



# A Framework for Organizing Web Usability Guidelines

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# Aims and goals

- ◆ Aims of the EvalWeb project
  - To provide designers with assistance on designing web pages
  - To guide designers in evaluating design choices
  - To support designers in documenting design choices for tracability
  - To be aimed at people who are not necessarily very familiar with usability

# Goals of this particular work

- ◆ Assumption: to rely on guidelines
  - Guideline = consolidated statement containing design wisdom or recommendations with supporting evidence
  - Can propagate some knowledge of web usability in the design and development
  - Can be used for both formative input and summative evaluation

# Goals of this particular work

- ◆ However, guidelines are rarely used:
  - Incompleteness
  - Context-independence
  - Hard interpretation
  - Lack of experimental studies
  - Conflicting issues
  - Hard integration in design process

# Goals of this particular work

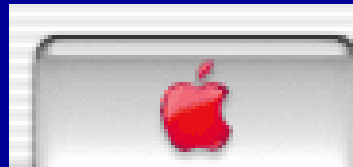
- ◆ Main goal is
  - To develop a framework
  - For organizing web usability guidelines
  - That address these shortcomings
  - That facilitates the structuring and the use of guidelines for
    - Design
    - Evaluation

# Method for building the framework

- ◆ Step 1: Guidelines collection
  - 1.1 Web guidelines collection
  - 1.2 Addition of GUI guidelines
- ◆ Step 2: Guidelines organization
  - 2.1 Classifying guideline by ergonomic criteria
  - 2.2 Further classifying guideline
- ◆ Step 3: Incorporation of guidelines into approach

# Step 1: Guidelines collection

## ◆ 1.1 Web guidelines collection



Apple Web Design Guide



Ameritech Web Page User Int. Standards and guidelines



Yale Web Style Guide

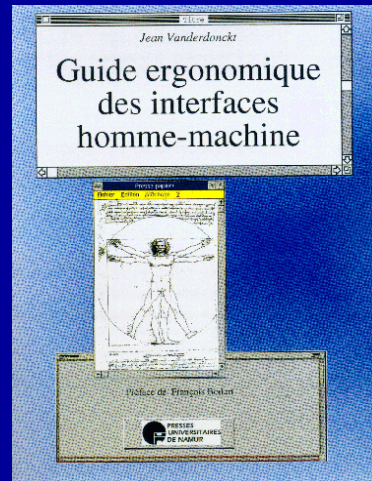
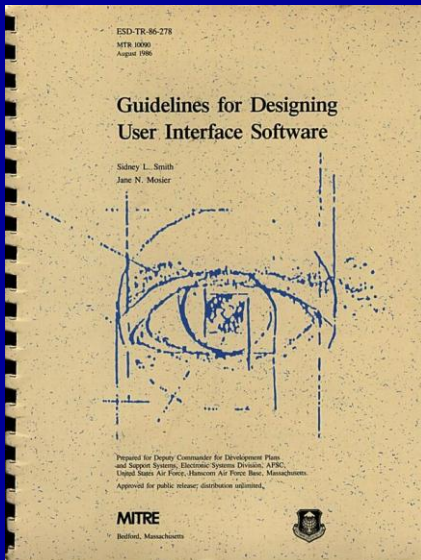
SUN Guide to Web Style



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# Step 1: Guidelines collection

## ◆ 1.2 Addition of GUI guidelines



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# Step 2: Guidelines organization

