# Museums' User Needs



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# ICT in Museums: Some Areas of Application

- Databases for collections management
- Multimedia kiosks for gallery interpretation
- Web sites (visitor information, info about the collections, access to the database, online exhibitions, etc.)
- Publishing (on paper, electronic)
- Administration (salaries, museum shop, ticketing systems, etc.)
- Communication (between staff, outside the museum)

# ICT in Museums – trends and context

- 1990s-2000s:
  - Fast and continuous spread in the cultural world
  - Pressure from the public for the use of technologies in museums
  - linked with the image of a modern institution which follows the social and technological changes
- Promises for great new possibilities and advantages
- In some cases technolunacy and uncritical enthusiasm (technology as an end in itself)

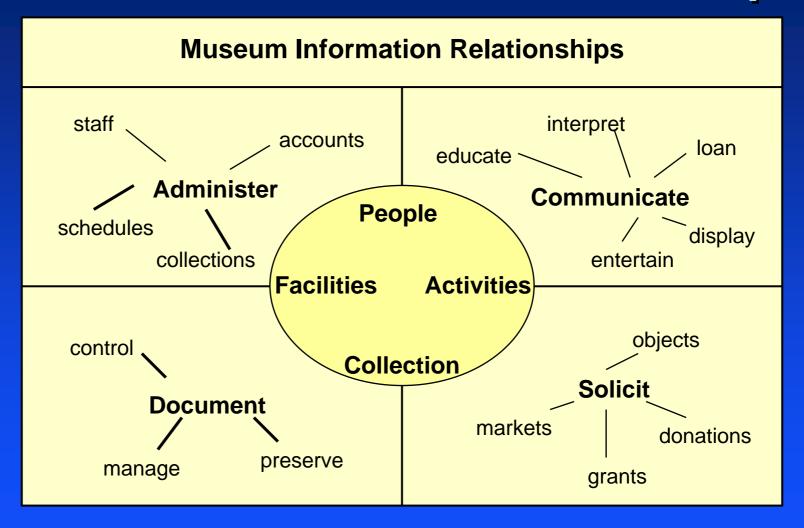
# New areas of application

- Increasingly, use of ICT to create an 'experience'
- Virtual reality
- Immersive environments
- Hand-held devices
- Interaction in the gallery with virtual visitors on the Internet

# Museum context and trends

- Social inclusion
- 'Museums are for people'
- Making things personal and relevant
- Importance of social context
- New ways of informal learning (e.g. constructivism)
- Telling stories, revealing secrets, bringing objects to life
- Synergy with libraries, archives, other cultural & educational institutions
- Other partnerships

# **Museum Information Relationships**



Adapted from John Perkins. 1993. Planning for Museum Automation Student Workbook, 1

# **Special Characteristics of Museum Information**

- variety
- lack of uniform procedures
- vagueness in terminology
- multiple interpretations & perspectives
- dynamic nature of information
- complex inter-relationships (people, places, objects, activities)
- keep for ever

### **Documentation of Collections**

Museums - primary sources of information about objects, people, events

- Documentation systems handle the information about the collections and its associations
- Users of museum information: curators, conservators, other museum professionals, visitors, researchers, local government, building planners, auditors
- Museum documentation dynamic, not static

# **Example of museum information**

### About this coin ...

- Where was it found?
- What does it show?
- How old is it?
- How did it arrive at the museum?
- Who owned it before?
- Where else have they found similar ones?
- Does it relate to the national curriculum?
- Does it need cleaning?

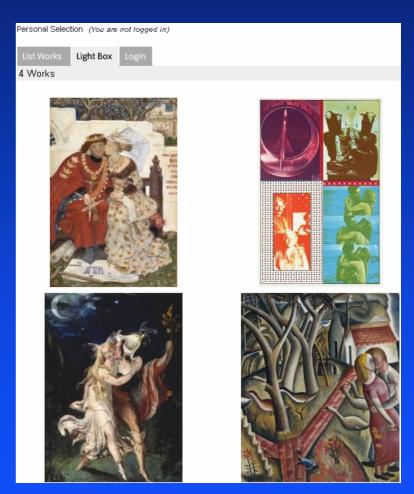




# 'Digital libraries' and museum needs

- ability to show context of objects
- users need to choose what they want to see
- ability to combine, compare objects

from different galleries, periods, countries, etc.



