

DESIGN & PROTOTYPAGE

CIE/IHM (NI226/NI205)
21 février 2013

James Eagan <james.eagan@telecom-paristech.fr>

jeudi 21 février 13

Add/Update Shipping Information

We found an error while verifying your shipping address.
We've marked the problem in red for you.

Update the address book of

Required information is marked in GREEN CAPS.

[HELP](#) for questions about shipping.

NICKNAME:

Please assign a "nickname" for the person you're shipping to.
You may change or delete this information at any time.

FIRST NAME: MIDDLE INITIAL:

LAST NAME:

ADDRESS:

 (International use only)

CITY:

STATE/PROVINCE:

Includes APO and FPO. Use "Other" if country is not USA or Canada.

ZIP/POSTAL CODE:

COUNTRY:

SHIPPING METHOD: In the U.S.: [HELP](#) International: [HELP](#)
 Standard UPS (2 business days plus) Canada Canada Post (4-10 business days)

jeudi 21 février 13

USABILITY PRINCIPLES

- Many different kinds
- No cookbooks, checklists, magic recipes
- Shneiderman, *Designing the User Interface*
- Dix, Finlay, Abowd, Beale, *Human-Computer Interaction*

jeudi 21 février 13

jeudi 21 février 13

USABILITY PRINCIPLES

- Learnability
 - Support for learning for users of all levels
- Flexibility
 - Multiple ways for performing tasks
- Robustness
 - Support recovery

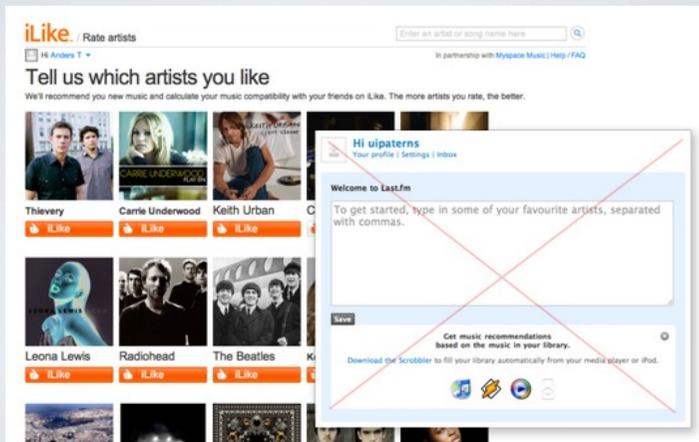
jeudi 21 février 13

LEARNABILITY

- Ease with which new users can begin effective interaction
- Performance improvement from session to session
- Principles
 - Predictability, Synthesizability, Familiarity, Generalizability, and Consistency

jeudi 21 février 13

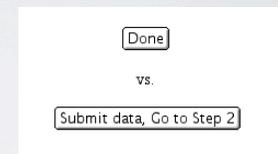
RECOGNITION OVER RECALL



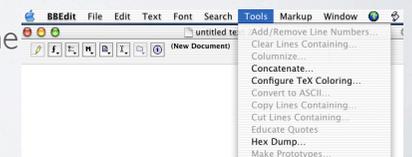
jeudi 21 février 13

PREDICTABILITY

- I think that this action will do...

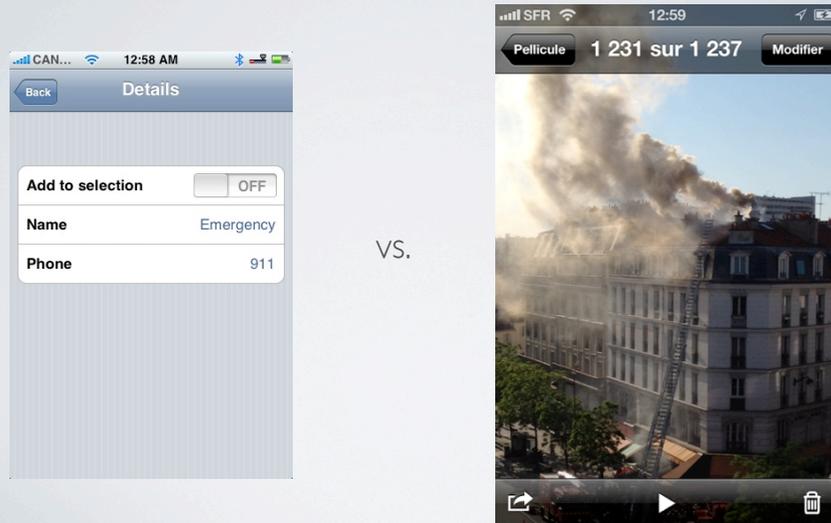


- Operation visibility – can see all available actions
- e.g. menus versus command-line
- Grayed menu items