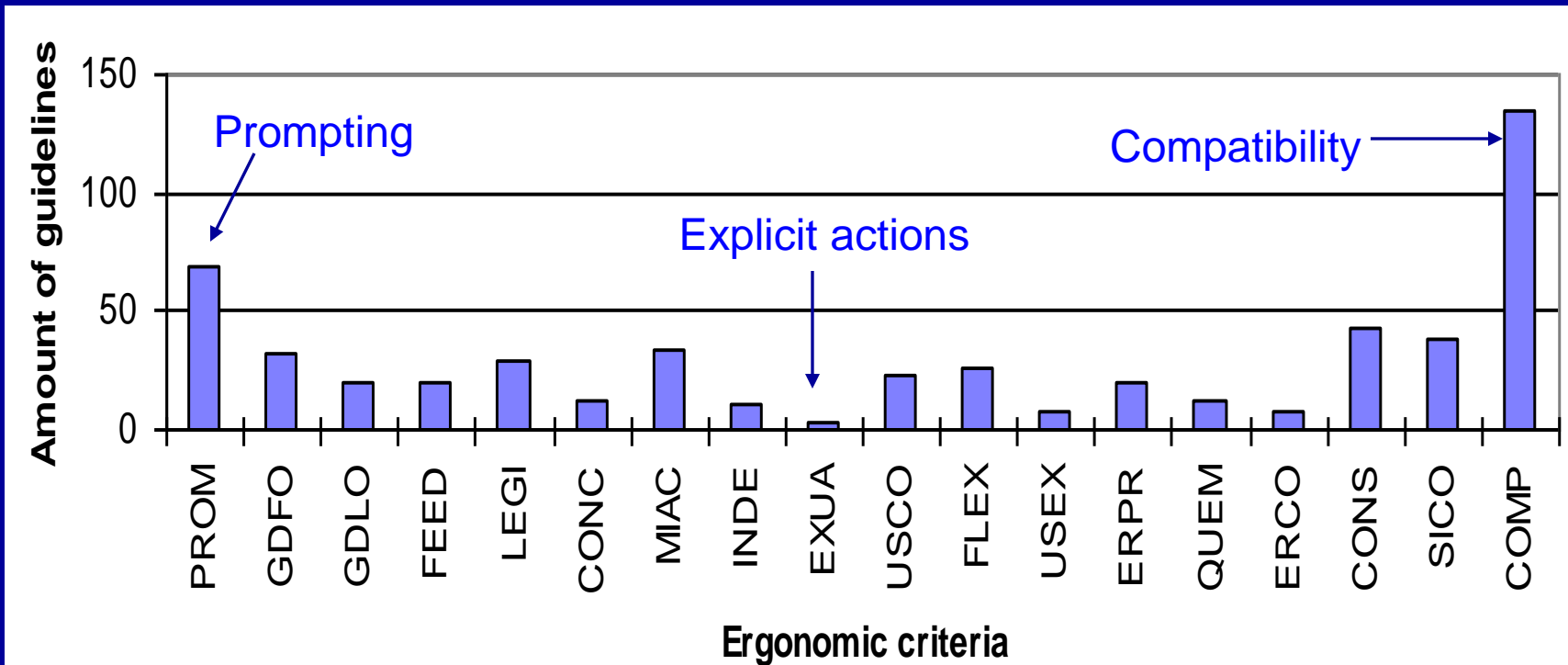
- ◆ 2.1 Classifying guideline by ergonomic criteria
  - Initial set is huge, has varying credibility, expressions, poor structure
  - Ergonomic criteria = a usability factor recognized in HCI has having usability impact that is experimentally assessed

# Ergonomic criteria

- ◆ 1. Guidance
- ◆ 2. Work load
- ◆ 3. Explicit control
- ◆ 4. Adaptability
- ◆ 5. Error management
- ◆ 6. Homogeneousness / Consistency
- ◆ 7. Significance of codes
- ◆ 8. Compatibility

# Guidelines by Ergonomic Criteria

## ◆ Distribution of guidelines by elementary c.



# Step 2: Guidelines organization

- ◆ 2.2 Further classifying guidelines
  - Resulting set is still huge
  - Alternate index keys: actions, alignment,...
  - Method/technique with examples
  - Tool support
    - Full automatic
    - Semi-automatic
    - Questions-based
    - Delegated
    - Manual
  - Importance

# Step 2: Guidelines organization

## ◆ 2.2 Further classifying guidelines

**Guideline:** In order to support different levels of user skills, direct manipulation dialogues should be designed to minimize the need for users to alternate between different input devices.

**Example:** To fill in a form a user points and selects every field with the mouse and then enters text with the keyboard. As the experience grows the user moves the cursor from field to field with the tab key before entering text. Thereby the need for the user to alternate between input devices is minimized and efficiency is increased.