Light Box, Tate Online

(Ford Madox Brown "King René's Honeymoon 1864, Sir Eduardo Paolozzi 'Moonstrips Empire News' 1967, Theodore Von Holst 'The Fairy Lovers' 1840, David Jones, 'The Garden Enclosed' 1924)

# Museum 'digital libraries' and specialist users

- Importance of colour information (e.g. for art historians)
- Metadata on calibration, image processing
- 3D information
- Museum collections: variety of media
- Importance of context ("information about an object is more important than the object itself")
- Unlike some other cultural institutions: multiple contexts and changing groupings

# Museum 'digital libraries' and 'lay' users

- Again: Importance of context
- Bringing objects to life
- Making collections relevant

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- Strong links primary and secondary education (e.g. more education officers in museums than archives or libraries)
- Relevant to National Curriculum

# Museum 'digital libraries' and schools

- Need to balance of information provided on collections
- Teacher: [In Perseus digital library of classical material, www.tufts.edu,] "...the links to real objects and texts in collections were good something that museums should always bear in mind. It is easy to be seduced into thinking that games, interactive displays, models etc., can or should replace real objects; but nothing beats knowing that what you can see or even touch is real and old and has a history. I can still remember holding a real Roman sword as a teenager when attending a lecture at the British Museum."
- Balance between lots of object or collection detail & overview of museum's holdings
- Issue: is digital info likely to deter from visiting real thing?

Nuttall, S. (ed.) 2001. Building Digital Content: A Study in the Selection, Presentation and Use of Museum Web Content for Schools. <a href="http://www.mda.org.uk/bdc\_intro.htm">http://www.mda.org.uk/bdc\_intro.htm</a>

# Museum 'digital libraries' and schools

- Different models of use
  - Classroom teaching tool
  - Reference tool
  - ◆ Teacher resource
  - Computer suite

Nuttall, S. (ed.) 2001. Building Digital Content: A Study in the Selection, Presentation and Use of Museum Web Content for Schools. <a href="http://www.mda.org.uk/bdc\_intro.htm">http://www.mda.org.uk/bdc\_intro.htm</a>

# Museum 'digital libraries' and schools

- Presenting content Teachers' needs:
  - Special section & resources for education professionals
  - Again, consultation with teachers is important
  - Good short introduction to site
  - Unique and authoritative content
  - Depth rather than breadth of information
  - Information on visiting/links to real thing
  - Keeping it up-to-date and fresh (e.g. 'Curator's choice, 'Website of the week')
  - Good navigation and usability (effective searching tools, visual searches, avoiding clutter, clear headings and links, good use of icons and buttons)
  - Ability for users to store information

Nuttall, S. (ed.) 2001, Bullation, Bullation, Bullation, Bullation, Bullation, S. (ed.) 2001, Bullation, Bulla

# Digitisation of museum collections - why create digital libraries?

- Conservation reasons (e.g. reduce wear-andtear on originals)
- Eases transmission across space & time
- Added value & increased usability (e.g. enlarge segments, cut and compare, compare with material at other locations)
- Faithful copying
- Rapid retrieval

# Selecting the material for DLs

- Strategic knowledge of collections (intellectual capital of institutions)
- Need to focus on
  - User needs
  - Collection conservation requirements
  - Institutional objectives
- Based on framework that defines intellectual, historic and cultural value of assets
- Moving from projects to programmes
- Issue: should museums focus on digitisation of core assets or also invest in their interpretation and the creation of resources for different users?

Ross, S., Economou, M. & Anderson, J. 1998. Funding Information and Communications Technology in the Heritage Sector. Study carried out for the Heritage Lottery Fund, UK. HATII, Glasgow, January 1998 (137 pages) <a href="http://www.hatii.arts.gla.ac.uk/HLFICT">http://www.hatii.arts.gla.ac.uk/HLFICT</a>

### **Guidelines for museums considering the creation of DLs**

# Collecting the material

- Don't underestimate the time and effort involved in collecting the material and researching the content (if using material from outside, don't forget copyright)
- This requires involvement of curators & researchers
- Simple mass of data is not enough; need to reduce information to what is relevant and important
- Consider carefully the level of information to be provided

### **Guidelines for museums considering the creation of DLs**

### During the design process

- Need to be clear about objectives & target users
- Even when commissioned outside, the staff need to be closely involved
- DL design: requires team work (collaboration of content specialists, education officers, & technology experts)
- It often involves partnerships
- Need to incorporate users from early stages of design
- Importance of evaluation