jeudi 21 février 13

PREDICTABILITY



jeudi 21 février 13

CHUNKING



jeudi 21 février 13

FLEXIBILITY

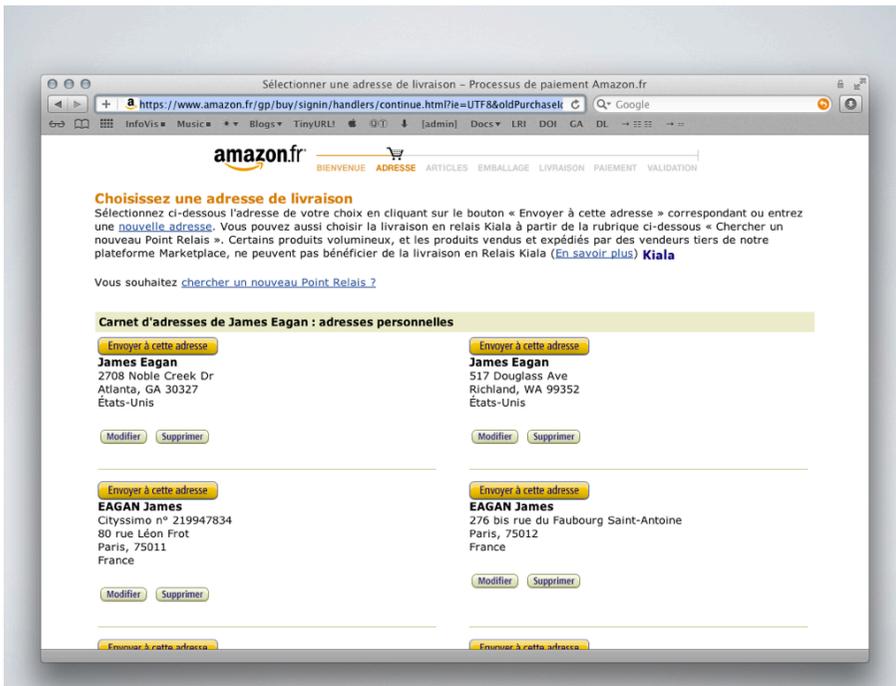
- Minimize modality, Multithreading, Task Migratability, Substitutivity, Customizability

jeudi 21 février 13

ROBUSTNESS

- Observability
- Recoverability
- Responsiveness
- Task Conformance

jeudi 21 février 13



jeudi 21 février 13

MODÈLES MENTAUX

- La représentation mentale de l'utilisateur du système
- Sa perception de comment marche le système

jeudi 21 février 13

DON NORMAN

- Design of Everyday Things

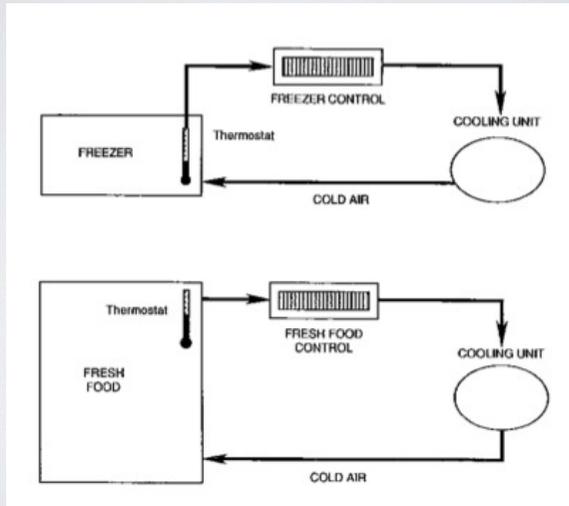
jeudi 21 février 13

INTERFACE D'UN FRIGO

NORMAL SETTINGS	C	AND	5	
COLDER FRESH FOOD	C	AND	6-7	1 SET BOTH CONTROLS
COLDEST FRESH FOOD	B	AND	8-9	2 ALLOW 24 HOURS
COLDER FREEZER	D	AND	7-8	TO STABILIZE
WARMER FRESH FOOD	C	AND	4-1	
OFF (FRESH FD & FRZ)			0	

