TICKET MACHINE EVALUATION

GROUP 6

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Heuristic Evaluation

A heuristic evaluation consists of a structured analysis of the usability of an interface with respect to a number of usability heuristics. The evaluators inspect the interface, comparing it to the heuristics one by one, taking notes whenever a rule is violated.

These are ten general principles for user interface design. They are called **heuristics** because they are more in the nature of rules of thumb than specific usability guidelines.

1. Visibility of system status
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2. Match between system and the real world
The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order

3. User control and freedom
Users often choose system functions by mistake and will need a clearly marked emergency exit to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

4. Consistency and standards
Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5. Error prevention
Even better than good error messages is a careful design which prevents a problem from occurring in the first place.

6. Recognition rather than recall
Make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. Flexibility and efficiency of use
Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. Aesthetic and minimalist design
Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9. Help users recognize, diagnose, and recover from errors
Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

10. Help and documentation
Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Implementation

This evaluation is preferably done with three or more evaluators since it is very difficult for one evaluator to find all usability problems in an interface. So our group first evaluated the project by three members then discussed and determine severity level for problems.

There are 4 phases of heuristic evaluation.

- Pre-evaluation training: Since all group members worked on similar project, there is no need for training
- Evaluation: Individuals evaluate and then aggregate results
- Severity Rating: Determining how severe each problem is
- Debriefing: Discussing the outcome with design team

Severity Rating:
Severity ratings can be used to allocate the most resources to fix the most serious problems and can also provide a rough estimate of the need for additional usability efforts.

The severity of a usability problem is a combination of three factors. They are **frequency**, **impact** and **persistence** of the problem

Finally, of course, one needs to assess the **market impact** of the problem since certain usability problems can have a devastating effect on the popularity of a product, even if they are objectively quite easy to overcome.

The following **0 to 4** rating scale can be used to rate the severity of usability problems:

- **0** = I don't agree that this is a usability problem at all
- **1** = Cosmetic problem only: need not be fixed unless extra time is available on project
- **2** = Minor usability problem: fixing this should be given low priority
- **3** = Major usability problem: important to fix, so should be given high priority
- **4** = Usability catastrophe: imperative to fix this before product can be released

Nielsen's experiments indicate that severity ratings from a single evaluator are too unreliable to be trusted. As more evaluators are asked to judge the severity of usability problems, the quality of the mean severity rating increases rapidly, and using the **mean of a set of ratings from three evaluators** is satisfactory for many practical purposes.

Because of that all of our group members participated on severity rating process.

Advantages:

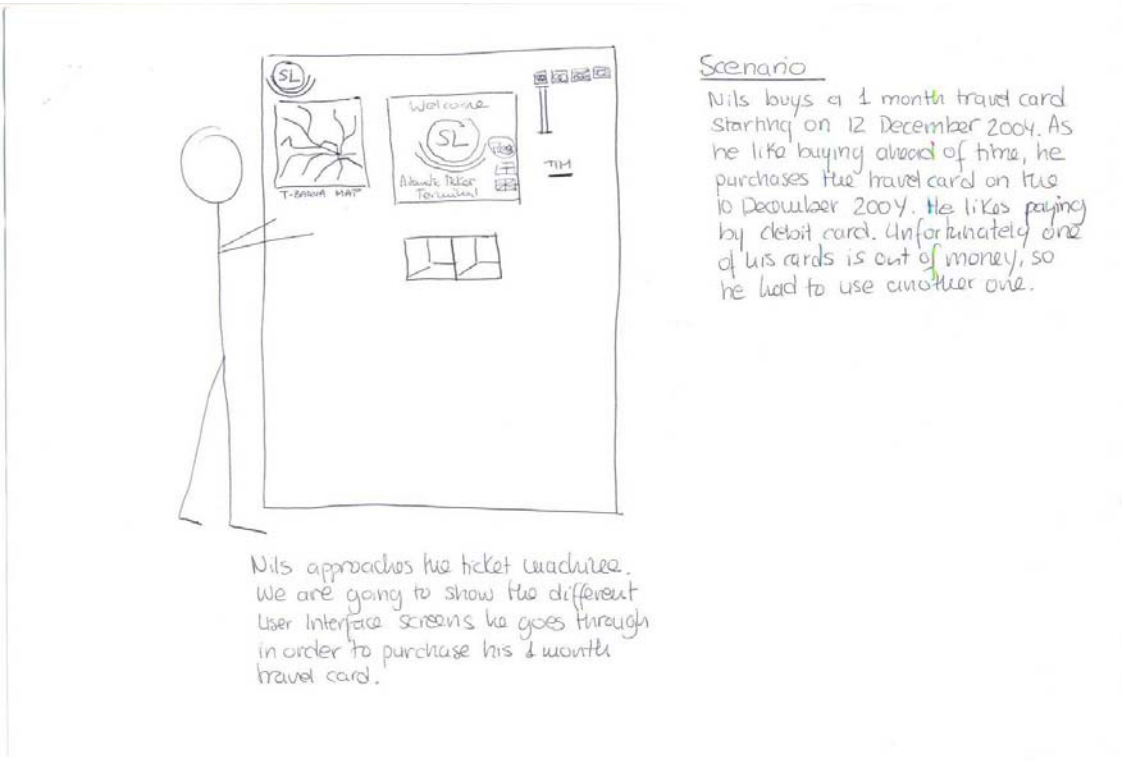
- Cost-effectiveness
- Quick -- can accommodate tight deadlines
- Can identify key issues for field or laboratory study.