### **Lessons from user evaluation**

- Digital Cultural Heritage Community Project
  - database of historical info from museums, libraries, and archives
  - related to curriculum
  - evaluation with elementary school classrooms in 3 schools in Illinois
- Recommendations:
  - v. important for teachers: link digitized content to curricular standards;
  - ensure the robustness of database;
  - concentrate on enabling teachers to utilize images and metadata off-line in the classroom and for assignments, and on high-quality, rather than highquantity resources;
  - undertake continuous evaluation of the database use;
  - ensure that information in the database continues to be 'trustworthy'

Bennett, N., Sandore, B. & Pianfetti, E. 2002. 'Illinois Digital Cultural Heritage Community - Collaborative Interactions Among Libraries, Museums and Elementary Schools' *D-Lib Magazine* 8 (1) <a href="http://www.dlib.org/dlib/january02/bennett/01bennett.html">http://www.dlib.org/dlib/january02/bennett/01bennett.html</a>

### **Lessons from user evaluation**

#### Museums and the Online Archive of California

- Triangulation, quantitative & qualitative methods
- Evaluation with:

  - university students
  - academics in the humanities and social sciences
  - museum professionals, librarians, and archivists
- Data sources:
  - transaction logs
  - pre-existing use data
  - feedback forms
  - high-level questionnaires
  - in-depth interviews with participants
- Discover how to make museum digitised content useful, usable & used

Gilliland-Swetland, A., White, L., Chandler, R. 2004, 'We're Building It, Will They Use It? The MOAC II Evaluation Project' *Museums and the Web* 2004 <a href="http://www.archimuse.com/mw2004/papers/g-swetland/g-swetland.html">http://www.archimuse.com/mw2004/papers/g-swetland/g-swetlan

# **Delivery mechanisms**

- CD-ROM or via Internet / Intranet
- Things to consider:
  - Restrict access to particular types of users?
  - Registration and security
  - Type of use planned / estimated / permitted
  - Actions to plan against / discourage
  - Start small and expand later?
  - Ease of migrating later
  - CD-ROMs can generate revenue ... but
  - commercial success of cultural CD-ROMs is very rare

# Museum DL applications on the Web

- can be a medium for most museum functions (education, collections information, outreach, marketing, publicity, etc)
- interactivity & user involvement still rather low

# Interface design & retrieval

- Importance of testing and user evaluation
  - throughout all stages of design
  - with wide range of users
- Provide multiple alternative methods of searching / access
- Search methods
  - browsing (good interface, site map, thumbnails can help)
  - free text (full-text indexing based on all data / database indexing based on metadata) >> importance of standards, e.g. CIMI, Dublin Core
  - Boolean
  - content-based image retrieval (CBIR)

# Importance of standards

 Use of widely accepted standards can assist the retrieval, migration, interchange of museum information

e.g. standards for structuring data:

- CIMI (Consortium for the Computer Interchange of Museum Information)
   http://www.cimi.org
- Dublin Core http://dublincore.org

# **Terminology Control**

Using standardized terminology when documenting museum collections allows:

complete retrieval of information

consistent records which give reliable answers

successful communication with other museums

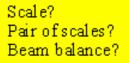
and researchers

record of hierarchical relationships & related terms

From Leonard Will "Thesaurus principles and practice"

#### What do you call it?





Balance?



Magnifier? Lens? Magnifying glass?



Bicycle? Cycle? Push-bike?

# New developments in retrieval

- Cross-collection searching
- Translation of results into different languages
- Analysis of content
- Visual representation of relationships among information



# Digital libraries and museum learning

- Influence of museological & learning theories
- Constructivism
  - learner-centred, active learning based on prior experience and knowledge; educators to facilitate learning by providing 'scaffolding' of activities, strategies, etc
- For users of digital libraries:
  - Ability to explore at their own pace, follow their own choices
  - Facilitate multiple voices & exchange of stories
  - Provide wide range of learning approaches, entry points & points of view
  - Invite people to ask questions about content
  - Help users search for meaning

Canadian Heritage Information Network, 2004. 'Constructing Meaning and Online Museum Experience' tip sheet <a href="http://www.chin.gc.ca/English/Digital\_Content/Tip\_Sheets/constructivism.html">http://www.chin.gc.ca/English/Digital\_Content/Tip\_Sheets/constructivism.html</a>

