten;
type	Work;



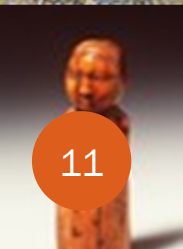
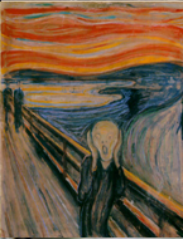
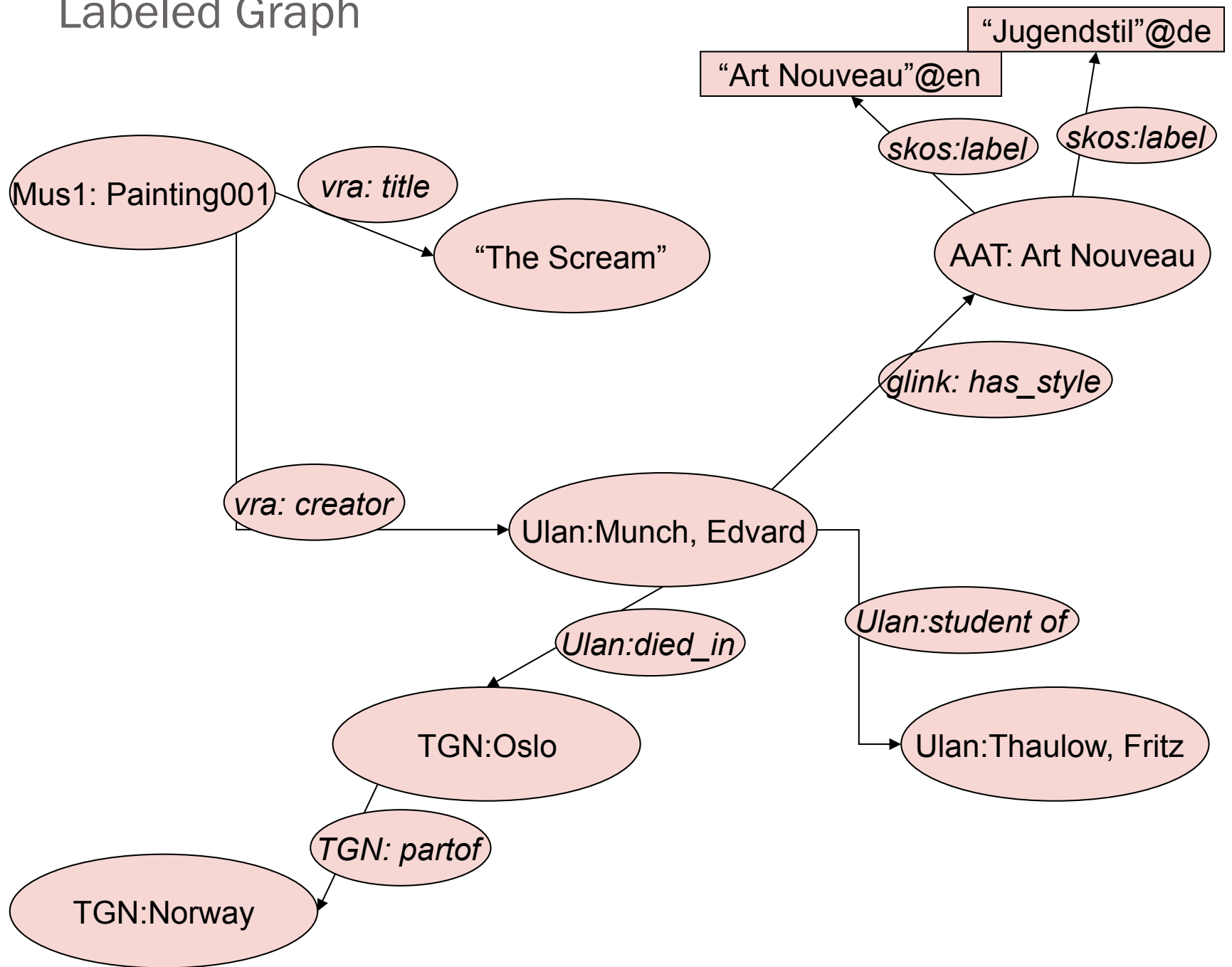
RDF(S)/OWL

