Agenda

- ROI of Human-Centered Design
- Introduction to Human-Centered Interaction Design
- Namahn's HCID process
  - Understand (day 1 9:45 - 12:30)
  - Explore (day 1 13:30 - day 2 15:30)
  - Define (day 2 15:30 – 17:00)

The ROI of Human-Centered Design

ROI on HCD by UPA

- **4%-9%** productivity gain in service sector
- Reduction in the product development cycle by **33%-50%**
- Reduction of training time by **50%**
- Productivity gains of up to **720%**
- ROI of **200%-10.000%** for maintenance

Source: : http://www.upassoc.org/usability_resources/usability_in_the_real_world/benefits_of_usability.html

To be taken with a grain of salt

- These cause-and-effect relationships can be speculative.
- Functionality remains more important than usability.
- Airtight ROI is not what gets the HCD train moving.
- What does get the train moving?
  - **Pain** at the executive level
  - **Vision** at the executive level

Why then practice HCD?

- Risk aversion
  - Death and destruction
  - Rejection by users
  - High cost of support
  - Loss of reputation
  - Loss of productivity

UDT		360	
1	Scroll in call reasons list	1	Click Add Case, Go
2	Select call reason level 1	2	Click Case Type
3	Select call reason level 2	3	Select Case Type value
4	Click log	4	Click Quick Code
		5	Select Quick Code value
		6	Scroll down
		7	Select Resolved by First Contact
		8	Click Solution Status
		9	Select Solution Status
		10	Click Save
		11	Scroll up
		12	Click 360-Degree View
		13	Scroll down
		14	Click Interaction Status
		15	Select Interaction status value
		16	Click Finish and Return

Source: Namahn client project

Comparison of number of user actions required to enter a trouble ticket

Why then practice HCD?

- Risk aversion
  - Death and destruction
  - Rejection by users
  - High cost of support
  - Loss of reputation
  - Loss of productivity
- Future vision
  - Competitive advantage
  - A new product development approach

Help to beat the competition

"... when the functionality and reliability of a product become more than good enough, **the basis of competition changes.** What becomes not good enough are speed to market and the **rapid and responsive ability to configure products to the specific needs of customers** in ever-more-targeted markets segments. The **customer interface** is the place in the value chain where the ability to excel on this new dimension of competition is determined."

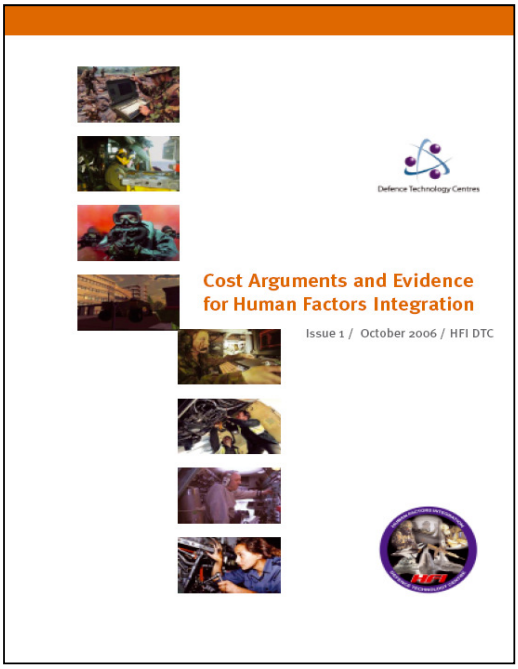
Source: Christensen & Raynor, The Innovator's Solution, p. 169

Philips' Sense and Simplicity campaign

Increase developer productivity

- Build the right thing.
- Make errors early and without commitment of significant resources.
- Facilitate discussion through a healthy focus on the user experience.

