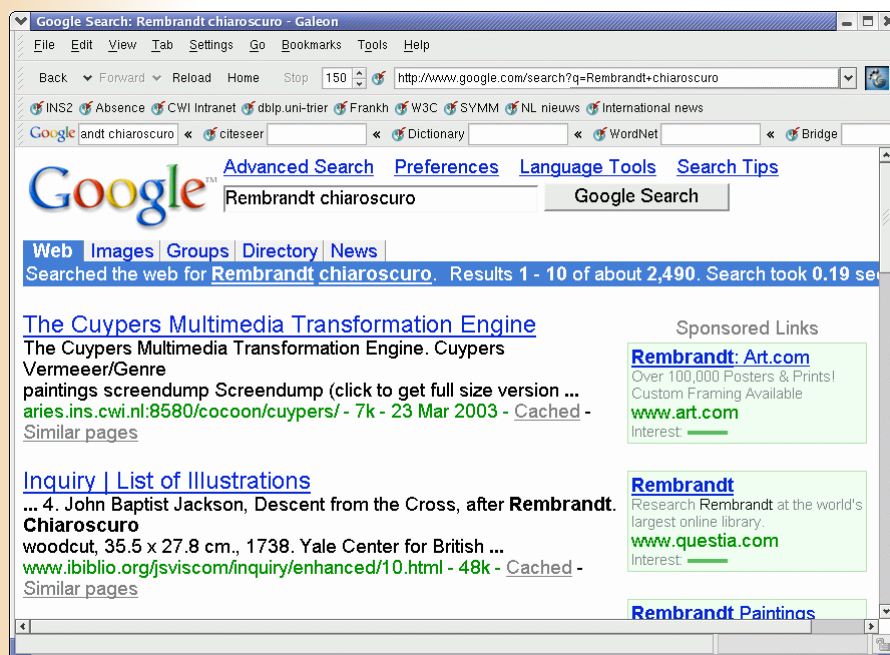
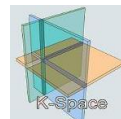


Interacting with the semantic media web

Lynda Hardman

CWI, Interactive Information Access
UvA, Multimedia Interaction



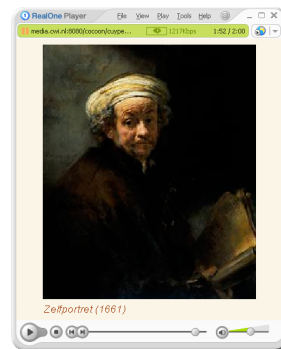
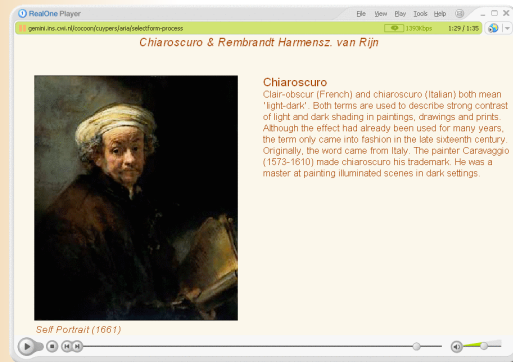


3



4

One size *doesn't* fit all



5

The problem

- Too many users need their own information
 - for their level of expertise
 - using appropriate media
 - in an appropriate style
 - displayed on their own device
- Multimedia presentation design is expensive
- There has to be some automation in the process

6

The Context

- Web
 - open and linked
 - is with us now
- Semantic Web
 - open and richly linked
 - is under development
 - particularly for machine processing
- User's information task
- Media and metadata
 - either already available to the system
 - or can be generated, or supplied by the user
 - *remember the Canonical Processes of Media Production*

7

Interaction Design for the SW

- Understand how to design presentations "by hand".
 - How can machines help us with the details?
- We can use information sources available on the SW and make them available to end-users.
 - Which metadata is useful for improving querying, organisation, or presentation?
- Then we need to deal with:
 - Selecting a sub-set (semantic search)
 - Grouping and ordering (linking to extra) for end-user.
(Start with "data" based structuring and move to discourse based.)
- Extra "semantics" allows richer search functionality
 - beyond fact-finding

8

RealOne Player

gemini.ins.cwi.nl/cocoon/cuypers/aria/selectform-process

1393Kbps 1:29 / 1:35

Chiaroscuro & Rembrandt Harmensz. van Rijn

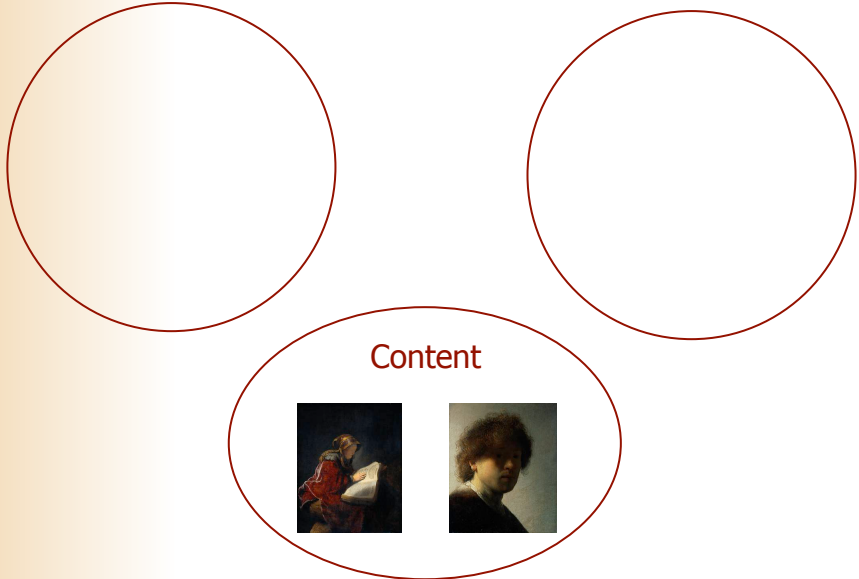


Chiaroscuro
 Clair-obscur (French) and chiaroscuro (Italian) both mean 'light-dark'. Both terms are used to describe strong contrast of light and dark shading in paintings, drawings and prints. Although the effect had already been used for many years, the term only came into fashion in the late sixteenth century. Originally, the word came from Italy. The painter Caravaggio (1573-1610) made chiaroscuro his trademark. He was a master at painting illuminated scenes in dark settings.