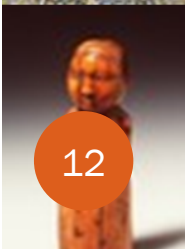
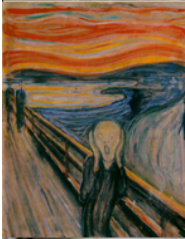
- Semantic Web standard for modelling of knowledge
- Triples (Subject, Relation, Object)
- URIs
 - Namespaces (Who says what)
- `<mus1:Painting001, vra:title, "the Scream">`



- RDFS adds classes, instances etc.
- OWL adds logic

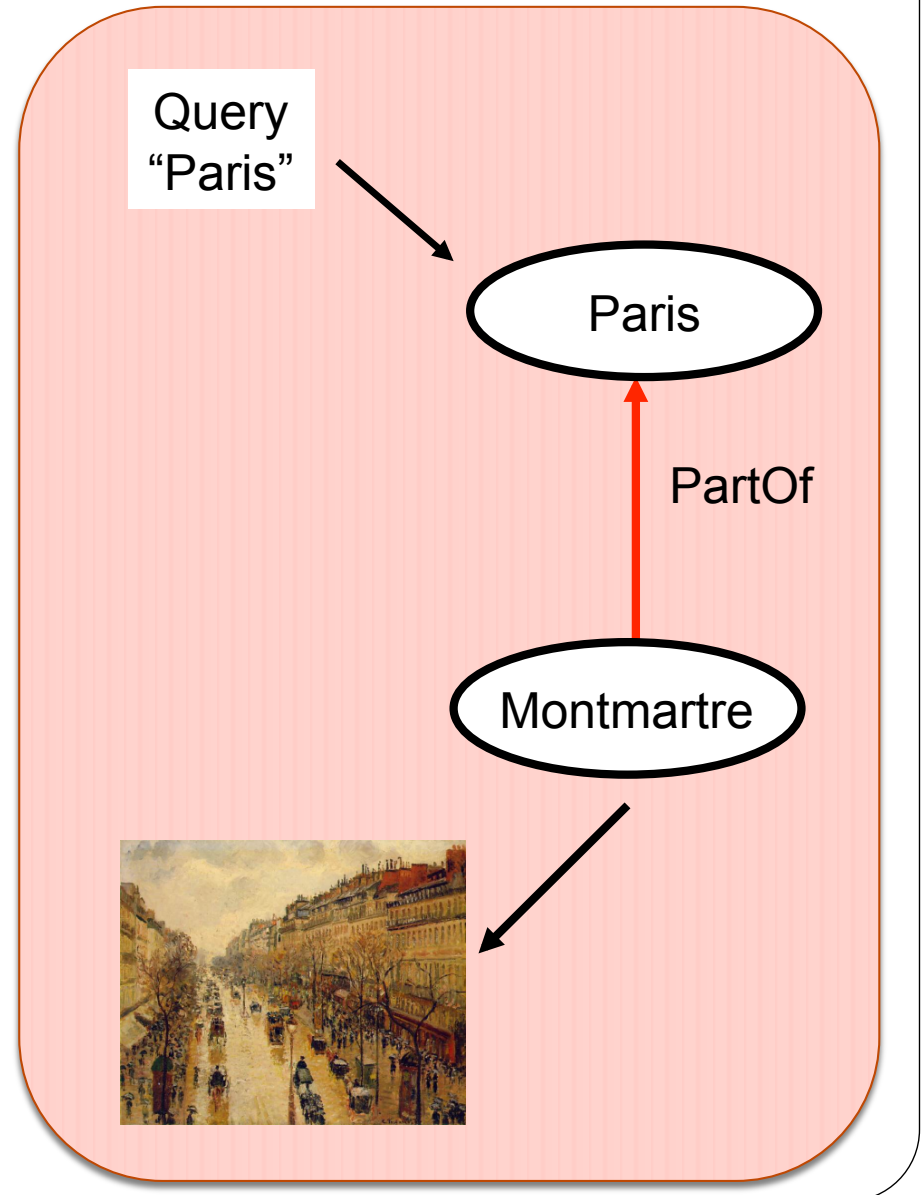
Labeled Graph

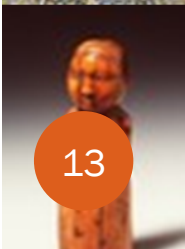
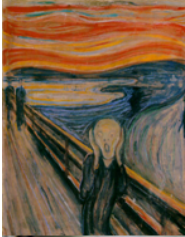