From the good people in the military

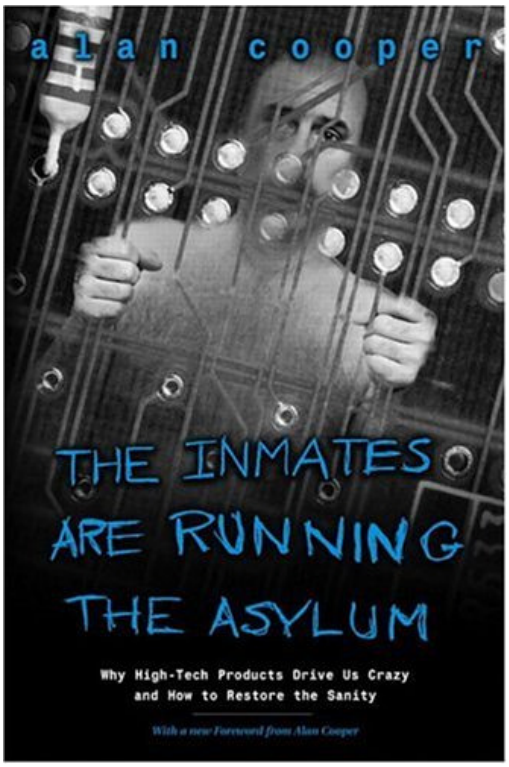


http://www.hfidtc.com/pdf-downloads/cost-just-hfi.pdf

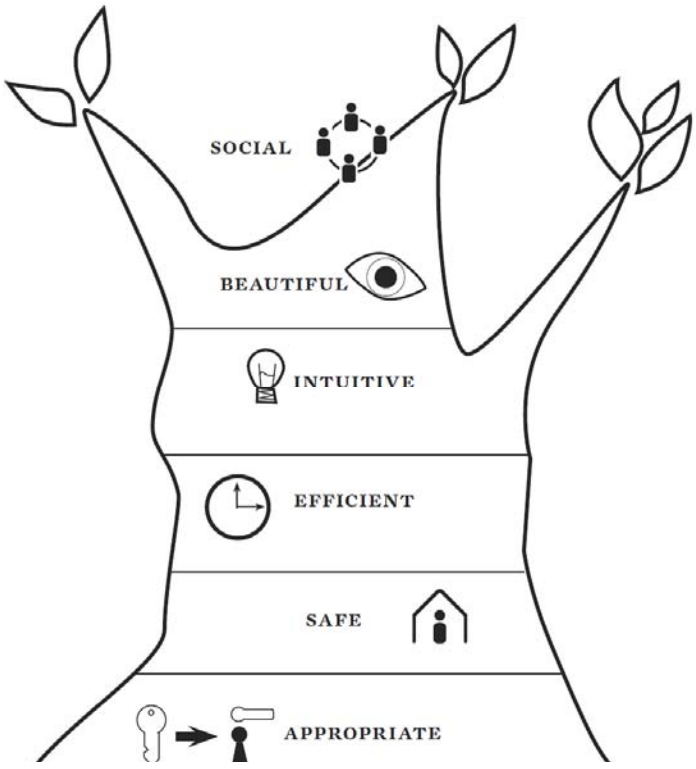
Some words of wisdom

It’s very easy to talk about user interfaces,
as it is about the weather.