Self Portrait (1661)

9

Three ingredients



Content

10

Content of example



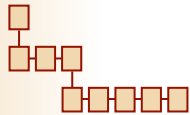
Clair-obscur (Frans) en chiaroscuro (Italiaans) betekenen 'licht-donker'. Beide termen worden gebruikt om sterke licht-donkercontrasten in schilderijen, tekeningen en prenten aan te duiden. Hoewel het effect al eerder werd toegepast, is de term pas sinds het einde van de 16de eeuw in zwang. De oorsprong van het woord ligt in Italië. De schilder Caravaggio (1573-1610) maakte het chiaroscuro-effect tot zijn handelsmerk. Hij was een meester in het schilderen van donkere taferelen met één felle lichtbundel.



11

Three ingredients

Presentation
structure



Content



12

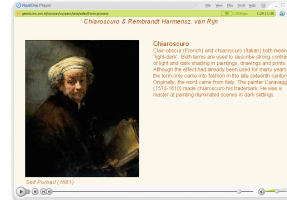
Presentation structure of example

Chiaroscuro & Rembrandt
Harmensz. Van Rijn

title

description

examples



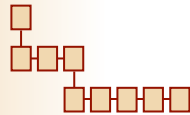
Clair-obscur (Frans) en chiaroscuro (Italiaans) betekenen 'licht-donker'. Beide termen worden gebruikt om sterke licht-donkercontrasten in schilderijen, tekeningen en prenten aan te duiden. Hoewel het effect al eerder werd toegepast, is de term pas sinds het einde van de 16de eeuw in zwang. De oorsprong van het woord ligt in Italië. De schilder Caravaggio (1573-1610) maakte het chiaroscuro-effect tot zijn handelsmerk. Hij was een meester in het schilderen van donkere taferelen met één felle lichtbundel.



13

Three ingredients

Presentation
structure



Aesthetics

abcdefghijkl
abcdefghijklmn
ABCDEFGHIJK
abcdefghijklm
abcdefghijklm

Content



14

Aesthetics of example



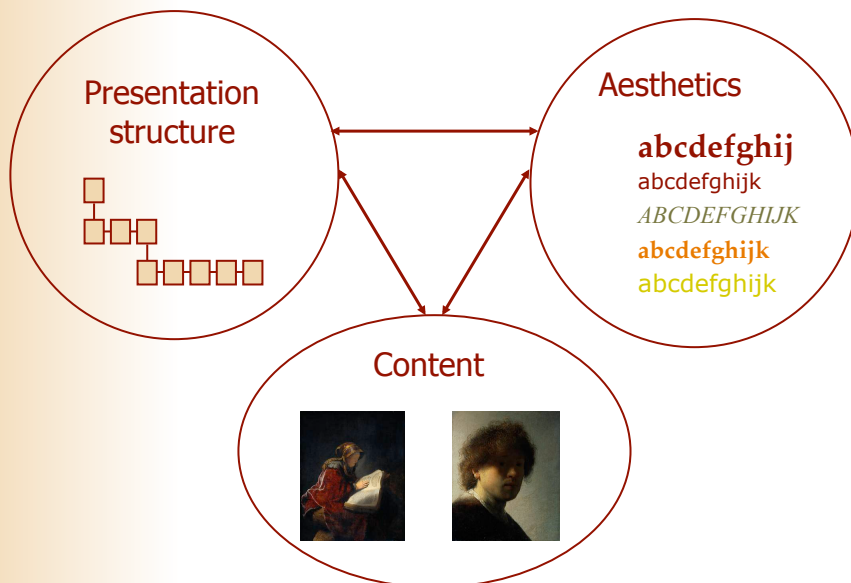
Fonts

Layout

Colours

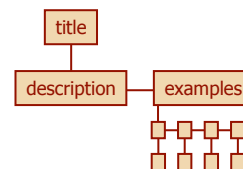
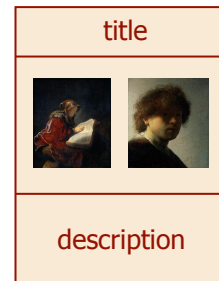
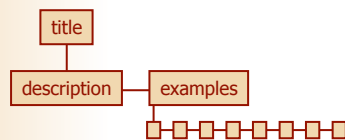
15

Design dependencies



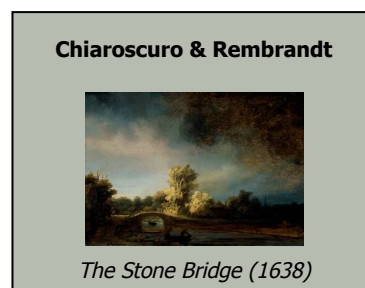
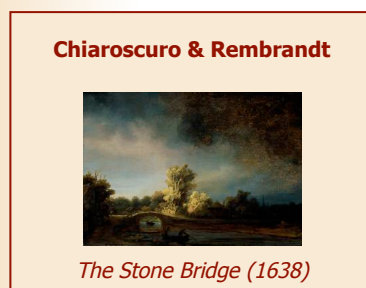
16