# Constructivist online learning example

- Virtual Museum Canada exhibit Horizons: Canadian and Russian Landscape Painting (1860-1940)
  - Thematic browsing
  - Facilitate comparisons of landscape art by artists in Canada and Russia
  - Enable users to build on experiences of natural environment
  - Coherent approach to organise large amount of information
  - Alternative entry points



and climatic features shared by the two countries. It is probable that the immensity of their territory—the most vast

http://www.virtualmuseum.ca/Exhibitions/Horizons/

### Virtual Museum Canada *Horizons* exhibit









Learning and exploration tools at each painting (e.g. zoom-in, map, change surrounding background colour, audio tour, music, related photographs) / Flash site (not HTML)

http://www.virtualmuseum.ca/Exhibitions/Horizons/

Vasiliy Kandisky 'Moscow, Red Square' 1916

# Museum Digital Libraries: some examples



thinker ImageBase, Fine Arts Museums of San Francisco - launced as website in 1996

Fine Arts Museums of San Francisco

Images indexed by descriptive keywords by non-specialists - "word soup" with simple visual terms (up to 60 words) by volunteers.

Info on artist, title, date and medium (about 80% of the collection)



Search Results

#### ImageBase

#### Search Results



Image 6 of 13

#### Lovis Corinth, artist

German, 1858 - 1925 Riders, from the Campo Santo, Pisa, 19th -20th century

Lithograph

30.5 x 24.1 cm (image); 37.5 x 28.3 cm (sheet)

Purchase by exchange from Dr. Joseph A. Baird, Tiburon, 1970 1970, 25.3

Select monitor size to zoom this image:

Display options: ZOOM 14"

Artist Credit: all

Artist Biography: Printer, etcher; born in Tapiau on 07/21/1858; Tapiau-Munich-Paris; checked in Schwarz (Nos. 1-452) and Muller (Nos. 453-918) ~- Reference: Schwarz, Karl. Das graphische Werk von Lovis Corinth (Berlin: Fritz Gurlitt, 1922) ~M, ller, Heinrich. Die sp‰te Graphik von Lovis Corinth (Hamburg: Lichtwarkstiffung, [1960]) ~~

#### Related Keywords

Pisa Santo Campo the from Riders 1970 Tiburon Baird Joseph Dr exchange by Purchase Europe Germany Print Lithograph Lovis Corinth German 3307201309730002 A008901 1970.25.3 AFGA

### Thinker – Fine Arts Museums of San Francisco

Each image appr 30 KB, 3,000 x 2,000 TIFFs. Ability to scroll and zoom in high-resolution images using GridPix technology developed at the Computer Science division, University of California, Berkeley (storage system and special software, larger images with tile-based approach)





Lovis Corinth, artist

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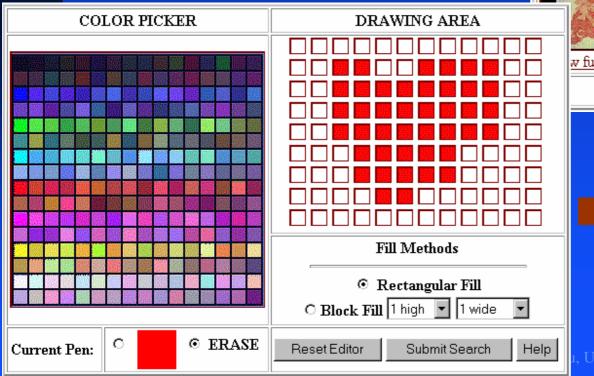
#### Related Keywords

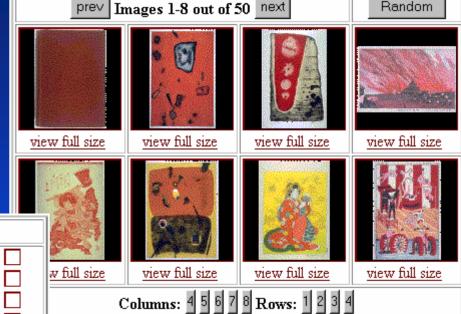
Pisa Santo Campo the from Riders 1970
Tiburon Baird Joseph Dr exchange by
Purchase Europe Germany Print Lithograph
Lovis Corinth German 3307201309730002
A008901 1970.25.3 AFGA

### <u>Thinker – Fine Arts Museums of San Francisco</u>

Old version of the site – example of CBIR application of IBM's QBIC

Searching for red hearts...