**Source:** Ergonomic requirements for office work with visual terminals (VDTs) - Part 16: Direct-manipulation dialogues, ISO/DIS 9241-16.

**Guideline Number:** (5.4.3)

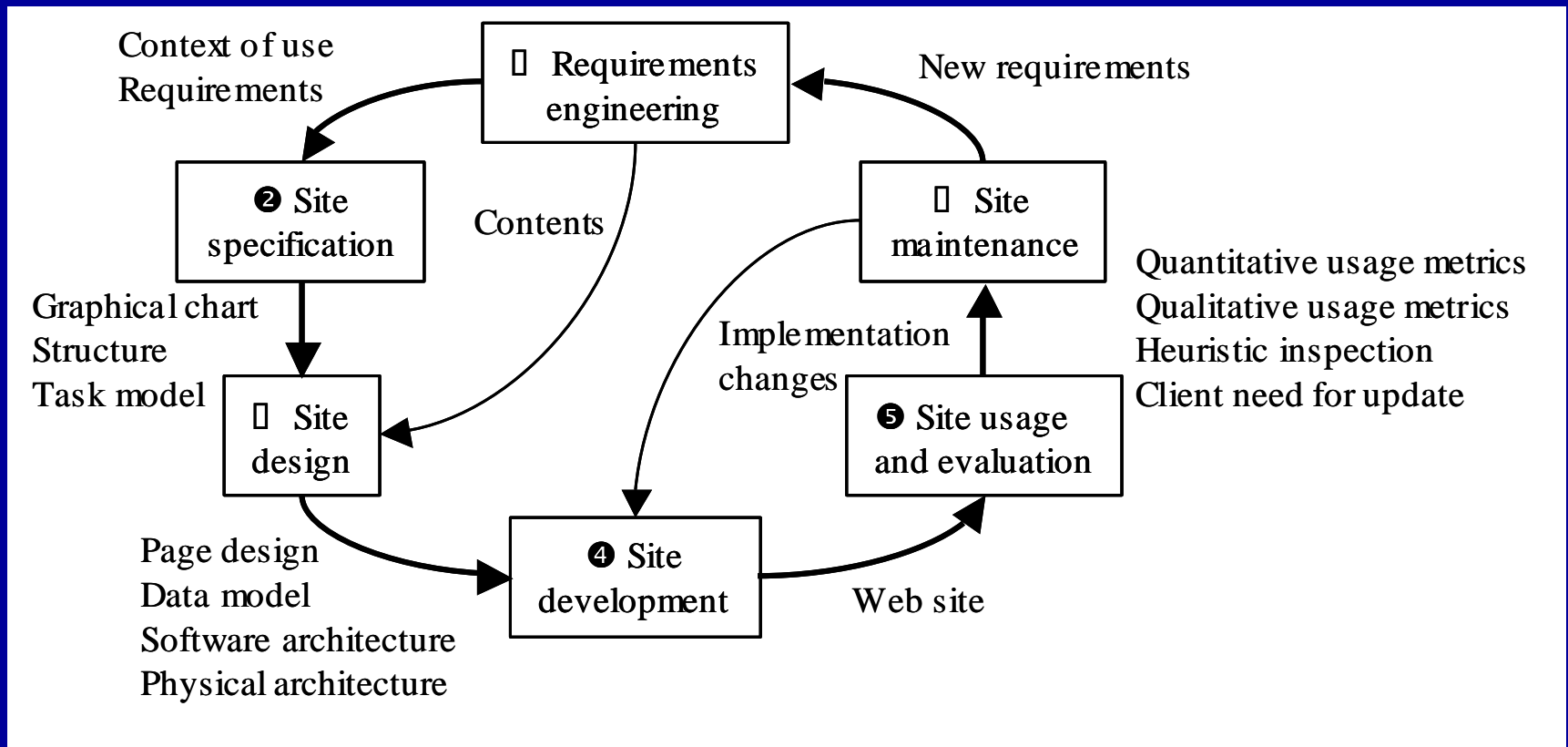
**Ergonomic criteria:** Users' experience

**Index Key:** Dialogue

**Evaluation method:** user observation (Level of automation: manual)

**Score:** rather important

# Step 3: Incorporation of guidelines into approach



Design process = series of design operations

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# Applying the framework: Example #1

## ◆ Guidelines

- Each personal home page should contain the company logo at the top left corner.
- Each personal home page should contain the photo of the person after the logo.