Presentation Structure depends on Layout



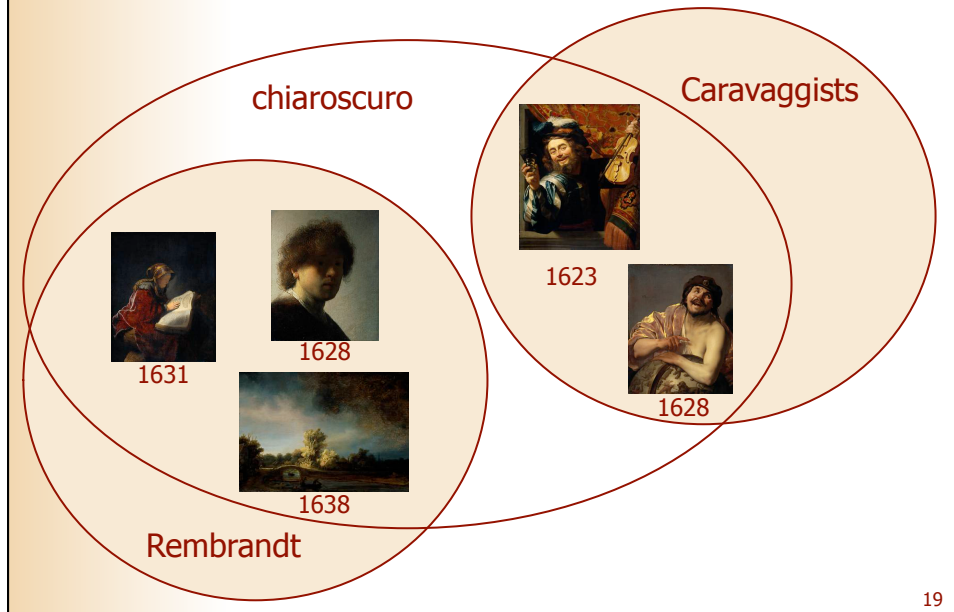
17

Style Depends on Content

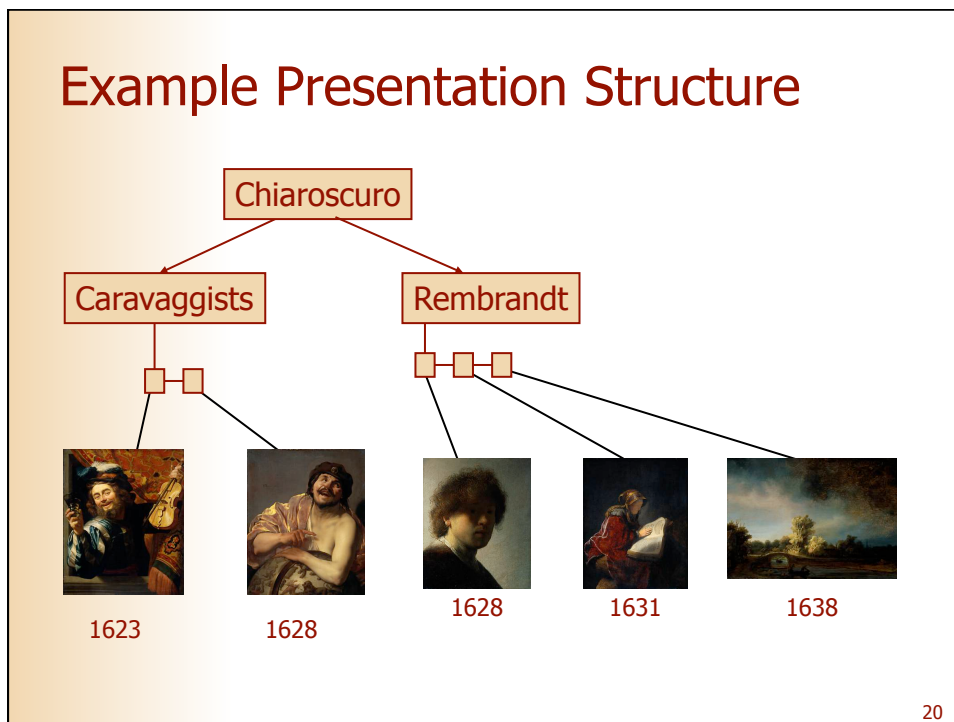


18

Presentation structure depends on content



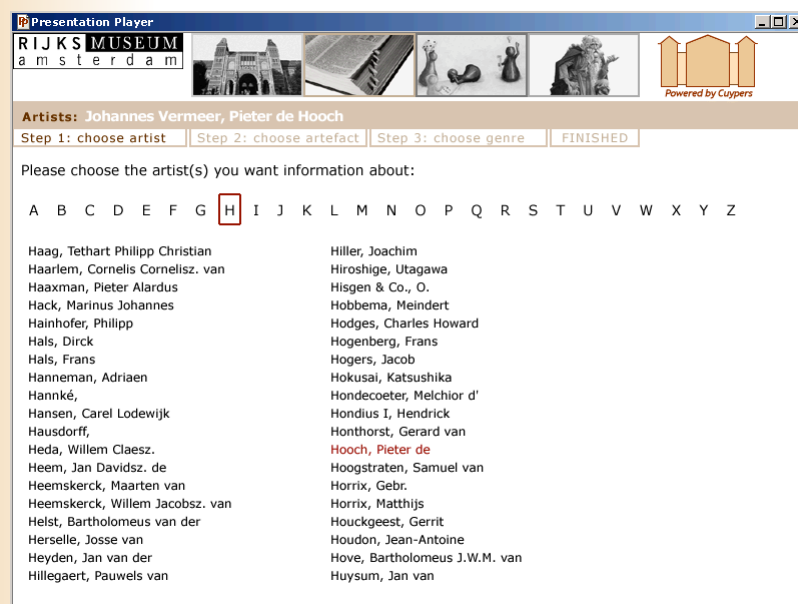
Example Presentation Structure



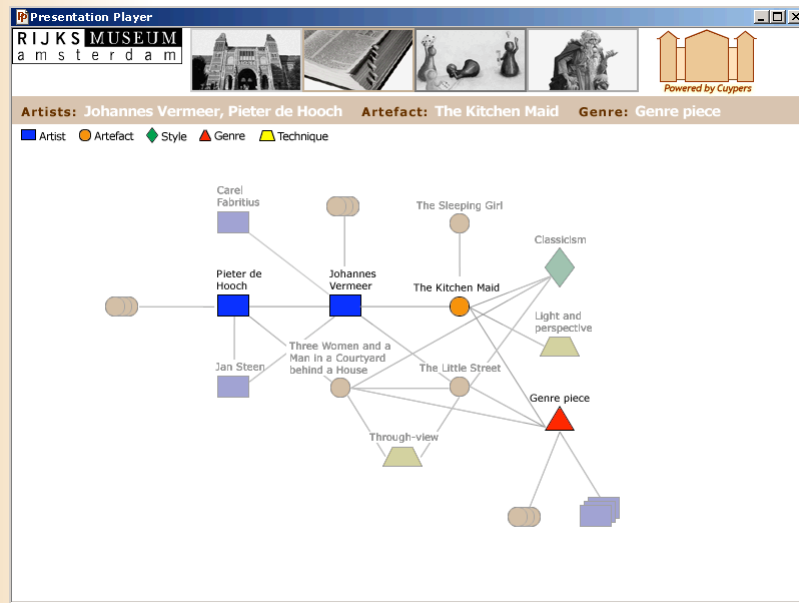
Different presentation styles

- Large amount of information
- High interaction

21



22



23

Presentation Player
RIJKS MUSEUM
a m s t e r d a m

Artists: Johannes Vermeer, Pieter de Hooch Artefact: The Kitchen Maid Genre: Genre piece