# COLLAGE — Corporation of London Libraries & Guildhall Art Gallery

iBase image database containing over 30,000 works of art (at Print Room / over 20,000 available on web) (London topography & life from 15th C. to present day) collage.cityoflondon.gov.uk/

#### Search by:

- Keyword
- Artists,Engravers &Publishers
- People
- Places
- (refine by date, medium, picture type)

#### Thematic browsing:

- Abstract ideas
- Archaeology & architecture
- History
- Leisure
- Military & War
- Natural World
- Politics
- Religion & Belief
- Society
- Trade & Industry



Old screenshot of Collage homepage

#### Currently Viewing: pre-raphaelite related



The Eve of St. Agnes



The Music Lesson



The Blessed Damoze1



La Ghirlandata



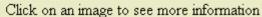
Pomegranates



The Wine Shop



The Eve of St Agnes





Multiple ways of browsing and searching for casual and specialised users

# COLLAGE

Currently Viewing: Rossetti, Dante Gabriel (1828-1882)

Record: 11122





© Corporation of London

Rossetti, Dante Artist Gabriel (1828-1882)

Medium oil on canvas

Pre-Raphaelite Picture type

related

Longest 124cms dimension.

Date of 1873 Execution

#### "La Ghirlandata";

shows a woman seated plucking at a harp, surrounded by plants with two angels peering through them.

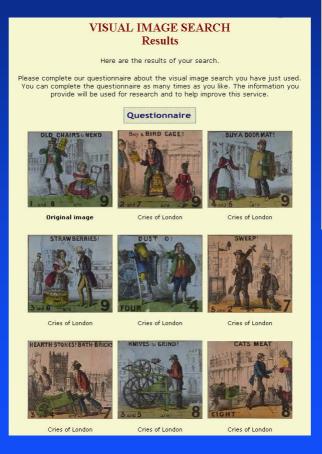
Acquired: Purchased / Source: David Croal Thomson / Received: 1927

### **COLLAGE – CBIR test**

Test site for content-based image retrieval software application and evaluation developed by the Institute for Image Data Research, University of Northumbria, UK

Retrieval based on colour, texture, and shape, located visually similar matches for a selected painting, print, drawing, or other object.

User evaluation with online questionnaire





Jones, T.H. (fl.1850)

Currently viewing 27479 Record: 27479

Click on the image to view full screen version.

OLD CHAIRS & MEND

Medium lithograph on paper

Picture type

Artist

Longest 10cms dimension

@ Corporation of London

Date of c1840

View of two chair menders, a

man stands with a chair on his

back, whilst a woman sits on the

pavement mending the seat of a

Execution

Description

#### Find more images like this:

Standard Visual Search Advanced Visual Search

Find out more about visual searching...

Add image to basket

New Search View basket

Record 1 of 1

#### Other links

street life dress furniture & fittings chair menders lithograph Main Print Collection paper Jones, T.H. (fl.1850) Jones, T.H. (fl.1850)

A Standard or Advanced Visual Search can be performed once an image has been selected through one of the traditional Collage searches.

The Results screen on the left

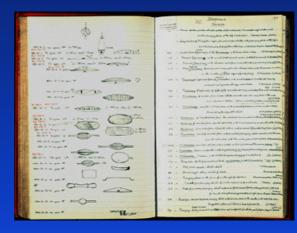
Ward, A. et al, 2001. 'Collage and Content-based Image Retrieval: Collaboration for Enhanced Services for the London Guildhall Library' Museums and the Web 2001 <a href="http://www.archimuse.com/mw2001/papers/ward/ward.html">http://www.archimuse.com/mw2001/papers/ward/ward.html</a>

## Pitt Rivers Museum, University of Oxford

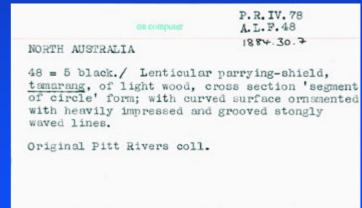


### Pitt Rivers Museum online catalogues

- Objects Catalogue & Historic Field Photographs Catalogue
- All original accession registers
- In some cases, terminology outdated or even offensive
- Information about some objects considered sacred or secret by local community
- Currently no images