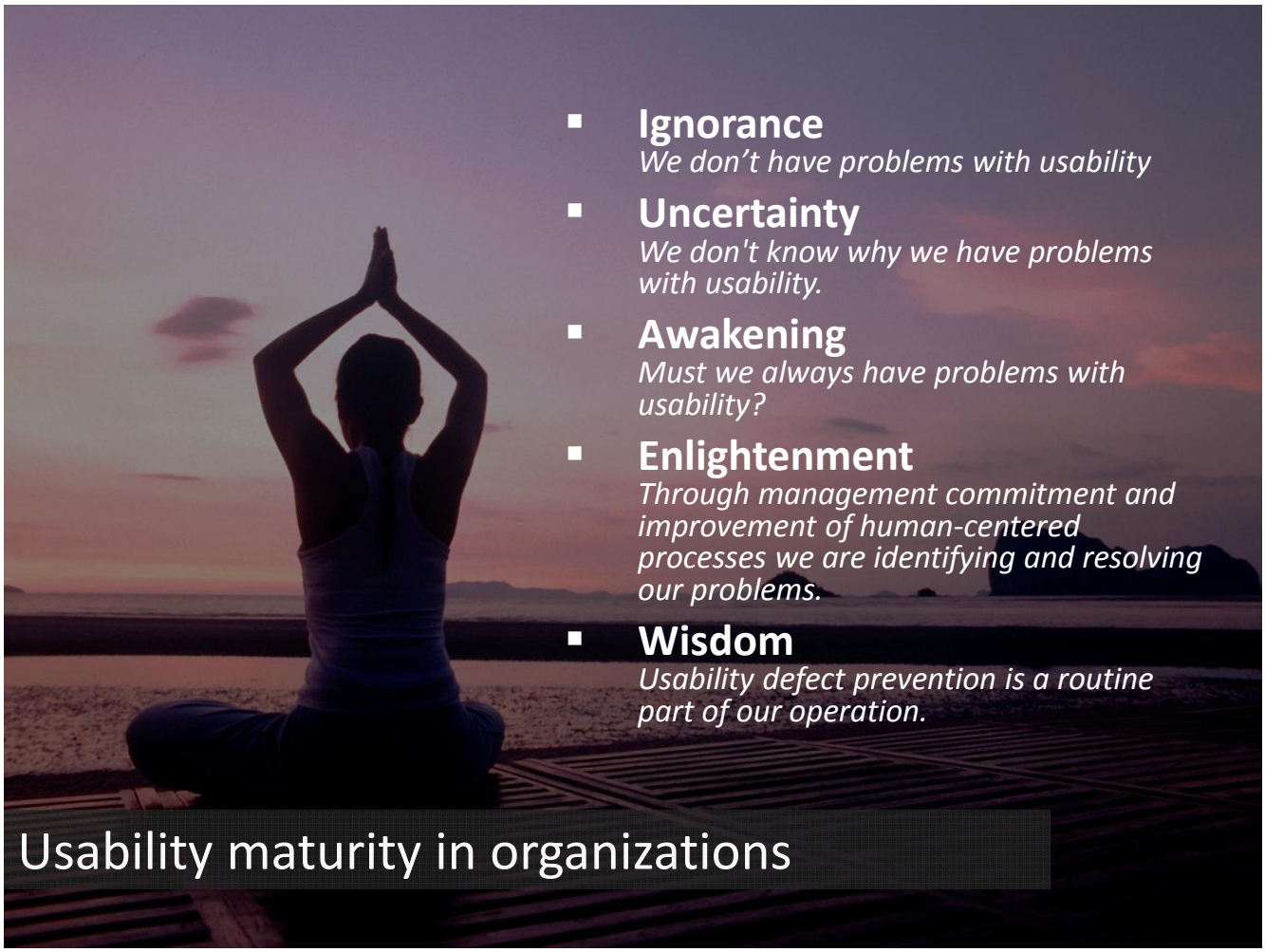
Beware of positioning yourself like usability police.



Establish how you wish to relate to developers.



Consider the usability ‘hierarchy of needs’



Introduction to Human-Centered Interaction Design

What is HCD?

- Knowing your users
- Involving all stakeholders
- Critically analysing both problem and alternative solutions
- Visualizing, prototyping & communicating
- Trying out, testing & iterating

What's in a name

- Human Factors & Ergonomics (HF/E)
- Human-Computer Interaction (HCI)
- User interface design
- Interaction design
- User eXperience design (UX)

What is interaction design?

- Shaping human-product communication
- For products that require input and are transactional
- Process and provide digital information
- With focus on:
  - Understandability
  - Learnability
  - Safety
  - Effectiveness
  - Efficiency
  - Aesthetics
  - Fun
  - Desirability
  - Emotional connectedness
  - Enduring positive experience

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Interaction design...

It needs to matter to you, but to your customer, it doesn't matter, because good interaction is natural and should be totally transparent.