Principle 2: semantic search

- Search for objects which are linked via concepts (semantic link)
- Use the type of semantic link to provide meaningful presentation of the search results





Term disambiguation is key issue in semantic search

- **Post-query**
 - Sort search results based on different meanings of the search term
 - Mimics Google-type search
- **Pre-query**
 - Ask user to disambiguate by displaying list of possible meanings
 - Interface is more complex, but more search functionality can be offered



Principle 3: vocabulary alignment

“Tokugawa”

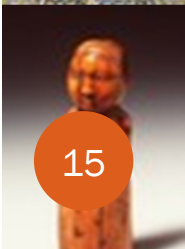
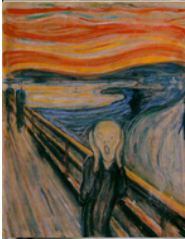


AAT style/period
Edo (Japanese period)
Tokugawa

*AAT is Getty's
Art & Architecture Thesaurus*

SVCN period
Edo

*SVCN is local in-house
ethnology thesaurus*



The myth of a unified vocabulary

- In large virtual collections there are always multiple vocabularies
 - In multiple languages
- Every vocabulary has its own perspective
 - You can't just merge them
- But you can use vocabularies jointly by defining a limited set of links
 - “Vocabulary alignment”
- It is surprising what you can do with just a few links

From metadata to semantic metadata

```
<record>
<title>Delftse Bijbel</title>
<date>1477</date>
</record>
<record>
  title>Nog een bijbel</title>
  <date>1500</date>
</record>
```

Metadata

- Europa
- NT Nederland
- NT Noord-Holland
- NT Zuid-Holland
- NT Delft
- NT 's Gravenhage
- UF Den Haag

Int. Thesaurus

- World
- Europe
- The Hague
- Delft

Ext. Thesaurus

1. Convert to RDF

2. Convert to RDF

3. Map to in-house
(implicit) thesaurus

RDF CONVERSION TOOLS (XMLRDF)

4. Align thesauri

ALIGNMENT TOOLS (AMALGAME)

Amalgame Alignment platform

Amalgame build evaluate publish login

Current node

mapping <http://localhost/ns/dataset5>

abbrev/label

namespace

comment

status

generated at 13-50-09 2012-02-17
 generated by [anonymous user \(not logged in\)](#)

total matches 364
 matched source concepts 364 (11%)
 matched target concepts 340 (5%)

Please login to make changes

Selectors

Matchers

Choose input

string/label (compound)

A label matcher matching after compound splitting the label(s) of the source concepts

