Introduction to MiLE+ : a systematic method for usability evaluation

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In a nutshell...

- ↗ MiLE+ (Milano-Lugano Evaluation)

- ↗ Developed in cooperation between HOC-Lab (Politecnico di Milano) and TEC-Lab (University of Lugano).
- ↗ Strikes a healthy balance between heuristic based and task-based techniques.
- ↗ Offers reusable tools and procedures to carry out **inspection** within budget and time constraints.
- ↗ It is well integrated with user testing

- ↗ Key concepts:
- ↗ Application independent usability attributes
- ↗ Application dependent usability attributes

- ↗ Two types of Inspection activities:

  - ↗ **Technical Inspection**
    - ▪ **For discovering application-independent problems**

  - ↗ **User Experience Inspection**
    - ▪ **For discovering application-dependent problems**

Understanding Usability

↗ Application-independent usability aspects:
- ...understandability....
- ...navigation quality...
- ...content accuracy
- ...consistency
- ...application status communication
- ...graphic and layout quality
- ...interface order....
- ...compliance with standards and conventions...
- ......accessibility

↗ These features can be evaluated even without knowing the purpose and the user of the application

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Understanding Usability

↗ Application-dependent usability aspects:
- ↗ Users can achieve their goals
  - People find the information they need . . .
  - People are properly driven and guided to unexpected content . .
  - Content is relevant to specific user profiles (kids, local tourists, tourists from abroad, families, curious, ...) . . .
  - Content is enjoyable/entertaining for specific user profiles..
  - ...
- ↗ The application can be effectively used in a specific context (while driving, while at home, office, walking, visiting, ...)

↗ Understanding users, their goals and the contexts of use is essential to evaluate these features.

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Understanding Usability

↗ The effectiveness of application-independent aspects (font, layout, navigation, structure,...)

↗ The effectiveness of application-dependent aspects (meeting user profiles, context, needs and goals)

ARE BOTH A IS A NECESSARY CONDITION FOR USABILTY!!!

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Examples of
Application independent Usability Problems

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Content

Currency of Information

www.moma.org/events/film/

Text Conciseness

www.papesse.org/papesse/ita/programma/mostrescheda.cfm?id=127

Technology/Performance

Browser Compatibility

Explorer 6.0   Mozzilla Firefox 1.0

www.exploratorium.edu/listen/

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System Reaction to User's Error(s)

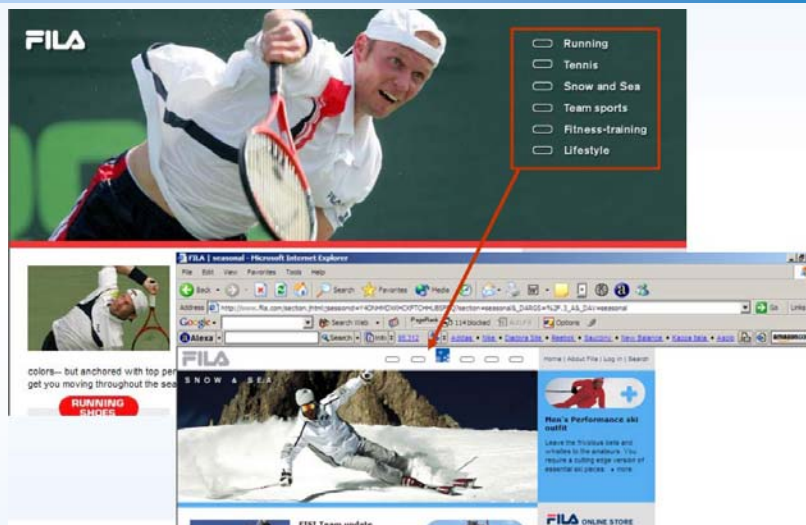Which is the error?