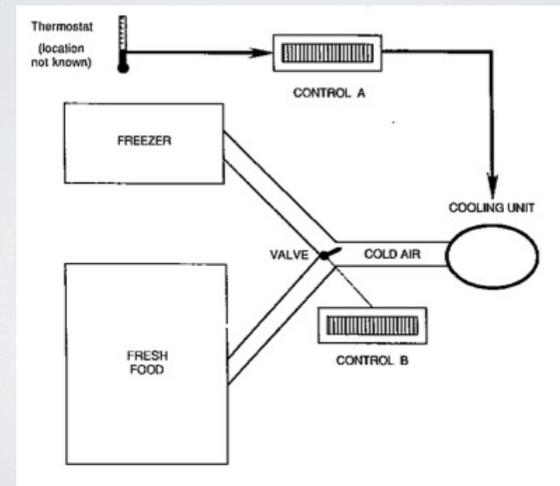
jeudi 21 février 13

MODÈLE D'UN FRIGO



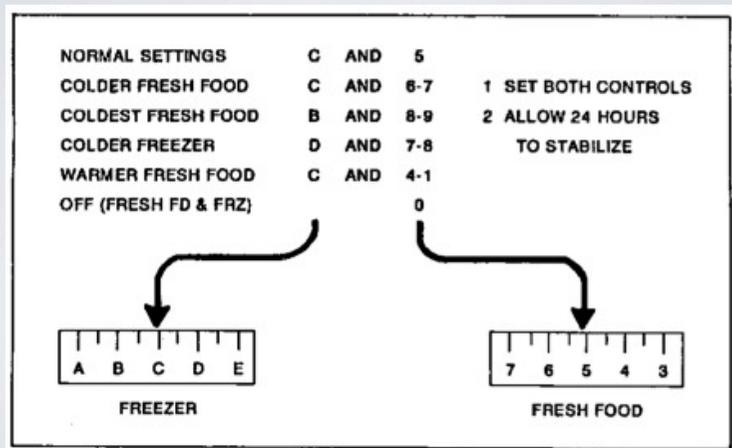
jeudi 21 février 13

MODÈLE D'UN FRIGO



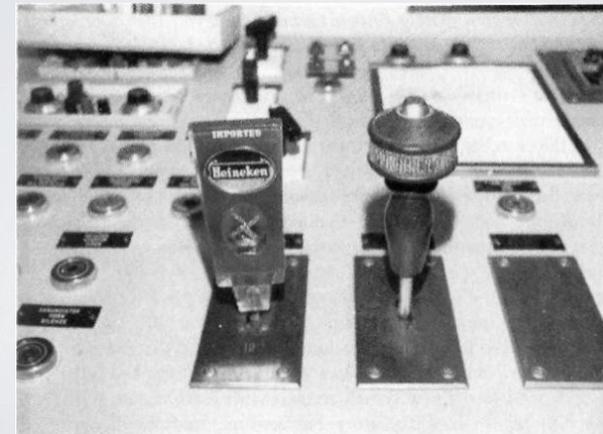
jeudi 21 février 13

INTERFACE D'UN FRIGO



jeudi 21 février 13

MAKE CONTROLS LOOK & FEEL DIFFERENT

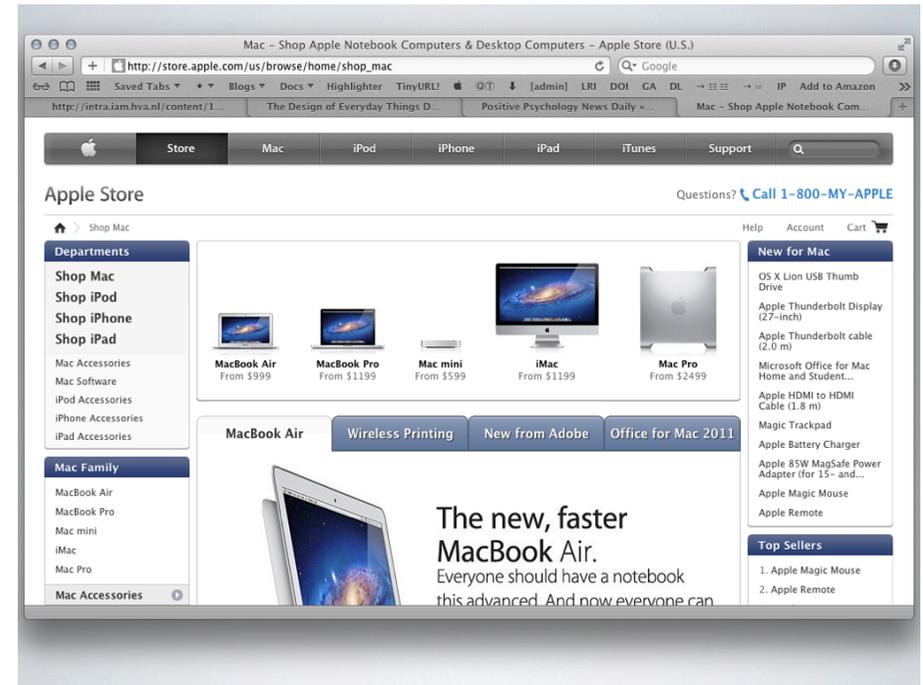


jeudi 21 février 13

PARADOX OF CHOICE



jeudi 21 février 13

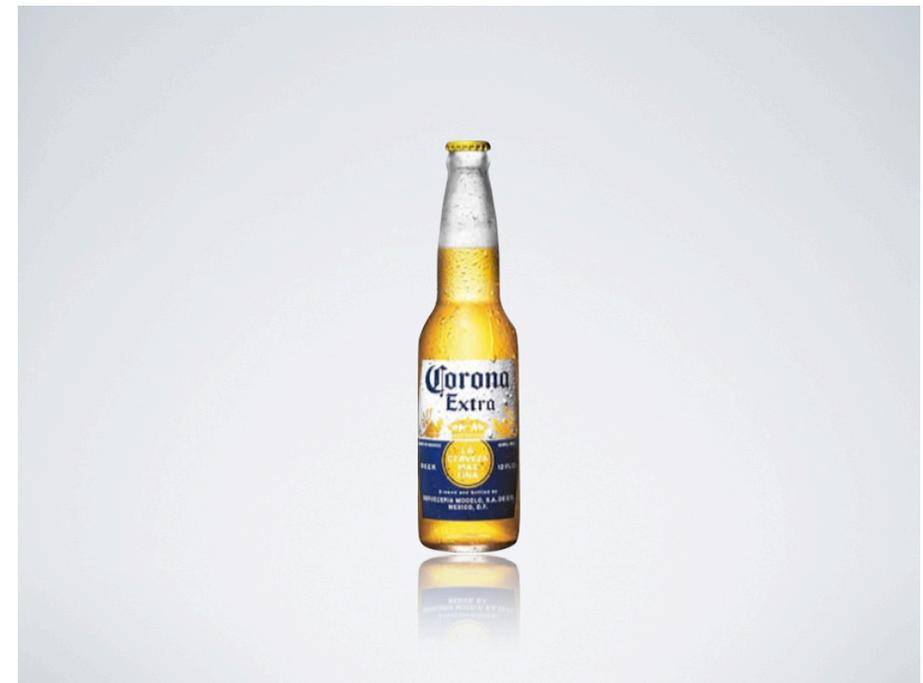


jeudi 21 février 13

INVOKE SCARCITY

- If it costs a lot, it must be good!
- Only two left in this size!

jeudi 21 février 13



jeudi 21 février 13



[Source : James Hudson, PayPal]

jeudi 21 février 13

Affordable Dog Insurance - Covers 80% Of Your Vet Bill; Request A Free Quote & Start Your Pets Coverage Today!

Get Your Free Quote

Pet Name:

Pet Type: Dog Cat

Select Breed:

Spayed/Neutered? Yes No

Pet Date of Birth:

Gender: Female Male

Your Zip Code:

Email:

Simple & Easy

33 % conversion

Affordable Dog Insurance - Covers 80% Of Your Vet Bill; Request A Free Quote & Start Your Pets Coverage Today!