■ Artist ● Artefact ◆ Style ▲ Genre ▼ Technique

1 2 3

Text: [Icon] Audio: [Icon]

The Kitchen Maid

ca. 1658, Johannes Vermeer
Oil on canvas, 45,5 x 41 cm

With quiet concentration a woman pours milk into a bowl. With her left hand she supports the can she is pouring from. Around her are various objects: a loaf of bread, a stoneware jug, a basket and a brass bucket. The woman is standing near the window so she can see what she is doing. The light falls on her hands; her silhouette is dark against the white wall. There is a fascinating play of light and shadow in this painting.

▲ Genre
This is one of Johannes Vermeer's genre pieces in which he establishes an intensely intimate atmosphere. Although the artist observes his model from nearby, she continues with her work, totally unperturbed.

▼ Technique
Vermeer made use of light and perspective to create the intimate atmosphere. All lines of perspective lead to the right hand of the girl, which subtly accentuates the task of pouring milk in which she is completely engrossed. The horizon lies beneath her head, so that the viewer seems to look up

ing Girl

Classicism

Light and perspective

Street

Genre piece

24

Presentation Player
RIJKS MUSEUM
 a m s t e r d a m

Artists: Johannes Vermeer, Pieter de Hooch Artefact: The Kitchen Maid Genre: Genre piece

■ Artist ■ Artefact ◆ Style ▲ Genre ▼ Technique

The Kitchen Maid



ca. 1658, Johannes Vermeer
 Oil on canvas, 45,5 x 41 cm

▲ **Genre**
 E Ex J All

▼ **Technique**
 E Ex J All

◆ **Style**
 E Ex J All

■ **Johannes Vermeer**
 E Ex J All

■ **The Sleeping Girl**
 E J All

ing Girl
 Classicism
 Light and perspective
 Street
 Genre piece

25

Presentation Player
RIJKS MUSEUM
 a m s t e r d a m

Artists: Johannes Vermeer, Pieter de Hooch Artefact: The Kitchen Maid Genre: Genre piece

■ Artist ■ Artefact ◆ Style ▲ Genre ▼ Technique

The Kitchen Maid ▲ Genre: Genre piece J Justification



ca. 1658, Johannes Vermeer
 Oil on canvas, 45,5 x 41 cm



Artemisia, ca. 1645, follower of Domenico Fiasella, Canvas

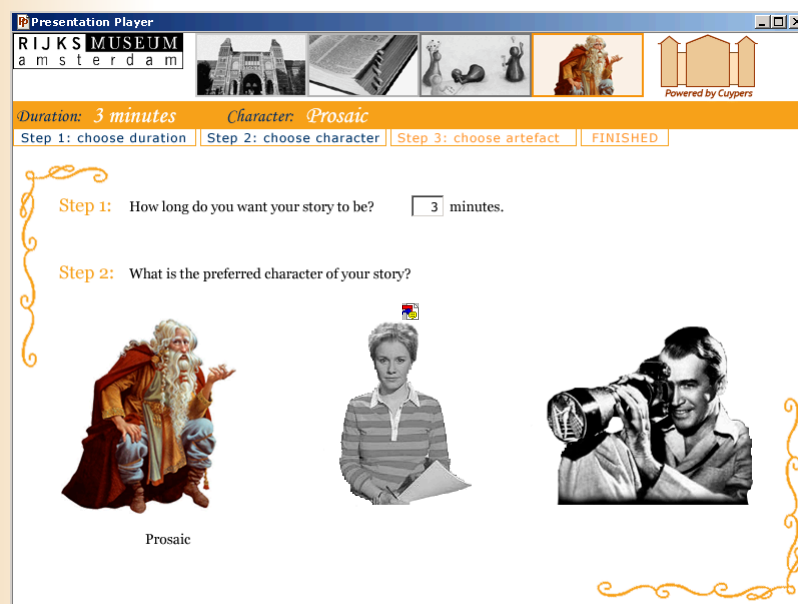
ing Girl
 Classicism
 Light and perspective
 Street
 Genre piece

26

Different presentation styles

- Entertainment rather than information
- Low interaction

27



28

Presentation Player
RIJKS MUSEUM
 a m s t e r d a m

Duration: 3 minutes Character: Prosaic Artefact: The Kitchen Maid
 Step 1: choose duration Step 2: choose character Step 3: choose artefact FINISHED

2. Search by name of artist:

A B C D E F G H I
 J K L M N O P Q R
 S T U **V** W X Y Z

Vermeer, Johannes

Artefacts in Rijksmuseum:

"Little Street", ca 1658
 The Kitchen Maid, ca 1660
 Woman reading a Letter, 1662/1663
 The Love Letter, 1669/1670

All other Artefacts in chronological order:

Soldier and a laughing Girl, ca 1658
 View of Delft, 1660/1661
 The Music Lesson, 1662-1664
 Woman holding a Balance, 1669/1670
 Young Woman with a Water Pitcher, 1669/1670