## ◆ Expression according to the framework

2.1.2.5. Specification C.E.-Guidance

2.1.2.5.1.3.2.4 Picture: picture=company logo

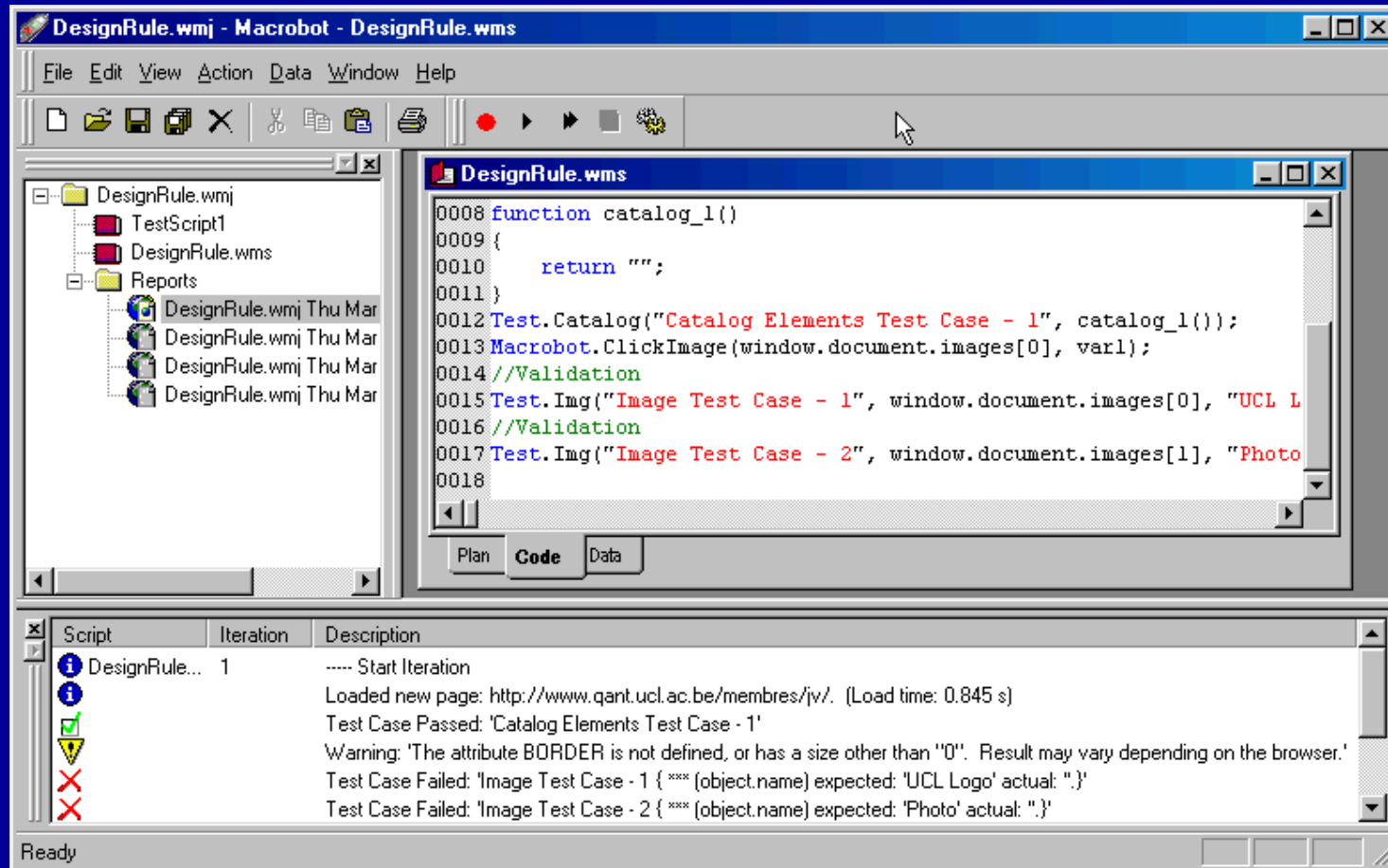
2.1.2.5.2 Specification C.E.-Grouping/distinction