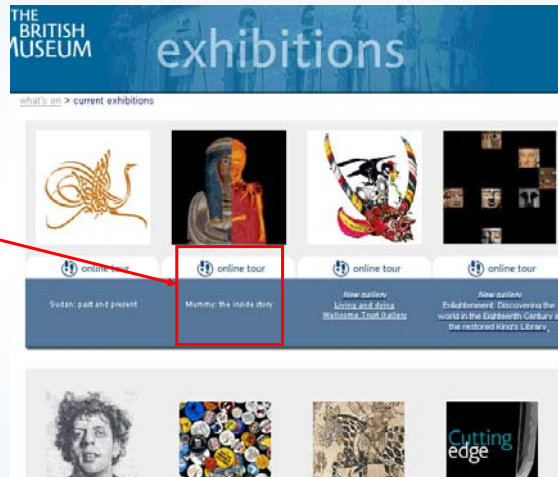http://shop.hermitagemuseum.org/index.html

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Semiotics

Understandability of the main menu

Ambiguity of labels

Two labels: two different websites

www.thebritishmuseum.ac.uk/whatson/exhibitions/index.html

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Cognitive

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Information Overload

www.metmuseum.org/Works_of_Art/collection.asp

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Web site Mental Map

Navigate within the British Museum Website for 5 minutes.

After 5 minutes are you able to formalize the web site map?

www.thebritishmuseum.ac.uk/

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Graphic Technical

Anchor identity & Use of a Link's Cromatic Code

MOCA THE MUSEUM OF CONTEMPORARY ART

| Selection | Payment | Confirmation |

Event Schedule | Shopping Cart | Customer Service | Cancel Order & Exit

November 2004 Event Schedule

Click on a month below to view events.	Event	Venue Name	Date & Time	
November - 2004	Museum Admission	MOCA California Plaza & MOCA Geffen Contemporary	Monday, 11/29/04	Tickets Available at Box Office
December - 2004				
January - 2005				

Which are links?

http://purchase.tickets.com/buy/TicketPurchase

Background Contrast & Font size

Are you able to read the different information on the screen?

www.moca.org/museum/visit_home.php

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Menu Font Size
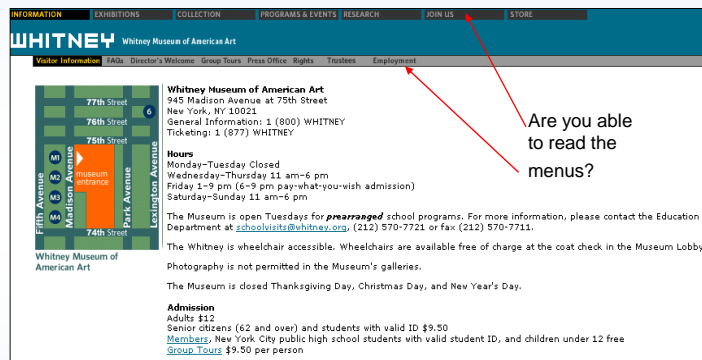
Are you able to read the menus?

www.whitney.org/information/index.shtml

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Navigational

Consistency within Sections' Navigation Strategy

www.metmuseum.org/visitor/index.asp

Links for accessing subsections

www.metmuseum.org/store/index.asp

These links are anchors in the same page.

Backward Navigation

www.guggenheimcollection.org/site/on_view_now.html
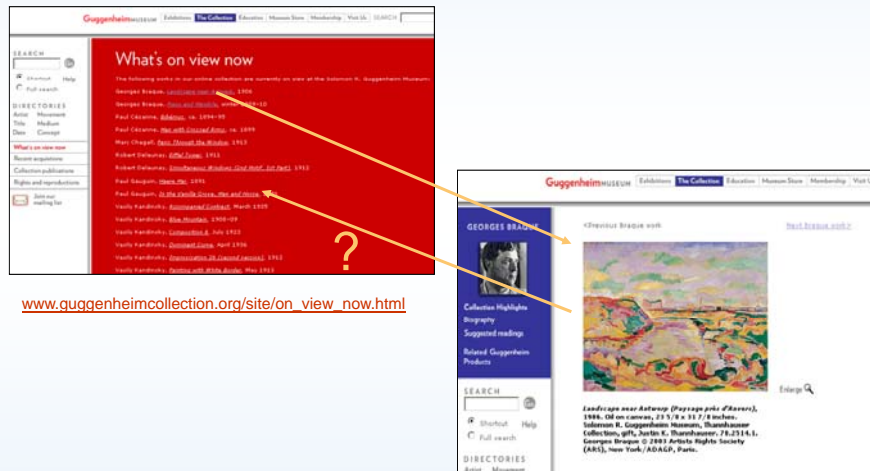
Semiotics: Understanding Link Labels

What happens when I click on the button "Tours"?

