

A Usability Study of a New Graphical Shopping Interface through GlobalPark

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Insights Into Methods and their Application in Practice

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Outline

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Outline of the Presentation

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Introduction

Traditional Online Shopping

- ▶ Most online stores are based on a list-based representation of products.
- ▶ Navigation based on Searching and/or Category selection

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Example

The screenshot shows the bol.com website interface. At the top, there is a navigation bar with categories like BOEKEN, MUZIEK, DVD, GAMES, and ELEKTRONICA. A search bar contains the text 'Alle elektronica'. Below the navigation, a banner reads 'Wat zijn de beste artikelen van de afgelopen 10 jaar?'. The main content area is titled '281 artikelen in Mp3-spelers' and features several filters on the left: 'Verfijn op categorieën', 'Verfijn op merk', 'Verfijn op prijs', 'Verfijn op opslagcapaciteit', and 'Verfijn op opties'. The main product display includes a 'Gratis verzending' banner for iPod nano, a 'Licht en draagbaar!' section for Creative Labs Muvo T100 2 GB - Zwart, and a 'Voordelige 4GB mediaspeler inclusief FM-Radiot' section for Canyon MPV2A 4 GB. On the right, a 'BOL.COM TOP 5' list shows top-selling products like Unicharger USB Travel Charger and Sony NWZ-E434 4 GB - Zwart.

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Disadvantages

- ▶ Similarities and differences between products are hard to find.
- ▶ A lot of scrolling is needed.
- ▶ Strict constraints.

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Research Idea

- ▶ Why not use 2D Maps to visualize a product catalog?
- ▶ Similarity between product is immediately clear, since similar products are close to each other in the map.
- ▶ Using product images we can visualize a lot of products in a single screen.
- ▶ By implementing a recommendation engine, strict constraints do not need to be specified.

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Research Questions

- ▶ How can we implement a map-based shopping interface with a recommendation engine?
- ▶ Does such an interface improve user satisfaction over a traditional interface?

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Graphical Shopping Interface

Graphical Shopping Interface (GSI)

creative zen micro (6 gb, pink)

Brand:	creative
Type:	mp3 player
Memory Size (MB):	6.144
Memory Type:	hard disc
Screen Size (Inch):	
Screen Colors (bits):	1
Weight (grams):	108
Radio:	yes
Radio Presets:	32
Audio Format:	mp3
Interface:	usb 2.0
Battery Life (Hours):	12
Power Supply:	lithium ion
Signal-to-Noise ratio (dB):	98,0
Equalizer Presets:	8
Height (cm):	8,4
Width (cm):	5,1
Depth (cm):	1,9
Remote Control:	no
Color:	pink
Headphone:	earphone
Screen Resolution (pixels):	16.640

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Graphical Shopping Interface

Maps of GSI

- ▶ Maps of GSI are based on similarity between products.
- ▶ Similarity between products is based on their characteristics.
- ▶ In general, products located close to each other in the map are similar, while dissimilar products are far apart.
- ▶ Maps are created using Multidimensional Scaling.

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Graphical Shopping Interface

Recommendations of GSI by Recommendation by Proposing Principle:

- ▶ After selecting a product in the map, products more similar to this product are recommended in a new map.
- ▶ This is an iterative procedure in which products become more similar to the selected product.

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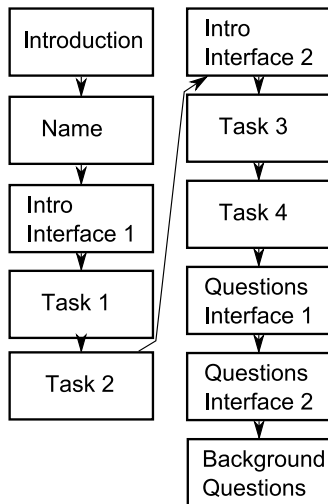
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Usability Study

Survey



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Usability Study

Setup of Survey

- ▶ To avoid order effects randomization plays a key role in the survey design.
- ▶ Order in which the two interfaces are used is randomized.
- ▶ This also holds for the questions about both interfaces.
- ▶ Also, the four tasks should be randomly assigned to both interfaces.

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Assigning Tasks to Interfaces

- ▶ Ordinary random assignment does not work for the assignment of tasks.
- ▶ This would lead to possible double assignment of a task to both interfaces.
- ▶ We use triggers and filters to avoid this.

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Triggers and Filters

- ▶ For both interfaces we created a random object in which the four tasks were nested, which chooses two of them.
- ▶ Note that the order of both interfaces is also random
- ▶ Each task has a corresponding variable.
- ▶ For each task we create a filter that tests whether this variable is not 1 (not earlier used).
- ▶ Also we create a formula trigger for each task setting the variable to 1 when this task has been used.