29

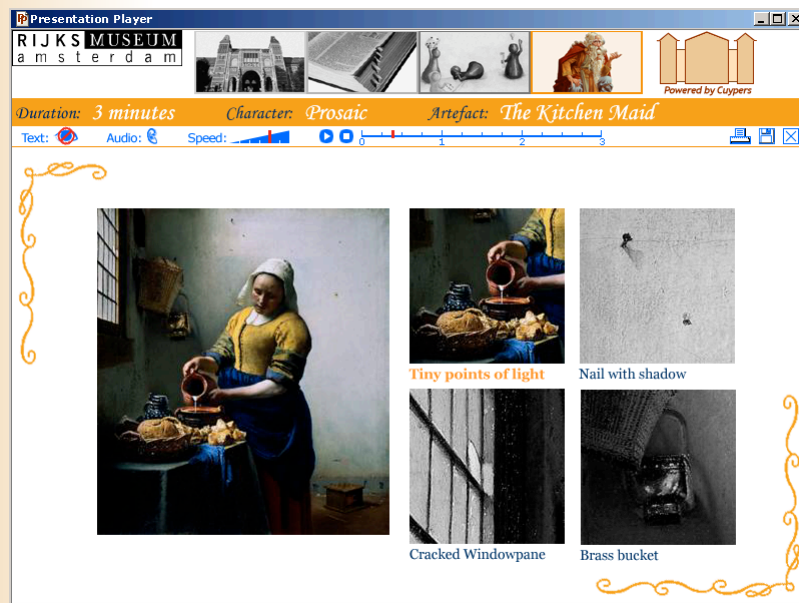
Presentation Player
RIJKS MUSEUM
 a m s t e r d a m

Duration: 3 minutes Character: Prosaic Artefact: The Kitchen Maid
 Text: Audio: Speed: 1 2 3



The Kitchen Maid
 by Johannes Vermeer
 ca 1660
 Oil on canvas
 45.5 x 41 cm

30



31

MM interaction on the SW

- Creating multimedia presentations requires
 - understanding message of presentation
remember the canonical processes?
 - knowing specifications of use context
 - making design dependencies explicit
 - taking these dependencies into account
- How can the SW help?

32

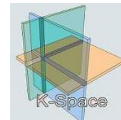


Semantic Search

Michiel Hildebrand

Jacco van Ossenbruggen, Alia Amin, Lynda Hardman

CWI, Interactive Information Access



Semantic search survey

- 35 systems
 - Search engine, faceted browser, wiki, question answering, portal
- Analysis of search functionality and interface for
 - Query construction
 - Search algorithm
 - Presentation of search results

http://swuiwiki.webscience.org/index.php/Semantic_Search_Survey

http://en.wikipedia.org/wiki/Semantic_search

Query Construction

Feature	Functionality	Interface components
Free text input	Keyword, natural language	Single text-entry, Property specific field
Operators	Syntactic disambiguation, Semantic constraints	
Controlled terms	Disambiguate input, Restrict output, Predefined queries	Value lists, Faceted browser, Graph
User feedback	Pre-query disambiguation	Autocompletion

Search algorithm

- Syntactic matching
 - Exact, prefix or substring match
 - Minimal edit distance
 - Stemming
- Semantic matching
 - Graph traversal
 - Query expansion
 - RDFS/OWL reasoning

Result Presentation

Feature	Functionality	Interface components
Data selection	Selected values, Template, Display vocabularies	Visualized by text, graph, tagcloud, map, timeline, calendar
Ordering	Content / link structure based ranking	Ordered list
Organization	Clustering by property, by result path or dynamic	Tree, nested box structure, clustermap
User feedback	Post-query disambiguation, Recommendation	Facets, tagcloud, value list

37

Principles of Facet Browsing

- Groups objects from different perspective
- Build constraints as you go

With thanks to Alia Amin for the slides explaining facet browsing

38

Group objects from different perspectives

Example: A set of paintings with these properties. How to group them?



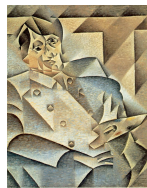
- Art Style: Art Nouveau
- Location: Paris
- Artist: Gustav Klimt



- Art Style: Art Nouveau
- Location : Paris
- Artist: Monet



- Art Style: Expressionist
- Location : Vienna
- Artist: Monet



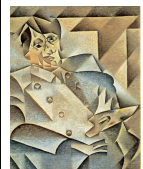
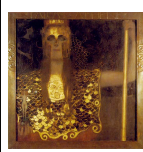
- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

39

Groups of objects from different perspectives (location)

Group objects based on location:

- Group 1: Paris
- Group 2: Vienna



Paris



Vienna

40

Group objects from different perspectives

Example: A set of paintings with these properties. How to group them?



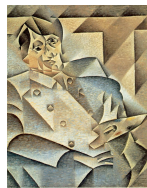
- Art Style: Art Nouveau
- Location: Paris
- Artist: Gustav Klimt



- Art Style: Art Nouveau
- Location : Paris
- Artist: Monet



- Art Style: Expressionist
- Location : Vienna
- Artist: Monet



- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

41

Groups of objects from different perspectives (art style)

Group objects based on art style:

- Group 1: Art nouveau
- Group 2: Expressionist
- Group 3: Impressionist



Art nouveau



Expressionist



Impressionist

42

Group objects from different perspectives

Example: A set of paintings with these properties. How to group them?



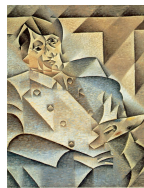
- Art Style: Art Nouveau
- Location: Paris
- Artist: Gustav Klimt



- Art Style: Art Nouveau
- Location : Paris
- Artist: Monet



- Art Style: Expressionist
- Location : Vienna
- Artist: Monet



- Art Style: Impressionist
- Location : Paris
- Artist: Picasso

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Groups of objects from different perspectives (artist)

Group objects based on artist:

- Group 1: Gustav Klimt
- Group 2: Picasso
- Group 3: Monet



Gustav Klimt



Picasso



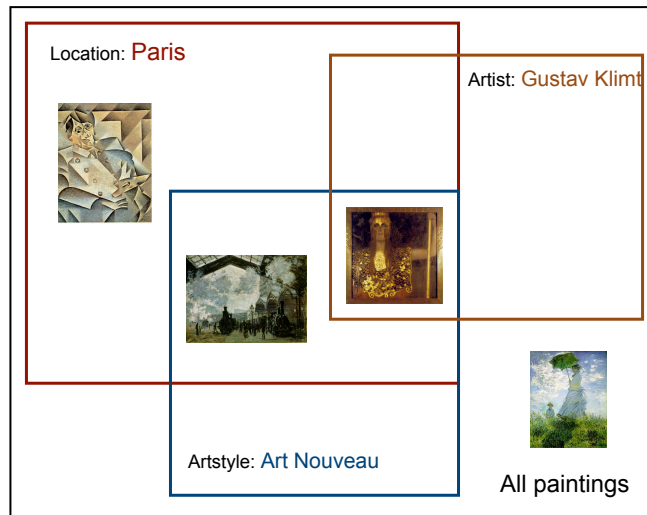
Monet

44

Build constraints as you go

All paintings which are

- Location: Paris
- Artstyle: Art Nouveau
- Artist: Gustav Klimt



45

Examples

- Commercial: Ebay Express
- Noncommercial: /facet, Flamenco
- Main advantage: support exploratory search
- Facet browser tutorial at CHI06 and CHI07

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eCulture /facet

Pronounced and googled Slashfacet
demo:

<http://e-culture.multimedien.nl/demo/facet>

talk:

http://e-culture.multimedien.nl/poster/slashfacet_iswc06/

and video (28 minutes):

http://videolectures.net/iswc06_hildebrand_bhswr/

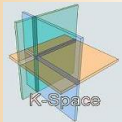
47

- CHIP demo
 - exploring both artefacts and properties
 - artefacts are artworks, but could be, e.g., books or movies
- Parallax video

Creating Meaningful Presentations

Lynda Hardman
Jacco van Ossenbruggen

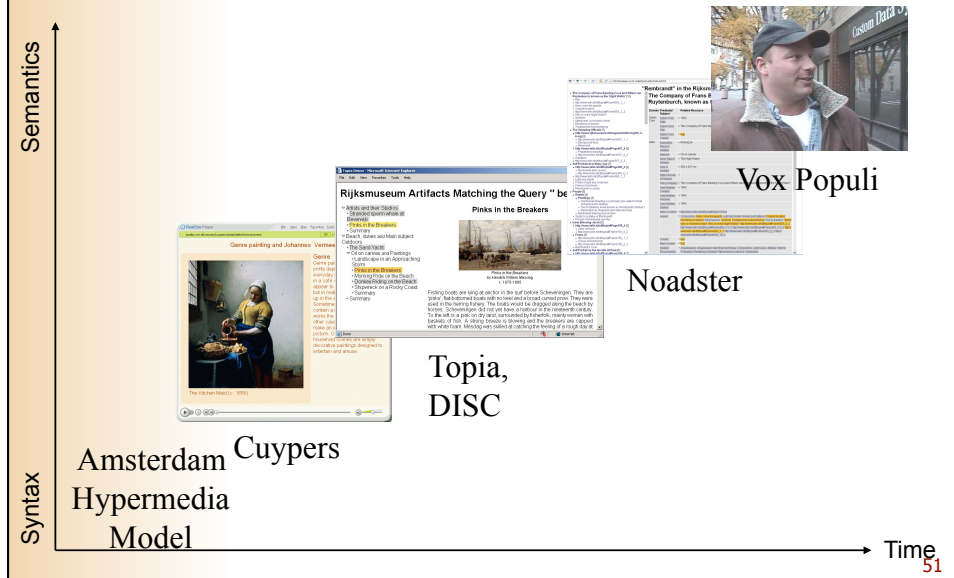
Interactive Information Access
CWI, Amsterdam
<http://www.cwi.nl/~media>



Introduction

- Overview of our research activities:
 - Creating meaningful presentations from query results
 - Part of the K-Space, Passepartout and Multimedia-N
- Main theme of our work:
 - The role that **explicit discourse** information plays in the *personalized generation process*
 - The difference between:
 - a *list* of retrieval results ordered *most relevant first* and
 - a *presentation* that has *structure* interpretable by the end user, giving the collection *sense of belonging to same presentation*

From syntax to semantics



Existing approaches in presenting query results

- No explicit discourse (only domain semantics):
 - Noadster - clusters from domain semantics
 - Topia - preselecting concepts in domain semantics
 - Museo Suomi, /facet (facet browsers) – selection based on domain semantics
- Deriving some aspects of discourse:
 - Giving meaning to clustering process
 - Assigning different weights to clusters => ordering
 - Influence the way people perceive information

Semantic Web browsing

- Noadster
- Generalised semantic web browsing
- Integrating global and local browsing

- Lloyd Rutledge, WWW 2005



- The Company of Frans Banning Cocq and Willem van Ruytenburch, known as the 'Night Watch' [10]
 - Rijn
 - http://www.tel.nl/nirdttopia/Frame583_1_1
 - Here come the guards
 - Original location
 - http://www.tel.nl/nirdttopia/Frame583_2_2
 - Who is in the Night Watch?
 - Symbols
 - Literally new: a moment in time!
 - Rendering of texture
 - Troublesome foreshortening
- The Sampling Officials [7]
 - <http://www.rijksmuseum.nl/images/aria/SKU/Org/SK-C-6.org> [3]
 - http://www.tel.nl/nirdttopia/Frame587_1_1
 - Background facts
 - Movement
 - http://www.tel.nl/nirdttopia/Frame587_4_2 [2]
 - Preparatory drawings
 - http://www.tel.nl/nirdttopia/Frame587_4_2
 - Signature
 - http://www.tel.nl/nirdttopia/Frame587_5_2
 - Self Portrait at an Early Age [7]
 - http://www.tel.nl/nirdttopia/Frame380_6_2 [2]
 - Rembrandt and Lievens
 - http://www.tel.nl/nirdttopia/Frame380_6_2
 - http://www.tel.nl/nirdttopia/Frame380_1_1
 - Light and shade
 - Points of light and scratches
 - Famous Dutchman
 - Rembrandt in Leiden
 - People [6]
 - Reliefs [4]
 - Paintings [3]
 - Old Woman Reading a Lctionary (So-called Portrait of Rembrandt's Mother)
 - The Prophetess Anna (known as 'Rembrandt's Mother')
 - Rembrandt as Shepherd with Staff and Flute
 - Rembrandt drawing at a window
 - Study for a statue of Rembrandt
 - Portrait of Rembrandt van Rijn
 - Isaac Blessing Jacob [6]
 - http://www.tel.nl/nirdttopia/Frame158_4_2 [2]
 - Other versions
 - http://www.tel.nl/nirdttopia/Frame158_4_2
 - Frame [3]
 - http://www.tel.nl/nirdttopia/Frame158_1_1
 - School of Rembrandt
 - http://www.tel.nl/nirdttopia/Frame158_2_2
 - Rembrandt's circle
 - Self Portrait as the Apostle St Paul [6]
 - http://www.tel.nl/nirdttopia/Frame158_4_2 [2]