sourcelabel

targetlabel

language

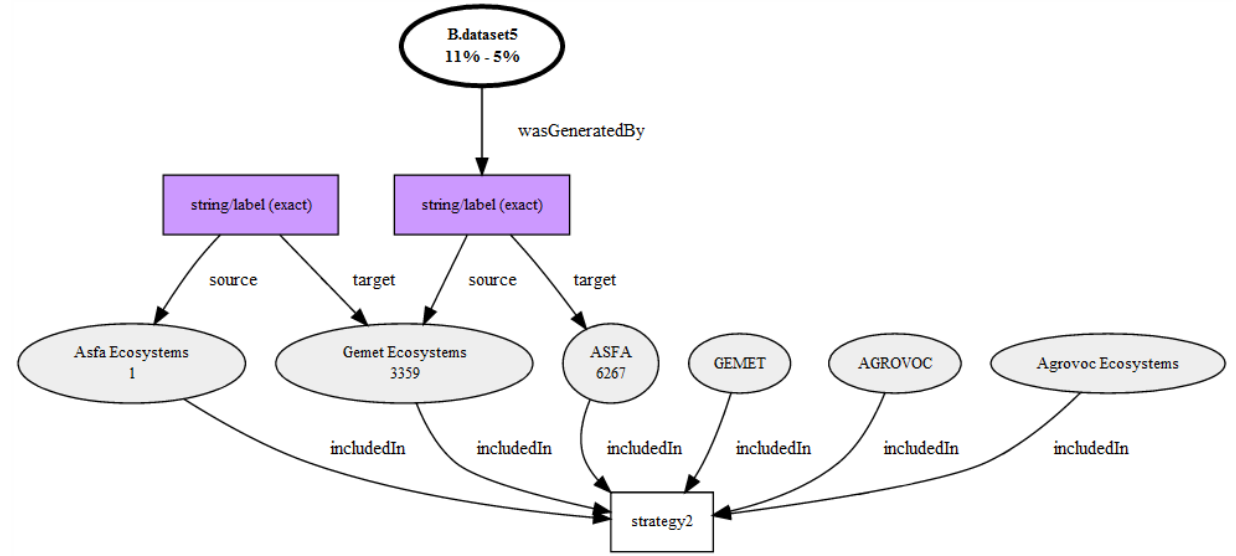
matchacross_lang

matchacross_type

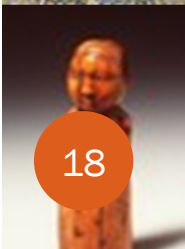
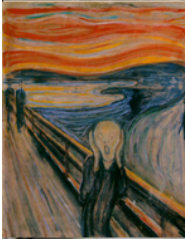
case_sensitive

string/label (exact)

string/label (stemmed)



source	relation	target
DNA		DNA
Internet		Internet
World Wide Web		Internet
acoustics		Acoustics
administration		Management
age		Age
air		Air
air temperature		Air temperature
altitude		Height
analysis		Analysis
anatomy		Anatomy
animal behaviour		Behaviour
animal nutrition		Animal nutrition



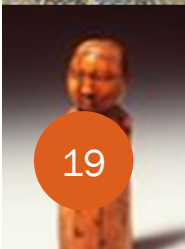
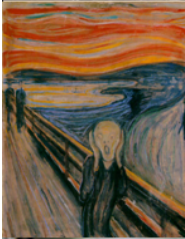
Other enrichments

- Learning relations between art styles in AAT and artists in ULAN through Information Extraction of art historic texts
 - “Who are Impressionist painters?”