And on the button "Take a online tour?"

Which is the difference?
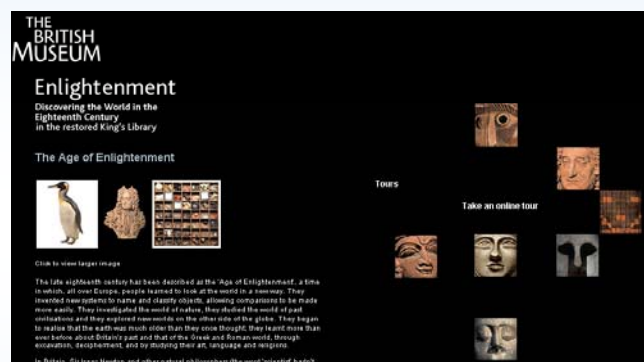
www.thebritishmuseum.ac.uk/enlightenment/theageof.html

PALAZZO DELLE PAPESSE CENTRO ARTE CONTEMPORANEA

How the navigation between objects works?

olafur eliasson
the uncertain museum

scroll both the squares to discover the work

www.papesse.org/papesse/minisiti/invisibile/index.htm

Application dependent Usability Problems

Multilinguisticity

I'm an American tourist.

It does not exist the English version of the current exhibition's description?

And the description of the collection?

www.men.ch/expositions.asp/1-3-583-99-21337-99-32-4-1/

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Satisfaction on provided information

I don't have found information in English about the collection and the current exhibition. However I'm very interested in the MEN Museum and I want to visit it. Therefore I need road markings for reaching the museum. But also this information is given only in French !!!

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Engagement

PALAZZO DELLE PAPESSE CENTRO ARTE CONTEMPORANEA

Once understand the interaction strategy of the website, this could be entertaining.
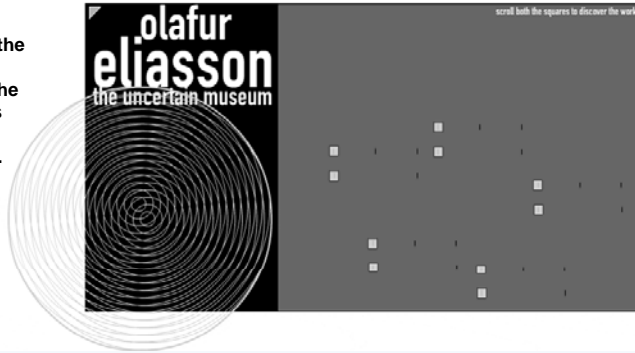
www.papesse.org/papesse/minisiti/invisibile/index.htm

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Memorability of online tours

When users return to the online tours of British Museum Websites after a period of not using it, they should be able to re-establish proficiency the past experiences of use?
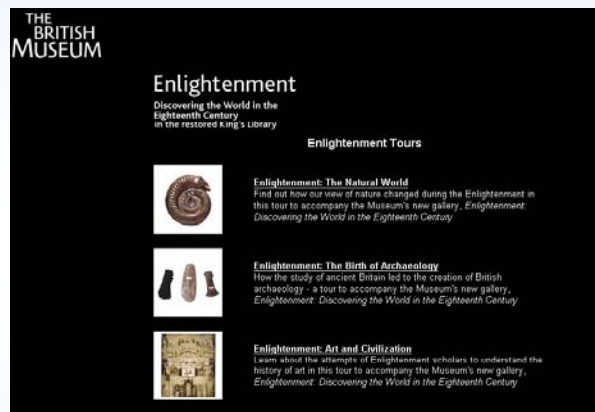
www.thebritishmuseum.ac.uk/enlightenment/en_tours.htm

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HOW TO PERFORM EVALUATION: TECHNICAL INSPECTION

↗ **Main goal:** to evaluate Application INDEPENDENT Usability, i.e., identification of design problems and implementation breakdowns.