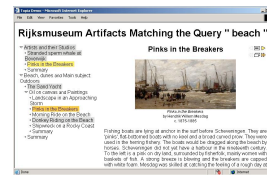
"Rembrandt" in the Rijksmuseum

The Company of Frans Banning Cocq and Willem van Ruytenburch, known as the 'Night Watch'

Domain	Predicate/Subject	Related Resource
Dublin Core	Date	> 1642
	Title	> The Company of Frans Banning Cocq and Willem van Ruytenburch, known as the 'Night Watch'
	Creator	> Rijn
ARIA	Exposition	> RM-M224
	Place of Artefact	> Oil on canvas
	Material	> The Night Watch
	Short Title of Artefact	> 363 x 437 cm
	Size of Artefact	>
	Style Periods of Artefact	>
	Title of Artefact	> The Company of Frans Banning Cocq and Willem van Ruytenburch, known as the 'Night Watch'
	Year Artefact Created	> 1642
	Year Artefact Finished	> 1642
	Year Artefact Started	> 1642
	Altis Location	> http://www.tel.nl/nirdttopia/Atlas157849
	Aspect	> Composition Here come the guards Light and shade Moved and battered Original location Rendering of texture Rijksmuseum Symbols Troublesome foreshortening True to tradition Literally new: a moment in time! Who is in the Night Watch? http://www.tel.nl/nirdttopia/Frame583_2_2 http://www.tel.nl/nirdttopia/Frame583_11_2 http://www.tel.nl/nirdttopia/Frame583_13_2 http://www.tel.nl/nirdttopia/Frame583_10_2
	Creator	< Rijn
	Main Creator	< Rijn
	Related	> Arquebusiers Arquebusiers hall Brush technique Composition Light source Militias Patrons
	Encyclopedia	> Portraiture Rendering of texture Rijksmuseum collection Symbolism

Inferring document structure

- Topia
- Rijksmuseum ARIA database -> RDF
- Clustering on results of query
- Presentation showing "table of contents" and current focus
- Lloyd Rutledge
ACM Hypertext 2003



Inferring document structure

Topia Demo - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Rijksmuseum Artifacts Matching the Query "beach"

- Artists and their Studios
 - Stranded sperm whale at Beverwijk
 - Pinks in the Breakers**
 - Summary
- Beach, dunes and Main subject: Outdoors
 - The Sand Yacht
 - Oil on canvas and Paintings
 - Landscape in an Approaching Storm
 - Pinks in the Breakers**
 - Morning Ride on the Beach
 - Donkey Riding on the Beach
 - Shipwreck on a Rocky Coast
 - Summary
 - Summary

Pinks in the Breakers

Pinks in the Breakers
by Hendrik Willem Mesdag
c. 1875-1885

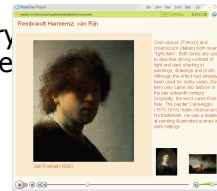
Fishing boats are lying at anchor in the surf before Scheveningen. They are 'pinks', flat-bottomed boats with no keel and a broad curved prow. They were used in the herring fishery. The boats would be dragged along the beach by horses. Scheveningen did not yet have a harbour in the nineteenth century. To the left is a pink on dry land, surrounded by fisherfolk, mainly women with baskets of fish. A strong breeze is blowing and the breakers are capped with white foam. Mesdag was skilled at catching the feeling of a rough day at

Done Internet

Explicit Discourse

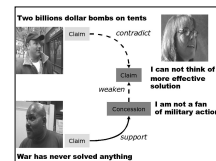
– Fixed discourse:

- DISC – uses annotated multimedia repository + domain ontology and discourse knowledge
- discourse knowledge = set of rules (genre, narrative units...)



– Dynamic discourse:

- VoxPopuli: argument generation in video

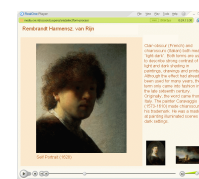


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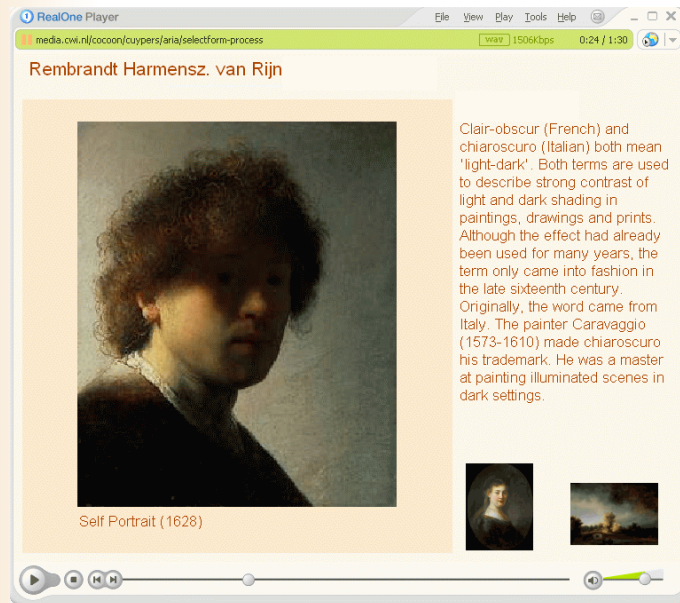
Fixed Discourse

- DISC
- Rijksmuseum repository of media items
- Semantic graph is not enough
Rembrandt married-to Saskia
also need discourse structures
for deriving grouping, ordering and priorities
- Biography template created
painter is-a profession