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Integrating an external Java applet in GlobalPark

- ▶ The interfaces are Java applets integrated in the GlobalPark survey via the `<iframe>` HTML-tag.
- ▶ Since the interface itself also collects data, both data collection processes should be linked.
- ▶ Linking done by a name that the respondent should fill in and is passed to the applet via an URL parameter.

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Demo Survey



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In this experiment, we would like you to use two different user interfaces made for an online shop for MP3 players. For both interfaces, you will be asked to perform two tasks in which you have to search for an MP3 player. After these tasks, we will ask you some questions about the interface and some background information about yourself.

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Main Results

- ▶ No statistical significant difference in satisfaction about chosen products between interfaces.
- ▶ Respondents needed more time, when using the GSI.
- ▶ Main drawback of the GSI is its complexity.
- ▶ Although the GSI has some promising aspects, it is too complex in its current implementation.

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Follow-Up Research

- ▶ We have developed another shopping interface only based on a single Product Catalog Map.
- ▶ Users can navigate over this map using scrolling and zooming.
- ▶ Although we think this interface will be liked more by users, we still have to perform a usability study to evaluate this.

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- ▶ It is feasible to implement such a usability study in GlobalPark.
- ▶ Random ordering (as implemented) is complex. Is there a more simple solution?
- ▶ It would be ideal when there is a complete integration of Java Applets and GlobalPark.
- ▶ Survey and analysis part of GlobalPark is excellent.

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References

- ▶ The GSI research has been published in the following paper:
M. Kagie, M. van Wezel, and P.J.F. Groenen (2008). A graphical shopping interface based on product attributes. *Decision Support Systems*, 46(1): 265–276

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



Usability Study

Traditional Interface


Attributes

- Brand
- Type
- Memory Size (MB)
- Memory Type
- Screen Size (inch)
- Screen Colors (bits)
- Weight (grams)
- Radio
- Radio Presets
- Audio Format
- Interface
- Battery Life (hours)
- Power Supply
- Signal-to-Noise Ratio
- Equalizer Presets
- Height (cm)
- Width (cm)
- Depth (cm)
- Remote Control
- Color
- Headphone
- Screen Resolution (pixels)

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	creative zen microphoto (8 gb, black) mp3 player hard disc 8.3x5.1x1.7
	proline mb 900 256 mb mp3 player integrated 4.8x4.8x1.8
	creative zen micro (6 gb, green) mp3 player hard disc 8.4x5.1x1.9
	sweex black sea 256 mb usb key integrated 2.3x9.5x3.1
	apple ipod (20 gb, 4th generation) mp3 player hard disc 10.4x6.1x1.6
	commodore mpet ii 1 gb mp3 player integrated 3.9x9.8x2.4
	cowon iaudio f1 1 gb mp3 player integrated 1.8x7.6x3.5
	grundig mpixx vp 6200 30 gb

Buy



creative zen microphoto (8 gb, black)
Brand: creative
Type: mp3 player
Memory Size (MB): 8.192
Memory Type: hard disc
Screen Size (inch): 1.5
Screen Colors (bits): 18
Weight (grams): 115
Radio: yes
Radio Presets: 32
Audio Format: mp3
Interface: usb 2.0
Battery Life (Hours): 15
Power Supply: lithium ion
Signal-to-Noise ratio (dB): 96.0
Equalizer Presets: 8
Height (cm): 8.3
Width (cm): 5.1
Depth (cm): 1.7
Remote Control: no
Color: black
Headphone: earphone
Screen Resolution (pixels): □

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Usability Study

Four Tasks: Task 1

- ▶ You are going to buy an MP3-player for your cousin who celebrates his 14th birthday. He wants to use his new MP3 player when cycling to school, so it should not be too big and should contain at least 10 hours of music (assume that you need 1 megabyte for 1 minute of music). You know it is important for your cousin to have an MP3 player of an A-brand (Apple, Creative, Sony).

Usability Study

Four Tasks: Task 2

- ▶ Your brother has asked you to buy an MP3 player for him, since he thinks you are experienced with both MP3-players and internet stores. He has made a list with requirements that the MP3-player should satisfy. The MP3 player should have at least 20GB of memory and a radio. Also, the player should weigh at most 150 grams and the battery should last at least 10 hours.

Usability Study

Four Tasks: Task 3

- ▶ You want to buy an MP3 player as a present for your sister. You believe that she would like to have one. However, she is vague about her preferences. The only two things she mentioned were that it should be small and look nice.

Usability Study

Four Tasks: Task 4

- ▶ You will now purchase an MP3 player for yourself. Using the upcoming interface, please select the product that fits your preferences best. Additional to your normal preferences, imagine the following side conditions: You will mainly use the MP3 player on your way to work, which you do by train and takes about 1.5 hours. Furthermore, you have a large music collection and you do not like to listen to the same music each day.

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