↗ The inspector evaluates the application from the design dimensions' perspective

  ↗ **Content**

  ↗ **Navigation**

  ↗ **Technology**

  ↗ **Interface Design**
    ▪ **Semiotics**
    ▪ **Cognitive**
    ▪ **Graphics**

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MILE+ Technical Inspection

↗ For each design dimension MiLE provide a **library of "technical" heuristics** organized in various dimensions:
  ↗ **Content**
  ↗ **Navigation**
  ↗ **Technology/Performance**
  ↗ **Interface Design**
    ▪ **Semiotics**
    ▪ **Graphics**
    ▪ **Cognitive**

↗ For each tech heuristic MILE+ provides:

  ↗ Its definition

  ↗ Suggested (inter)actions on the web site to perform in order to measure it

↗ (see pdf in WB)

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How to carry on Technical Inspection: simple applications ("few" pages)

↗ Explore the application page by page

↗ For each page:
  ↗ For each **heuristic which may be relevant for the current page** perform the suggested ACTIONS and
    ▪ give a score to the heuristics (choose a metric previously agreed among all evaluators)
    ▪ Record the page where problems are detected, and the reason why you gave a given score

↗ Organize the results
  ↗ By design dimension
  ↗ By heuristics
  ↗ By page
  ↗ ....

↗ Provide aggregated numerical data (and their proper visualization) along various perspectives

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How to carry on Technical Inspection: complex applications (many pages)

If the application is wide and complex, and cannot be inspected exaustively, use **SCENARIOS** to choose where to focus inspection

FOR EACH SCENARIO:

• Perform the tasks; for each task, work on the pages you are traversing as indicated in the previous slide

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HOW TO PERFORM EVALUATION: UX INSPECTION

↗ How to evaluate Application DEPENDENT Usability
Problems?

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USER EXPERIENCE INSPECTION:

CONCEPTUAL TOOLS:

SCENARIOS

+

USER EXPERIENCE INDICATORS (UEIs)

UEIs: Fine-grained heuristics that cannot
be evaluated without knowing user
profiles and goals – i.e. their measure
depends upon some scenarios

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UEIs

↗ Three categories of UEIs (corresponding to the different types of user interaction experiences)

- **Content Experience Indicators** (ex. Multilinguisticity)

- **Navigation & Cognitive Experience Indicators** (ex: Predictability)

- **Interaction Flow Experience Indicators** (ex. Naturalness)

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The role of scenarios

| User/Customer Experience | End-user | → | Want to do something in a given context | → | Through a series of acts |

| Scenario | Users profile | → | Goal/Context | → | Tasks |
SCENARIO

UX INDICATORS

Exectute the scenario di evaluate …

USABILITY KIT (U-KIT)

Evaluation activity

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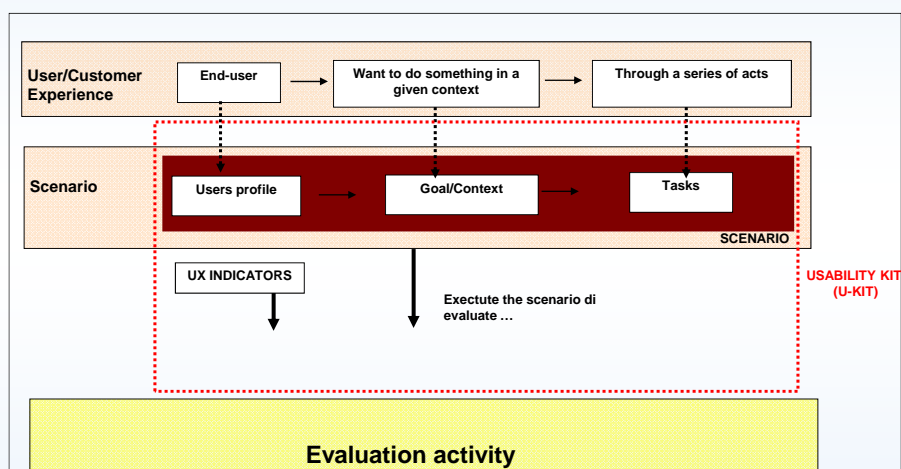
20

How to build scenarios / 1

↗ **Identify the user profiles (or user types): Who will use the application?**

User Type		
	User profiles	
Learner	Responsible	
	Accepter	
	Seller	
Instructor	Tutor (1..n)	
	Administrator	
	Responsible	

↗ **Identify their high-level (or macro) goals: Why will they use the application?**

Macroscenario A	
User profile	**Seller**
Macrogoal	**Plan the learning experience**