Get Your Free Quote

Pet Name:

Pet Type: Dog Cat

Select Breed:

Spayed/Neutered? Yes No

Pet Date of Birth:

Gender: Female Male

Your Zip Code:

Email:

Simple & Easy

66 % conversion

[Source : James Hudson, PayPal]

jeudi 21 février 13

[Source : James Hudson, PayPal]

jeudi 21 février 13

BESOINS UTILISATEUR

jeudi 21 février 13

MOTIVATION

- User
 - Low motivation, discretionary use
 - Low motivation, mandatory use
 - High motivation, due to fear
 - High motivation, due to interest
 - Design goal
 - Ease of learning
 - Control, power use
 - Ease of learning, robustness, control
 - Power, ease of use
-

jeudi 21 février 13

KNOWLEDGE & EXPERIENCE

Experience

<u>task</u>	<u>system</u>	<u>Design goals:</u>
low	low	– Many syntactic & semantic prompts
high	high	– Efficient commands, concise syntax
low	high	– Semantic help facilities
high	low	– Lots of syntactic prompting

jeudi 21 février 13

JOB & TASK IMPLICATIONS

- Frequency of use
 - High — Ease of use
 - Low — Ease of learning & remembering
- Task implications
 - High — Ease of use
 - Low — Ease of learning
- System use
 - Mandatory — Ease of use
 - Discretionary — Ease of learning



jeudi 21 février 13

DEFINE TASKS

- Consider the *whole* system
- Determine *who or what* should perform each task and each step :
e.g. the system remembers the login, but the user remembers the password
- Determine criteria: efficiency, cognitive effort, time
 - Task x should take no more than y seconds
 - A new user should be able to create a new account in 5 minutes

jeudi 21 février 13

DESIGN & PROTOTYPING

jeudi 21 février 13

PROTOTYPING THE INTERFACE

- Why prototype?
 - Creating the system is expensive
 - Start with low-fidelity mockups
 - Progress to prototypes
 - Storyboards, task diagrams, etc.