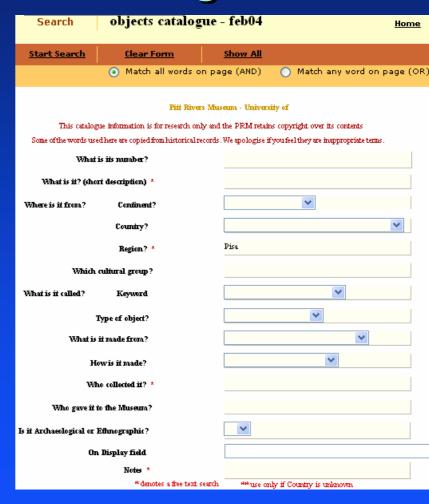


http://www.prm.ox.ac.uk/databases.html

#### Pitt Rivers Museum online catalogues

- Front-end to working collections databases
- Mainly an internal tool
- Usability and accessibility issues





## Pitt Rivers Museum online catalogues

Special character and history of PRM reflected in documentation and online catalogue (e.g. typological displays)



#### Type of object?



#### How is it made?



#### What is it made from?



#### **Tate Online**

http://www.tate.org.uk/

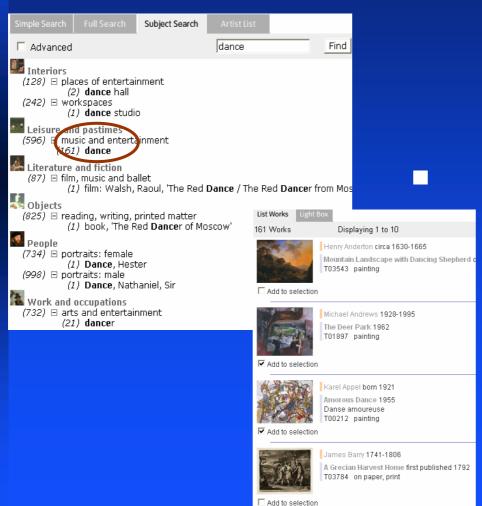
# All collections - 65,000 works of art online





#### **Tate Online**

#### Subject search





Light Box

#### **Tate Online**

## Different ways of exploring, searching

Simple Search	Full Search	Subject Search	Saved Search	Artist List		
(fill in as many or as few fields as you like)						
Artist Name:					<ul><li>All works</li><li>General collection</li></ul>	
Work Title:				C Turner		
Object Type:		Select-	•			
On Display:		Select-	•			
Accession No:					1	
	Us	e four digit years b	elow	Search	Reset	
Artist Birth Date:		To:				
Work Date:		To:				
	Subject:	Choose				

#### Collection ▶ Collection Highlights

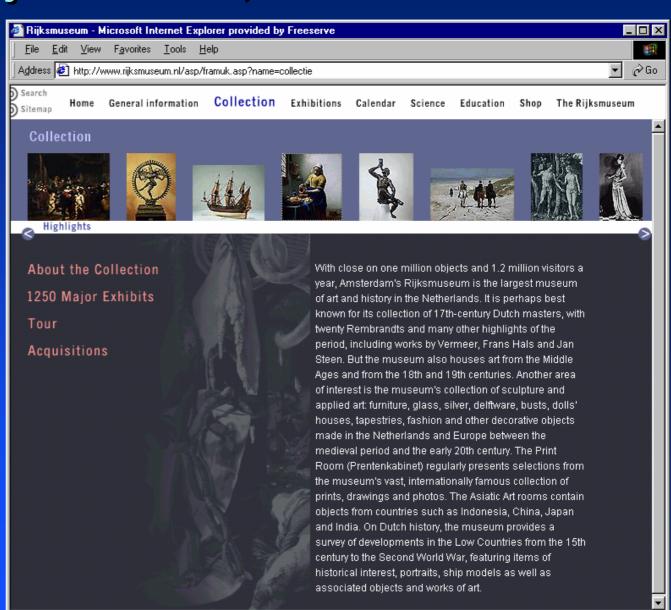
The selection of works featured below gives an introduction to the nature of Tate's collection. Over time, this section will be expanded to feature different views on the collection from both Tate and wider perspectives.