- Stefano Bocconi, Joost Geurts
ISWC 2003



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Dynamic Discourse

• Vox Populi: Argument generation in video

Question		Interviewee	Opinion	
Why did they do what they did? What do you think of the casualties among civilians? What do you think of the Afghanistan war? What are the consequences of the war? What are the roots of the problem? What do you think about the Anthrax?		Cameroun Parking Guard at Stamford Lawyer in Harvard	War in Afghanistan - Pro	Position
Age	Education	Employment	GeoLocation	Race
Middleage Old Teenager Young	HighEducated LowEducated MediumEducated	HighIncomeJob LowIncomeJob MiddleIncomeJob Retired Student	NotUSA USA	AmericanIndian Asian Black Hispanic White
				Religion
				Atheist Christian Muslim
				Sex
				Female Male
First Character				
Age	Education	Employment	GeoLocation	Race
Middleage Old Teenager Young	HighEducated LowEducated MediumEducated	HighIncomeJob LowIncomeJob MiddleIncomeJob Retired Student	NotUSA USA	AmericanIndian Asian Black Hispanic White
				Religion
				Atheist Christian Muslim
				Sex
				Female Male
Second Character				
Strategy Bandwidth Intercut Caption				
☐ None ☐ Low Bandwidth ☐ True ☐ On (can cause problems)				
☐ Create Clash ☐ Medium Bandwidth ☐ False ☐ Off				
☐ Create Support ☐ High Bandwidth				
☐ Vox Populi				
Done Reset				

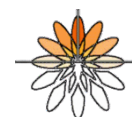
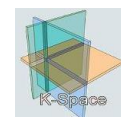
Conclusions

- From projects described we have learned:
 - distinguish stages in process
 - separate discourse knowledge
 - Fixed and Dynamic discourse
 - mappings between domain & discourse knowledge
- Scientific challenges remain:
 - Making (MM) discourse and design knowledge explicit
 - Expressing re-usable semantics of media assets
 - Architectures for multimedia presentation generation

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 - Dutch *BSIK MultimediaN e-Culture project*

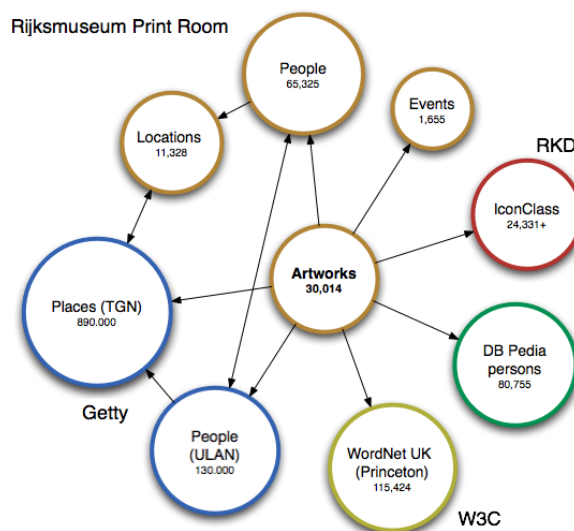


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Bringing The IPTC News Architecture into the Semantic Web

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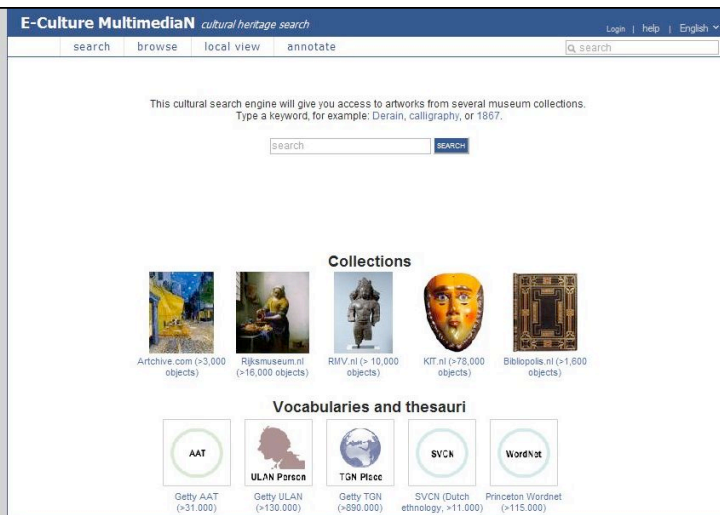
Cultural Heritage Data Cloud



Professional Art Annotation with Thesauri from the Web



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Prototype comparison search – bar chart

Prototype comparison search - map

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user tasks/interfaces

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- Alia Amin, Jacco van Ossenbruggen, Lynda Hardman, Annelies Nispen: *Understanding Expert' Information Seeking Needs*. In Proc. Joint Conference on Digital Libraries (JCDL'08)
- Alia Amin, Michiel Hildebrand, Jacco van Ossenbruggen, Vanessa Evers, Lynda Hardman. *Organizing Suggestions in Autocompletion Interfaces*. In ECIR '09
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- Raphaël Troncy: *Bringing the IPTC News Architecture into the Semantic Web*. In [7th International Semantic Web Conference \(ISWC'2008\)](#), pages 483-498, Karlsruhe, Germany, October 26-30, 2008.
- Raphaël Troncy, Lynda Hardman, Jacco van Ossenbruggen and Michael Hausenblas: *Identifying Spatial and Temporal Media Fragments on the Web*. In [W3C Video on the Web Workshop](#), San Jose (California) and Brussels (Belgium), December 2007.
- W3C Video on the Web Activity, April 2008
<http://www.w3.org/2008/01/video-activity>.

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What are the messages?

- Features can be extracted and used to describe multimedia content (metadata)
- Multimedia presentations embody messages
- Media, structure and aesthetics all contribute to conveying the message
- The message can be made explicit (more metadata)
- Media content and metadata can be passed around and among systems
- We need to agree on how to do this (e.g. canonical processes; COMM; W3C working groups; IPTC)
- Users can be given much richer and more flexible access to (semantically annotated) content, but...
- we are still figuring out how to do this.

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Links to demos

<http://www.cwi.nl/~lynda/courses/swui-demos09/index.html>