2.1.2.5.2.1 Spec. C.E.-By location: location=left corner

Design action

Design question

# Applying the framework: Example#1





# Applying the framework: Example #2

## ◆ Guideline

- Select colors that will make your page easy to read by people with color blindness

## ◆ Expression according to the framework

1. Requirements engineering

1.2 Users

1.2.1.5 Handicaps: impairment = color blindness

2. Site specification

2.1.1. Spec. C.E.-Compatibility

2.1.1.2.6 Accessibility: user limitation = lack of color differentiation

2.1.2.2.8 Colors: colors = readable by users

5. Site evaluation

5.1.3.4 Color scheme = readable by users; legible in black & white

Data collection action

Design choices

Conformance verification

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# Applying the framework: Example #2

## ◆ Keep the good color combinations

### Background

	White
	Black
	Red
	Green
	Blue
	Cyan
	Magenta
	Yellow

### Thin lines and text

Blue (94%)	Black (63%)	Red (25%)
White (75%)	Yellow (63%)	
Yellow (75%)	White (56%)	Black (44%)
Black (100%)	Blue (56%)	Red (25%)
White (75%)	Yellow (63%)	Cyan (25%)
Blue (69%)	Black (56%)	Red (37%)
Black (63%)	White (56%)	Blue (44%)
Red (63%)	Blue (63%)	Black (56%)

# Applying the framework: Example #2

## ◆ Keep the good color combinations

### Background

	White
	Black
	Red
	Green
	Blue
	Cyan
	Magenta
	Yellow

### Bold lines and panels

<b>Black (69%) Blue (63%) Red (31%)</b>
<b>Yellow (69%) White (50%) Green (25%)</b>
<b>Black (50%) Yellow (44%) White (44%)</b>
<b>Black (69%) Red (63%) Blue (31%)</b>
<b>Yellow (38%) Magenta (31%) Black (31%)</b>
<b>Red (56%) Blue (50%) Black (44%)</b>
<b>Blue (50%) Black (44%) Yellow (25%)</b>
<b>Red (75%) Blue (63%) Black (50%)</b>

# Applying the framework: Example #2

## ◆ Avoid the bad color combinations

### Background

	White
	Black
	Red
	Green
	Blue
	Cyan
	Magenta
	Yellow

### Thin lines and text

Yellow (100%) Cyan (94%)
Blue (87%) Red (37%) Magenta (25%)
Magenta (81%) Blue (44%) Green (25%)
Cyan (81%) Magenta (50%) Yellow (37%)
Green (62%) Red (37%) Black (37%)
Green (81%) Yellow (75%) White (31%)
Green (75%) Red (56%) Cyan (44%)
White (81%) Cyan (81%)

# Applying the framework: Example #2

## ◆ Avoid the bad color combinations

### Background

	White
	Black
	Red
	Green
	Blue
	Cyan
	Magenta
	Yellow

### Bold lines and panels

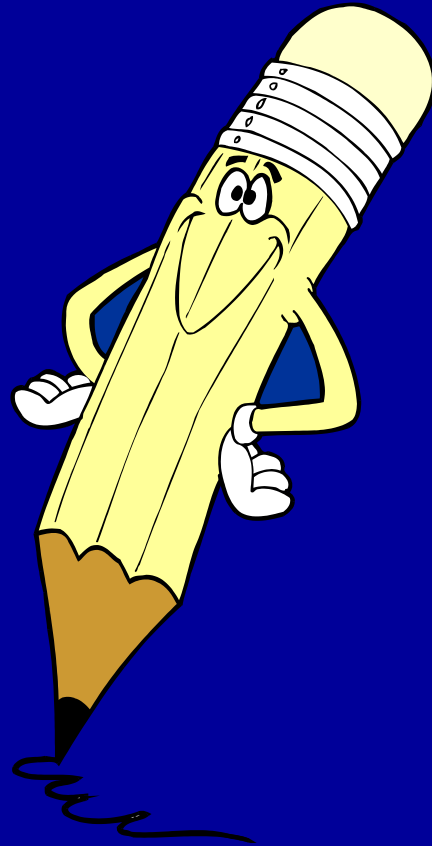
<b>Yellow (95%) Cyan (75%)</b>
<b>Blue (81%) Magenta (31%)</b>
<b>Magenta (69%) Blue (50%) Green (37%)</b>
<b>Cyan (81%) Magenta (44%) Yellow (44%)</b>
<b>Green (44%) Red (31%) Black (31%)</b>
<b>Yellow (69%) Green (62%) White (56%)</b>
<b>Cyan (81%) Green (69%) Red (44%)</b>
<b>White (81%) Cyan (56%) Green (25%)</b>