jeudi 21 février 13

DESIGN THE INTERFACE



jeudi 21 février 13

PAPER & PHYSICAL PROTOTYPING

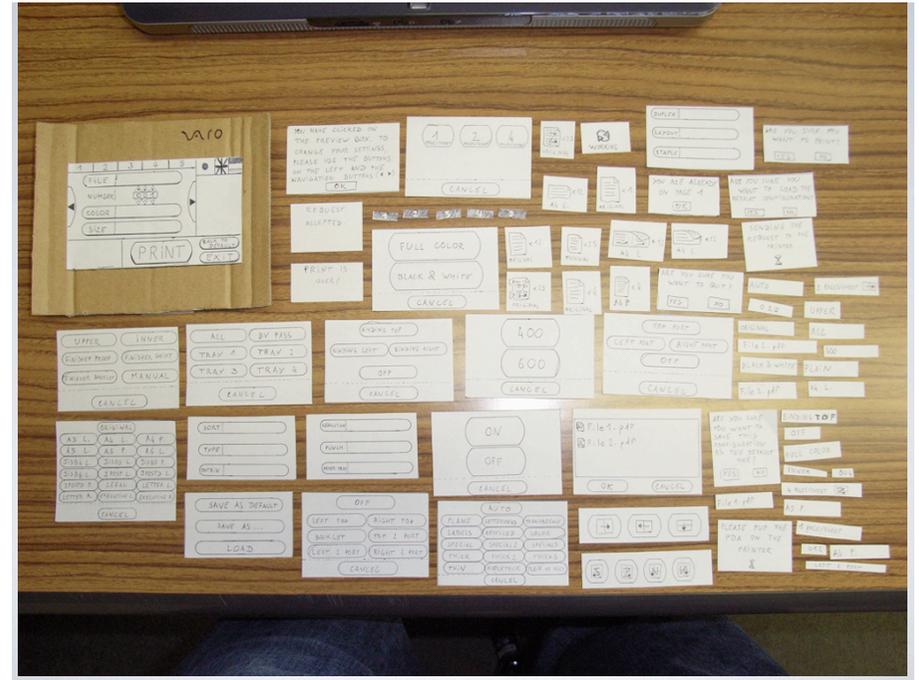


jeudi 21 février 13

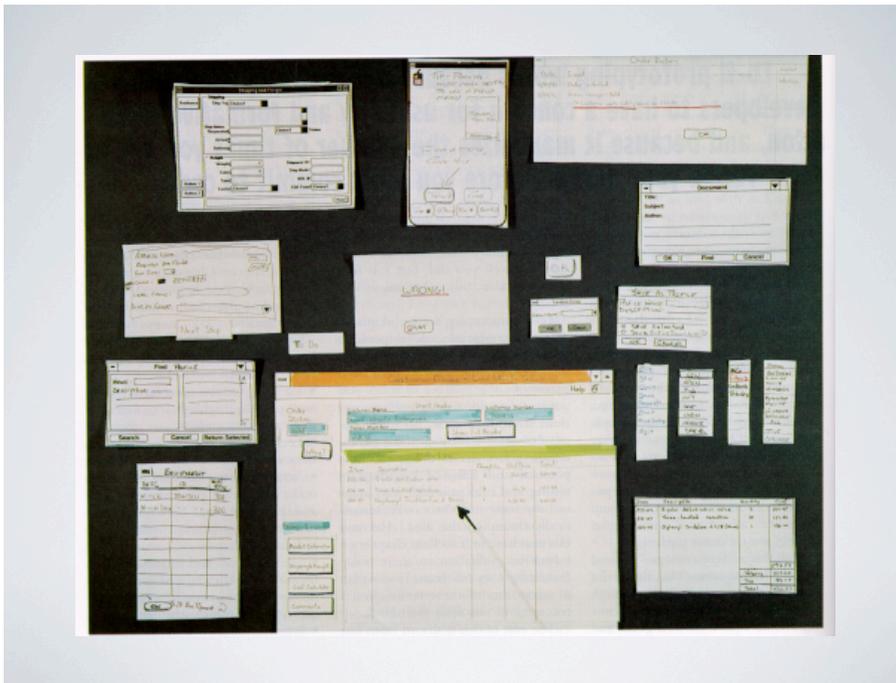




jeudi 21 février 13



jeudi 21 février 13



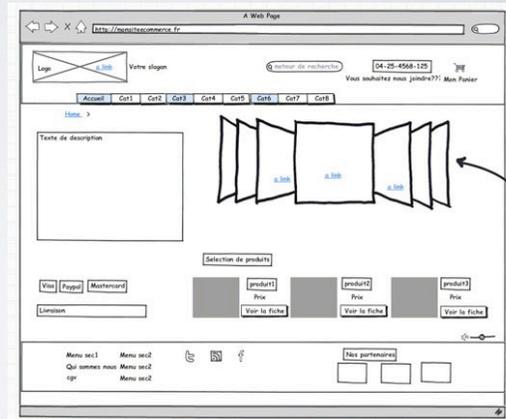
jeudi 21 février 13



jeudi 21 février 13

WIREFRAME PROTOTYPES

- Paper or digital
- Layout & functionality
- Tools :
 - OmniGraffle
 - Browser plugins
 - e.g. Pencil project



jeudi 21 février 13

CONCEPTION : UCD

6. Prototypage : mockup

- plus fidèle
- look & feel
- pixel prêt
- Outils :
 - Suite Adobe CS
 - OmniGraffle



jeudi 21 février 13

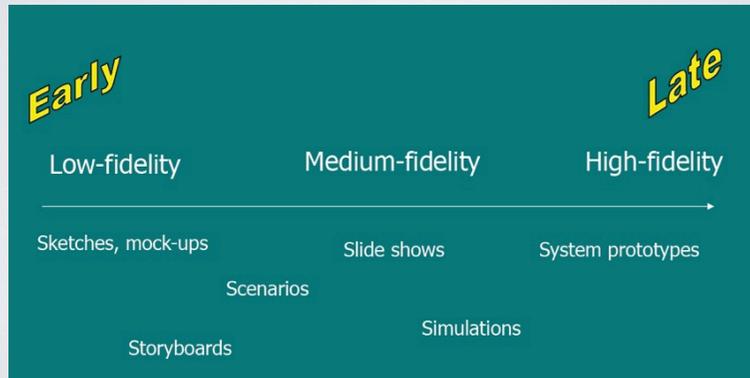
WIZARD OF OZ

- Simulate the system with a human wizard



jeudi 21 février 13

PROTOTYPING TOOLS



jeudi 21 février 13

jeudi 21 février 13

PROJET

jeudi 21 février 13

RECOLTE DE BESOINS

- Normalement, déjà faite !
- Identification des catégories d'utilisateurs
- Besoins de chaque type d'utilisateur
- Tâches ...