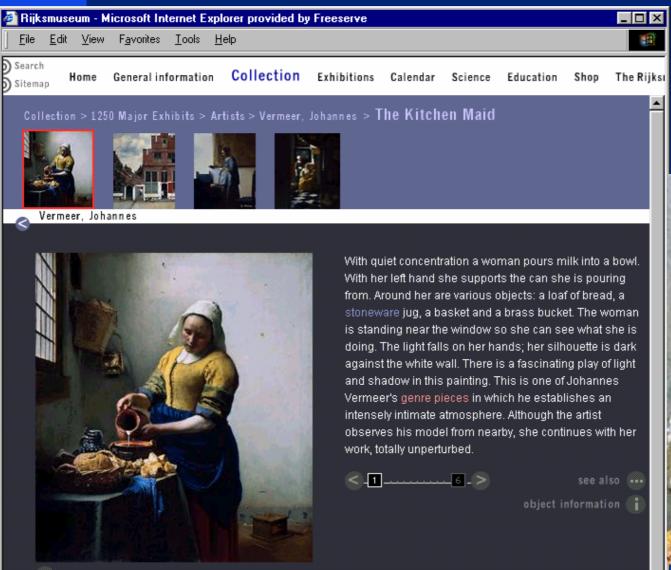
#### General Highlights

The Tate has almost 60,000 works in its collection, including British works from 1500 to the present day and twentieth century works by both British and International artists. This selection has been assembled by Tate curators to give you a flavour of the collection as well as showing off some of the key works.

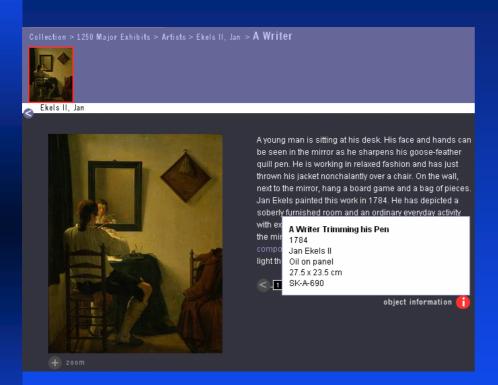
- Interface design
- Selection criteria of 1250 of 1 million objects?
- Access through artists' names, themes, encyclopaedic terms and systematic catalogue



Internet



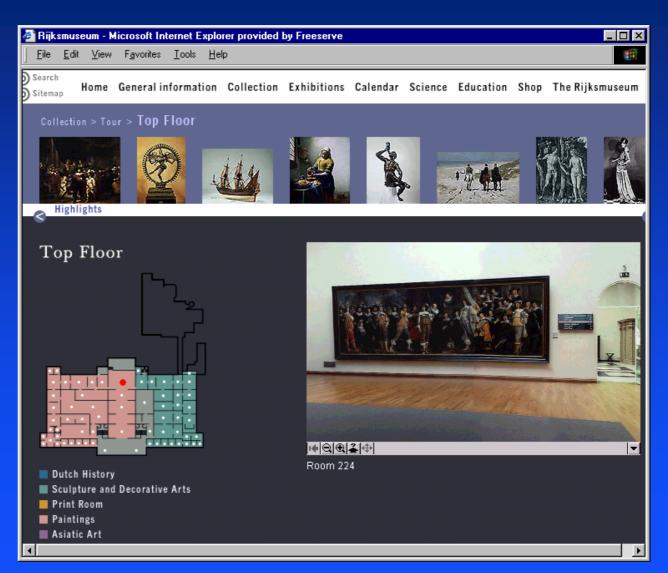




- Focus on story rather than traditional cataloguing information
- Multiple ways of linking information and works

	See also		
Artist	Jan Ekels II		
Catalog	Domestic interiors Figures (men) Interiors Man		
Encyclopedia	Classicism Composition Light source Mirror Occupations		
Theme	Everyday Life		

Virtual Tour (Quicktime)



# Museum Web tours & exhibitions: some technical tools

- VRML immersive environment, virtual reality on the web
- QTVR Apple's Quick Time VR tool

ability to reconstruct 3-D space (e.g. Egyptian tombs, Greek temples, museum displays, Mongolian tents)

# **Concluding thoughts**

- DLs and ICT can support changing role of museums
  - Moving from repositories to resource centres
  - For and with the community
- In order to do this:
  - Importance of professional good practice in creating and managing DLs (also keeping up to date & learning from others
     &
  - Working with users from early stages
    - Allowing multiple perspectives & layers of interpretation
  - For public access projects, using it as important as building it