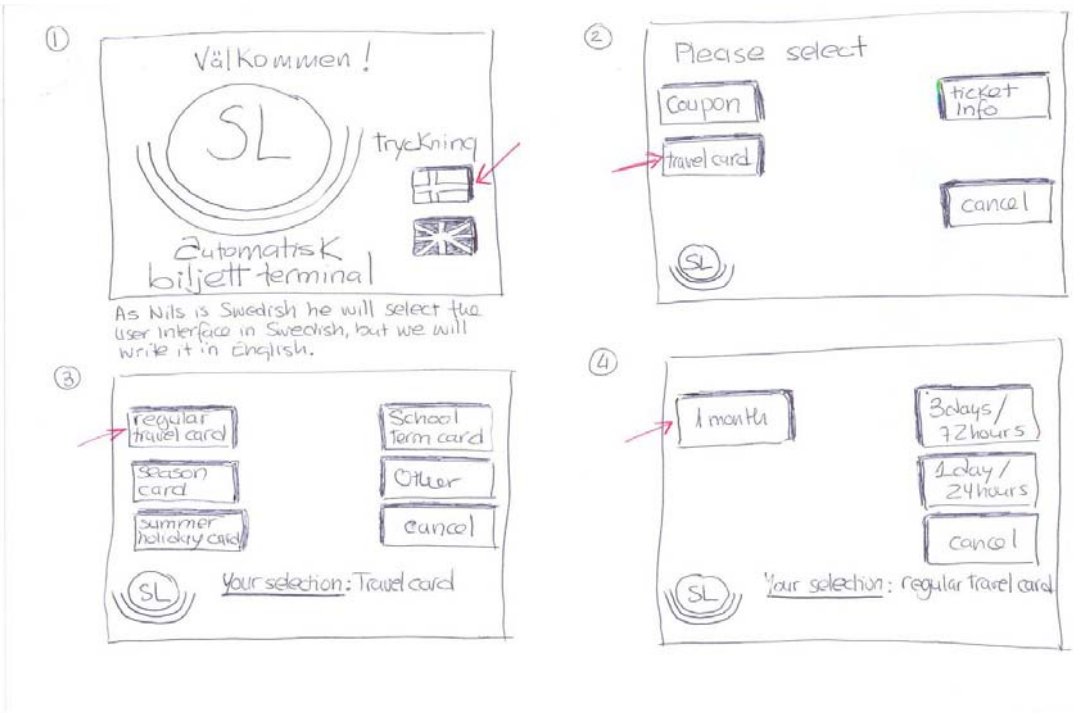
Disadvantages:

- Expert users cannot fully identify with real users' knowledge and expertise -- real user behaviour is often surprising.
- Success is highly dependent on the skills and expertise of the evaluators.
- Doesn't indicate which are priority problems i.e. those that users encounter most frequently.
- Development politics mean that developers and marketers are more likely to respond to user opinions than to 'just another opinion' from the usability expert. An organization's first usability project should preferably include the opportunity to watch real users.