jeudi 21 février 13

PROTOTYPES SUR PAPIER

- Commencer avec des sketches
- Ignorer les détails, concentrer sur l'idée
- Au moins trois idées différentes
- Élaborer chaque idée afin d'explorer l'interaction, le flot, ...

jeudi 21 février 13

USER TESTING & EVALUATION

jeudi 21 février 13

WHY TEST?

- Identify problems with software
- You are not your user
- The *earlier* you find your problems, the *cheaper* they are to fix

jeudi 21 février 13

EVALUATION METHODS

- Experimental, Observational
 - Typically with users
 - Controlled experiments based on usability requirements
- Predictive
 - (without users)

jeudi 21 février 13

PREDICTIVE EVALUATION

- Idea:
 - Observational studies are expensive, time consuming
 - Let's predict rather than observe usage
 - Save resources (quick, cheap)

jeudi 21 février 13

APPROACH

- Expert review
 - HCI professional (not a real user) interacts with the system, tries to find usability problems
- Ideally:
 - Has not used previous prototypes
 - Knows the problem domain
 - Understands the user's perspective

jeudi 21 février 13

PREDICTIVE EVALUATION METHODS

- Heuristic Evaluation
- "Discount" usability testing
- Cognitive Walkthrough

jeudi 21 février 13

HEURISTIC EVALUATION

- Developed by Jakob Nielsen (www.useit.com)
- Several experts evaluate the system according to simple and general heuristics

jeudi 21 février 13

METHOD

- Determine inputs
- Evaluate the system
- Collect observations
- Rank by severity

jeudi 21 février 13

INPUTS

- Who are the experts?
 - Learn domain, practices
- What is the prototype to evaluate?
 - Mock-ups, storyboards, ... or even a working system

jeudi 21 février 13

EVALUATION METHOD

- Reviewers evaluate system according to high-level usability principles :
- Use simple and natural dialog
- Speak user's language
- Minimize memory load
- Be consistent
- Provide feedback
- Provide clearly-marked exits
- Provide shortcuts
- Provide good error messages
- Prevent errors

jeudi 21 février 13

PROCESS

- Perform at least two passes
 - Look at each screen
 - Flow from screen to screen
- At each step, evaluate according to heuristics
- Look for problems:
 - Subjective (if you think its a problem, it is)

jeudi 21 février 13

DEBRIEFING

- Gather all identified problems
 - Identify which ones aren't really problems
 - Group, classify
 - Document and record the problems

jeudi 21 février 13

ORDER BY SEVERITY

- Scale from 0 to 4
- Based on:
 - Frequency
 - Impact
 - Persistence
 - Market impact

jeudi 21 février 13

ADVANTAGES

- Cheap, good for small companies that can't afford more
- Can be performed on mockups
- Experienced evaluators ideal
- According to Nielsen, 5 evaluators finds 75% of problems

jeudi 21 février 13

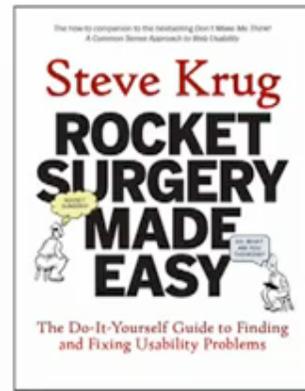
LIMITATIONS

- Evaluation is subjective, depends on reviewer expertise
- Are these the right heuristics?
- Are the identified problems really problems?

jeudi 21 février 13

Demo Usability Test

for readers of



Rev. 1.1 / February 3, 2010
© 2010 Steve Krug
www.rocketSURGERYmadeeasy.com