# Conclusion

- ◆ 400 Web usability guidelines organized
- ◆ Design operations
  - Design questions
  - Design actions
    - Design choices
    - Data collection actions
    - Conformance verification
- ◆ Design operations are triggered by
  - Design questions
  - Usability guidelines



# Thank you for your attention !



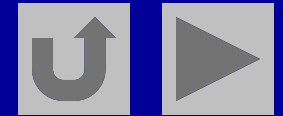
## Questions?

# Future work

- ◆ At least 3 directions
  - Guidelines: GDL language
  - Incorporation into approach: life cycle
  - Heuristic evaluation
  - Supporting tools

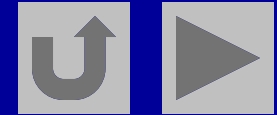


# Envisioned tools



- ◆ EvalWeb = Design/evaluation assistant
- ◆ MetroWeb = Tool for automated evaluation of usability guidelines

# EvalWeb



Guideline

Examples

Comments

Ergonomic criteria

Step

Design operations

recom Iso 9241	
Recommandation	<p>1) Long information items should be partitioned into groups with a specified number of characters which are consistently used for entry and display.</p> <p>2) A space should be used as a separator, unless this conflicts with existing conventions or user expectations. Numbers and letters should not be mixed in one group unless there is a convention for this.</p>
Example	<p>Example 1 : A 10-digit telephone number is represented as 10 00 33 45 35 or 100 033 4535.</p> <p>Example 2 : A 6-digit bank code is represented as 339 456</p>
Note	
Critère	<p>Compatibilité</p> <p>Sous Classe 1 Users characteristics</p> <p>Clé Index Items organization</p> <p>Sous classe 2 conventions d'écriture</p> <p>Groupement</p>
Phase	<p>Conception</p>
Test Conception	<p>Identifier les caractéristiques des utilisateurs concernant les conventions d'écriture.</p>
Test Evaluation	<p>Vérifier que les longs items d'information sont présenté de manière compatible avec les conventions d'écriture des utilisateurs.</p>
Source	<p>Ergonomic requirements for office work with visual terminals (VDTs) - Part 12</p>
NDI	<p>(5.10.2)</p> <p>Modification (DBLE : CONC)</p>