The above disadvantages are less serious when a heuristic evaluation is combined with a few user interviews.

Prototype


SL
Welcome
SL
T-BANA MAP
TIM
Scenario
Nils buys a 1 month travel card starting on 12 December 2004. As he like buying ahead of time, he purchases the travel card on the 10 December 2004. He likes paying by debit card. Unfortunately one of his cards is out of money, so he had to use another one.
Nils approaches the ticket machines. We are going to show the different User Interface screens he goes through in order to purchase his 1 month travel card.


①
Välkommen!
SL
tryckning
automatisk biljett terminal
As Nils is Swedish he will select the User Interface in Swedish, but we will write it in English.
②
Please select
coupon
travel card
ticket info
cancel
SL
③
regular travel card
season card
summer holiday card
School term card
Other
cancel
SL
Your selection: Travel card
④
1 month
3days / 72hours
1day / 24hours
cancel
SL
Your selection: regular travel card

⑤

adult 19 to 65

pensioner +65

youth 0 to 18

cancel

SL

Your selection: regular travel card 1 month

⑥

Travel card starting from:

\+

10 Dec 04

\-

12 Dec 04

2 times

proceed

cancel

SL

Your selection: 1 moth travel card adult

total amount 600,00:-

⑦

Please, swipe your card or insert your TIM.

cancel

SL

⑧

Your selection: 1 month travel card adult from 12 Dec 04

Total amount: 600,00:-

payment: visa xxxx xxxx xxxx-2022

proceed

cancel

SL

⑨

Card not accepted! Would you like to pay with another card?

YES

NO

SL

⑩

Please, swipe your card or insert your TIM.

cancel

SL

⑪

Your selection: 1 month travel card adult from 12 Dec 04

total amount: 600,00:-

payment: mastercard xxxx xxxx xxxx-7355

proceed

cancel

SL

⑫

processing

SL

Results and Suggestions

After evaluation we have found following usability problems:

Problem	When user selects a particular language from the first welcome screen, entirely new screen appears in spite of the same screen in that particular language
Category	Consistency and standards
Severity	2
Suggestion	Showing the same screen after language selection.
Problem	The option for ticket information was just on one screen and no other screens were having ticket information or any link for ticket information
Category	Recognition rather than recall, Visibility of system status
Severity	3
Suggestion	Add ticket info button to all required pages
Problem	Instead of BACK option, they have provided a CANCEL option which gives an impression when pressed everything will be cancelled and user will return to first screen.
Category	User control and freedom, Consistency and standards
Severity	3
Suggestion	Use appropriate button for appropriate operations

Problem	Some button captions were confusing. It is not easily understandable what user will face when clicks the button. For example, Regular Travel Card.
Category	Match between system and the real world
Severity	2
Suggestion	Use meaningful button captions
Problem	When selecting the date of issue of a card, you have to press that number of times to select desired date, which consumes time and doesn't give user a visual presentation.
Category	Visibility of system status
Severity	1
Suggestion	Use calendar display to select date
Problem	There is no indication on the screen, from where to get the tickets
Category	Recognition rather than recall
Severity	1
Suggestion	Using information arrows to help navigation
Problem	There is no explicit button for help. They provide SL logo for help, which is meaningless to the user.
Category	Help and documentation
Severity	3
Suggestion	Using a separate help button and use SL logo for main screen
Problem	There is no visual representation of how ticket looks like.
Category	Visibility of system status, Recognition rather than recall

Severity	2
Suggestion	Putting an actual picture or graphic on the screen
Problem	The system is confusing for first time users.
Category	Recognition rather than recall, flexibility and efficiency of use
Severity	3
Suggestion	Putting more information for first time users such as ticket info, zone information.
Problem	Swiping the card is problematic when the orientation of the card is wrong or speed is so slow or fast.
Category	Consistency and standard
Severity	2
Suggestion	Using insert slot for the card