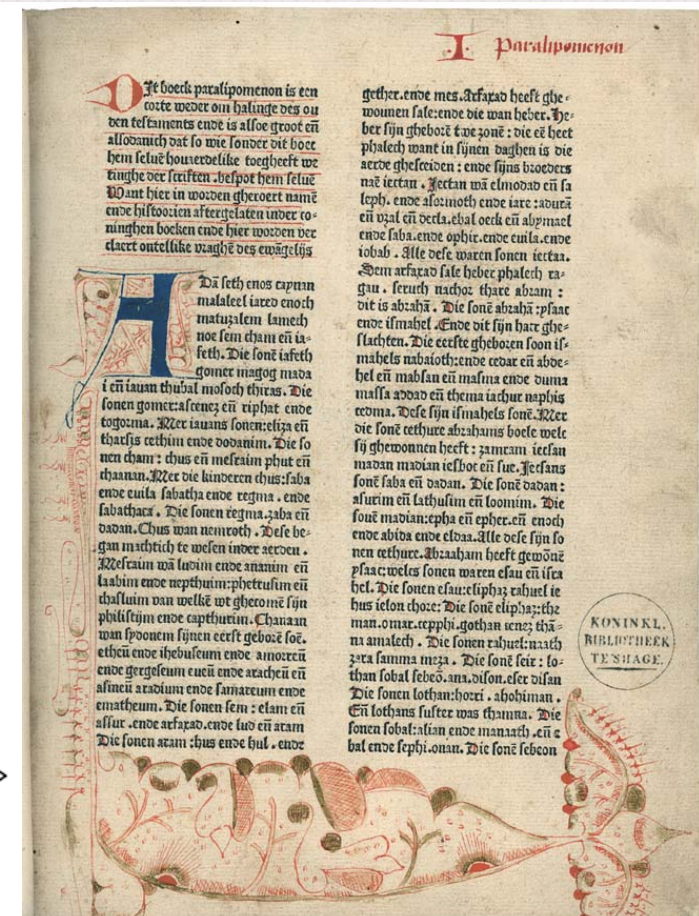


<i>Artist Name</i>	<i>IS</i>	<i>In GS</i>
edgar degas	0.0699	1
edouard manet	0.0548	1
pierre-auguste renoir	0.0539	1
morisot, berthe	0.0393	1
gogh, vincent van	0.0337	0
cassatt, mary	0.0318	1
cezanne, paul	0.0302	1

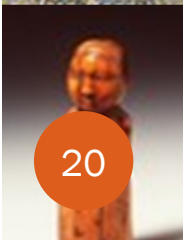
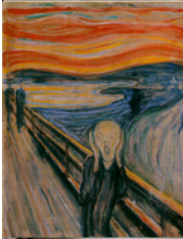
Example textual annotation



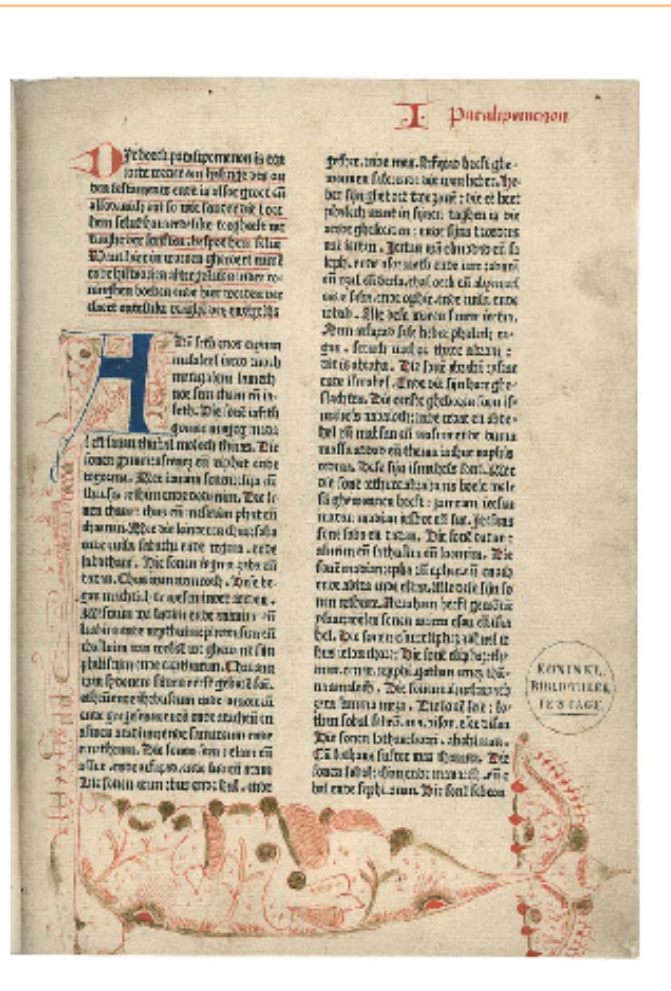
```
<inm:Record>
  <inm:NUMMER>6</inm:NUMMER>
  <inm:TITEL>Delftse Bijbel...</inm:TITEL>
  <inm:TITEL_EN>Delft Bible...</inm:TITEL_EN>
  <inm:MAKER>Yemantszoon, Mauricius : d</inm:MAKER>
  <inm:OBJECT>tekstbladzijde</inm:OBJECT>
  <inm:TECHNIEK>boekdruk</inm:TECHNIEK>
  <inm:DATERING>10 jan. 1477</inm:DATERING>
  <inm:CLASSIFICATIE>D</inm:CLASSIFICATIE>
  <inm:ORIGINEEL>Bijbel. Oude
    Testament...</inm:ORIGINEEL>
</inm:REPRODUCTIE>
<inm:TWNAAM/>
<inm:TWOND>typografische vormgeving</inm:TWOND>
<inm:TWOND>bijbels</inm:TWOND>
<inm:TWGEO>Delft</inm:TWGEO>
<inm:OMSCHRIJVING>Eerste bijbel die in het
  Nederlands verscheen...</inm:OMSCHRIJVING>
<inm:OMSCHRIJVING_EN>The first Bible to
  appear in the Dutch language...</inm:OMSCHRIJVING_EN>
<inm:AFMETINGEN>27 x 20 cm</inm:AFMETINGEN>
  ...
</inm:Record>
```