User type (or profile) + macro-goal = MACRO-SCENARIO

How to build scenarios / 2

↗ **Refine the Macro-scenario goals into finer-grained goals**

Macroscenario A	Plan the learning experience
Scenario 1	Plan the study
Scenario 2	Know course conditions
Scenario 3	Know the learning level achieved

↗ **Refine Scenarios into user tasks**

Macroscenario A	Plan the learning experience	
Scenario 1	Goal	Tasks
	Plan the study	– Know the time required to frequent a course – Find the ideal period to frequent a classroom session – Know the time needed to download a document
Scenario 2	Know course conditions	– See course goals – See the course structure – See how to communicate with tutors and peers

Choose the scenario granularity most appropriate to your project.

Examples of scenarios

SCENARIO	Well-educated American tourist who knows he will be in town, he wants visit the real museum on December 6th 2004 and therefore he/she would like to know what special exhibitions or activities of any kind (lectures, guided tours, concerts) will take place in that day.
USER PROFILE	Tourist
GOAL	Visit the M useum in a specific day
TASKS	• Find the events/exhibitions/lectures occurring on December 6th in the real museum • Find information about the museum's location

SCENARIO	Marc looking for some information about Enlightenment period studying at school.
USER PROFILE	Marc, High-school student
GOAL	To be informed on a specific historical period (e.g. Enlightenment)
TASKS	• Find general information about this period; • Find detailed information about social and religious impact of Enlightenment period.

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How to carry on UX evaluation

FOR EACH SCENARIO:

- Perform the tasks; for each task

- Evaluate the task through User Experience Indicators (UEIs)
  - For each attribute which may be relevant for the task, give a score.

- (Weight the results according to the priority of user profiles and goals)

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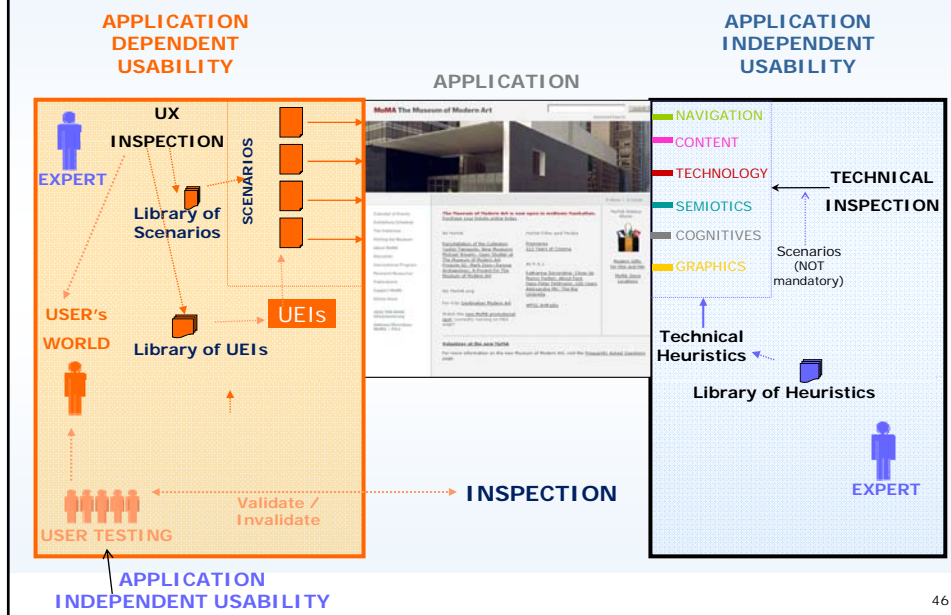# Example of evaluation (excerpts from the analysis of the Louvre web site)

SCENARIO	
USER PROFILE	Art-lover
TASK	Find information about the history of museum collection
SCENARIO DESCRIPTION	Joe is an art-lover. He would like to find some information about the history of a particular collection of the museum (e.g. paintings). He wants to know how the museum has acquired some works of art.

Example of User Experience Matrix

	UEIs				
Task: Find information about the history of museum collection	Predictability	Understandability	Richness	Comprehensibility	Global Score for this Task
Scores	8	8	5	6	6.75 (just average score)
Weights	0.1	0.1	0.5	0.3	
Weighted Scores	0.8	0.8	2.5	1.8	

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MILE+ activities: mutual relationships and relationship to User Testing

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