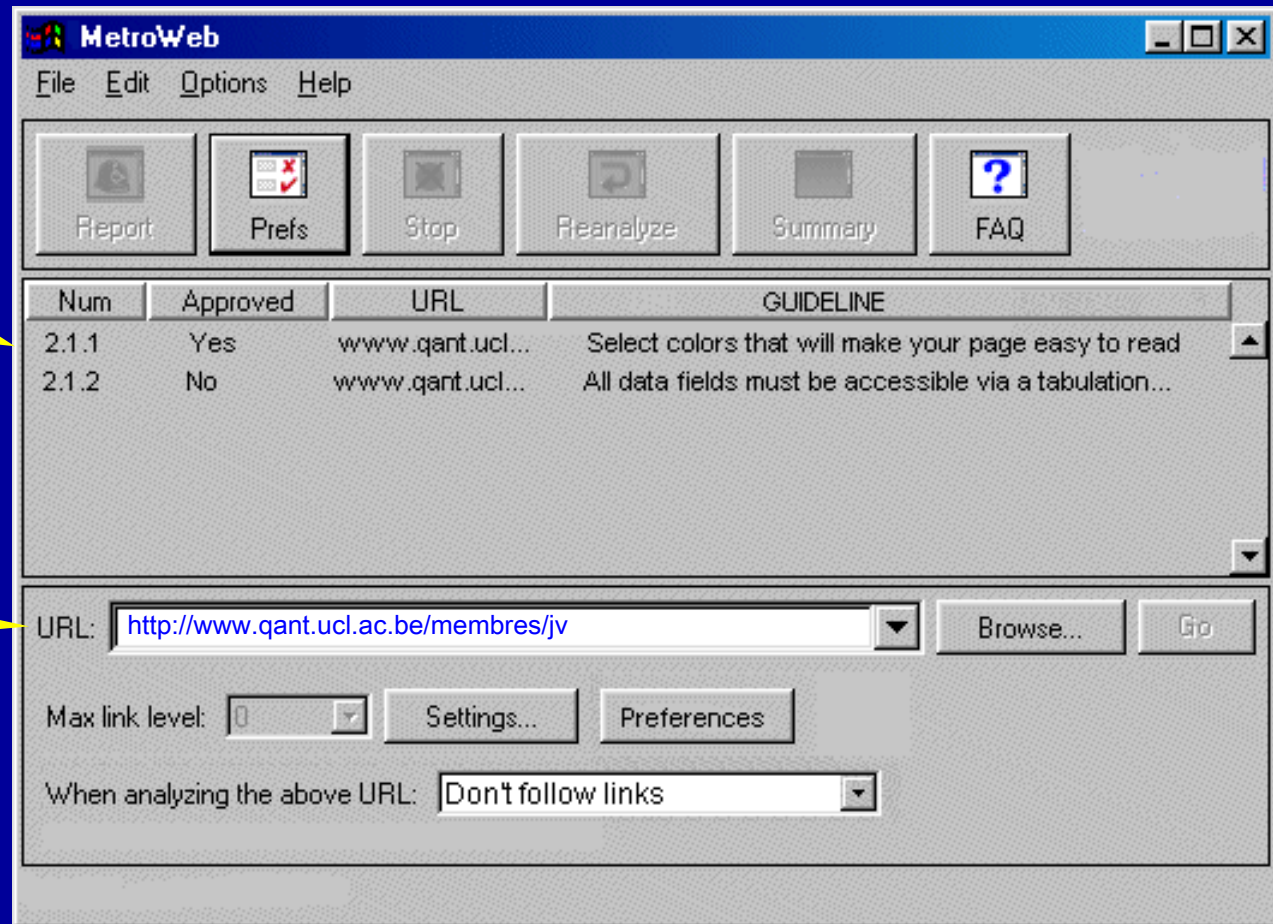
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# MetroWeb



Guideline evaluation

Starting URL



The screenshot shows the MetroWeb application window with a menu bar (File, Edit, Options, Help) and a toolbar with buttons for Report, Prefs, Stop, Reanalyze, Summary, and FAQ. Below the toolbar is a table with columns for Num, Approved, URL, and GUIDELINE. The table contains two rows of data. At the bottom, there is a URL input field with the text 'http://www.qant.ucl.ac.be/membres/jv', a 'Browse...' button, and a 'Go' button. Below the URL field are controls for 'Max link level' (set to 0), 'Settings...', 'Preferences', and a dropdown menu for 'When analyzing the above URL' (set to 'Don't follow links').

Num	Approved	URL	GUIDELINE
2.1.1	Yes	www.qant.ucl...	Select colors that will make your page easy to read
2.1.2	No	www.qant.ucl...	All data fields must be accessible via a tabulation...

URL:

Max link level:

When analyzing the above URL:

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# Example #3

## ◆ Guideline

- All data fields must be accessible via a tabulation key in the same order. If fields are grouped together, then tab must access the fields within the group

1. Requirements engineering
  - 1.1.1.2 Task order/sequencing: task order = domain objects sequence
2. Site specification
  - 2.1.1 Spec. C.E.-Compatibility
    - 2.1.1.1.1.2 Task.order/sequencing: fields order = task order

Data collection action

Design question