Resulting semantic annotation (rendered as HTML with RDFa)



20



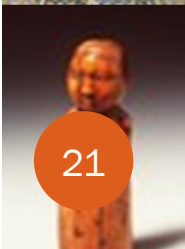
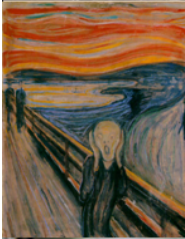
Description:

classificatie	Geschiedenis van de boekdrukkunst;
drukker	Meer, Jacob Jacobszoon van der; Yemantszoon, Mauricius;
origineel	Bijbel. Oude Testament. - Delft: Jacob Jacobszoon van der Meer en Mauricius Yemantszoon, 10 jan. 1477, dl. 2, p. 1;
Date	10 jan. 1477;
Description	The first Bible to appear in the Dutch language, known as the Delft Bible. It consists of the Old Testament only and is an anonymous adaptation of the - again anonymous - History Bible of 1360. It is an example of an incunabulum where the hand-written book still served as an example for lay-out and design. Contrary to many other incunabula, the place of origin, the names of the printers and even the day of its completion are mentioned in the colophon.;
Measurements.Dimensions	27 x 20 cm;
rights.copyright	Den Haag Koninklijke Bibliotheek;
Source	Bibliopolis;
Subject	bibles; incunabula; initials; ornamental borders; rubrications; typographical design;
subject.geographicPlace	Delft;
Technique	letterpress printing;
Title	Delft Bible, printed in Delft by Jacob Jacobszoon van der Meer and Mauricius Yemantszoon, 1477;
Type	tekstbladzijde;
type	Work;

Used as value to describe other resources:

BBB_163E56_1477_P1.JPG;

relation.depicts

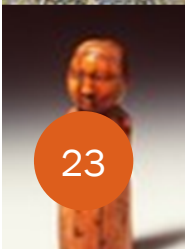
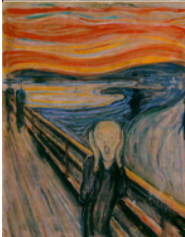


Search, Show and Annotate

- Multiple search/browse/result interfaces
 - Google-like
 - Local view
 - Map
 - Graph display
 - Facet browser
 - Split up data based on attribute-values
 - Multiple criteria
- Annotation Interface
 - Use of semantic autocompletion
 - Experts
 - Laypeople?

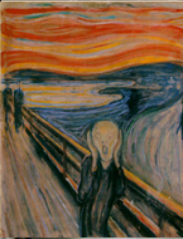
Architecture of the Demonstrator

- Open Web standards
 - XML, XHTML, SVG, RDF/OWL
- ClioPatria Semantic Web server
 - Based on SWI-Prolog
 - SPARQL interface, RDF/OWL partial reasoning
- AJAX for rich Web client interaction
 - Semantic keyword suggestion
 - Dynamic tree browser for structured taxonomies
- Use of web-services
 - Google Maps



Wrapping up + Perspectives

- Basic Semantic Web technology is ready for deployment
 - 2006 Semantic Web Challenge: 1st prize
 - Other instances of ClioPatria have been deployed
Europeana, Amsterdam Museum, Linked Open Piracy
- Web 2.0 facilities fit well:
 - Involving community experts in annotation
 - Personalization, myArt
- Search / Scaling issues
 - More links, more data, more metadata
- Social barriers have to be overcome!
 - “open door” policy
 - Involvement of general public => issues of “quality”



Demo time