Source: R. Brummer & S. Emery, 2009

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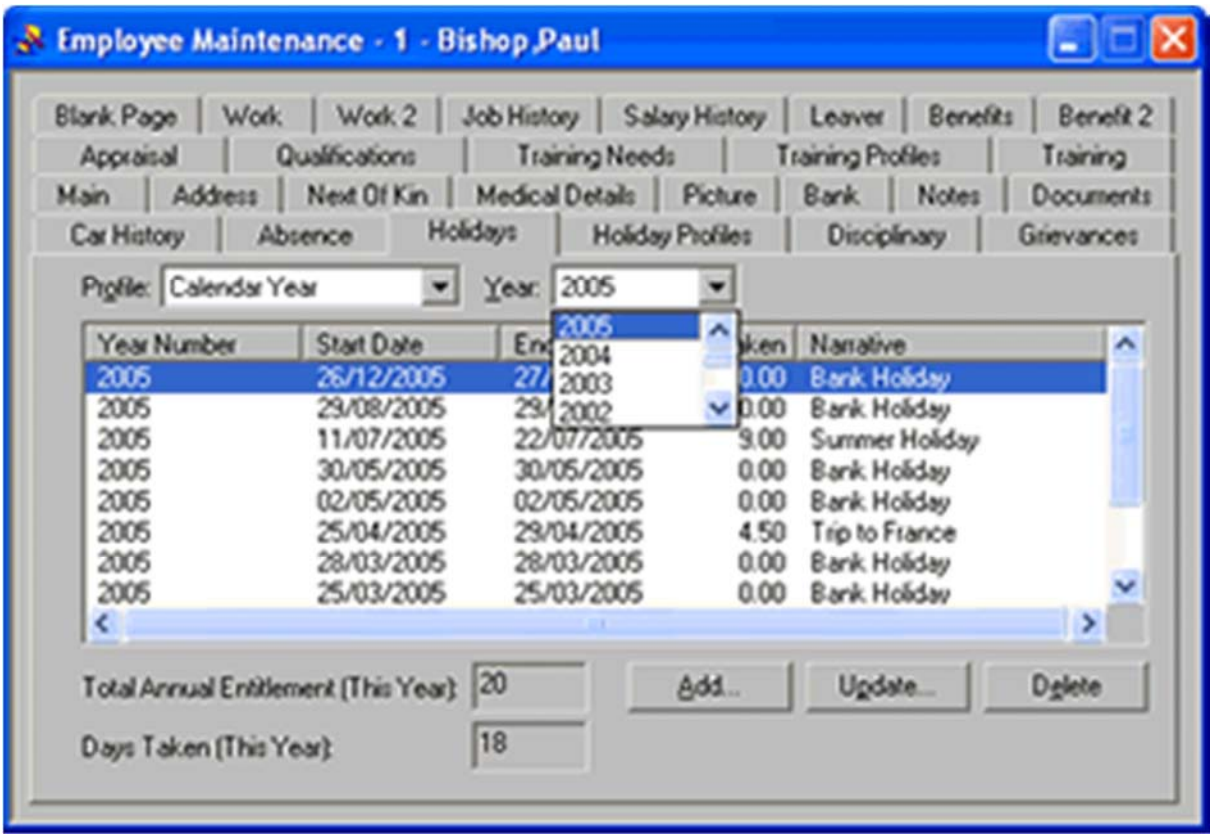
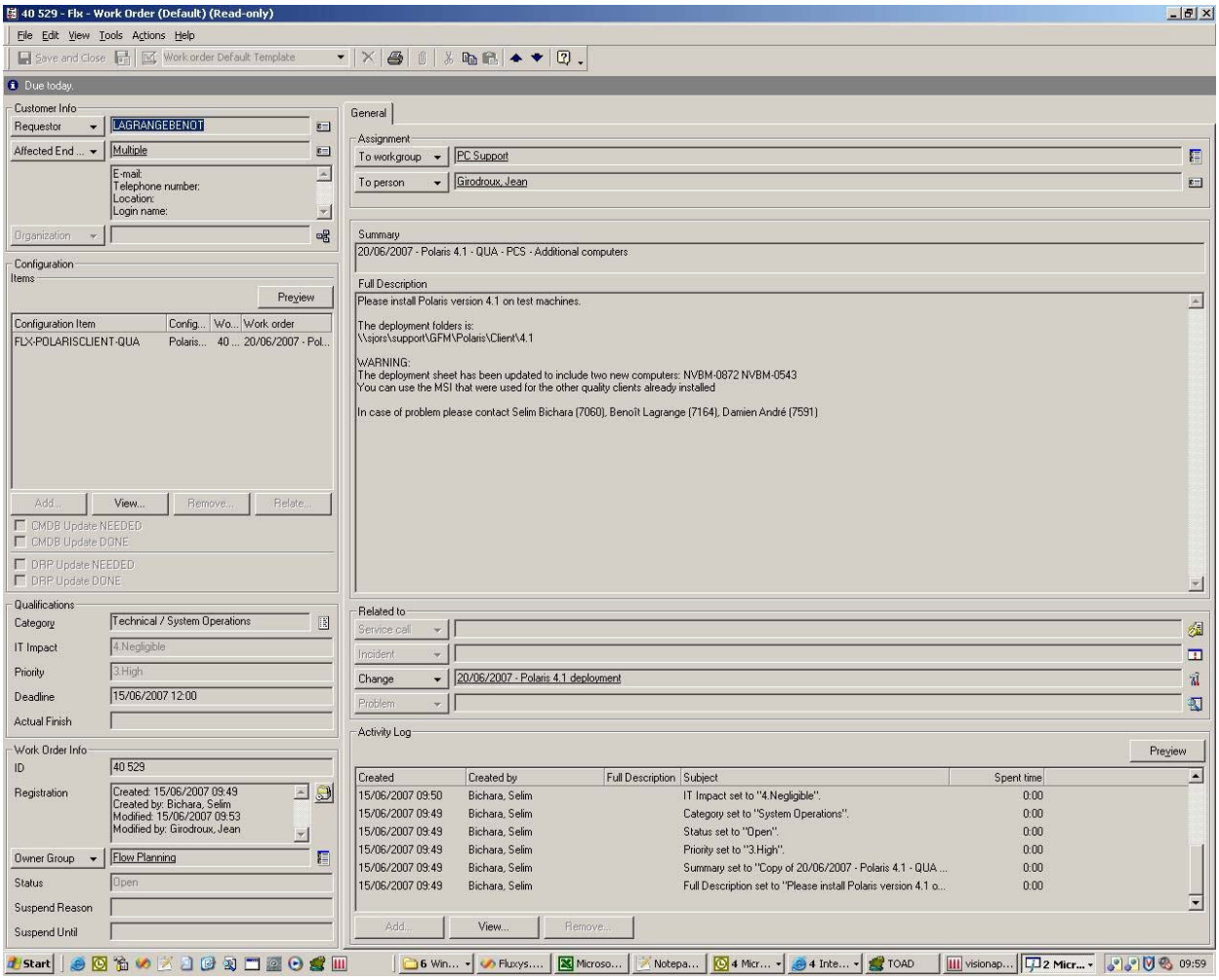

Employee Maintenance - 1 - Bishop,Paul
Blank Page
Work
Work 2
Job History
Salary History
Leaver
Benefits
Benefit 2
Appraisal
Qualifications
Training Needs
Training Profiles
Training
Main
Address
Next Of Kin
Medical Details
Picture
Bank
Notes
Documents
Car History
Absence
Holidays
Holiday Profiles
Disciplinary
Grievances
Profile: Calendar Year
Year: 2005
2005
2004
2003
2002
Year Number
Start Date
Narative
2005 26/12/2005 Bank Holiday
2005 29/08/2005 Bank Holiday
2005 11/07/2005 9.00 Summer Holiday
2005 30/05/2005 30/05/2005 0.00 Bank Holiday
2005 02/05/2005 02/05/2005 0.00 Bank Holiday
2005 25/04/2005 29/04/2005 4.50 Trip to France
2005 28/03/2005 28/03/2005 0.00 Bank Holiday
2005 25/03/2005 25/03/2005 0.00 Bank Holiday
Total Annual Entitlement (This Year): 20
Days Taken (This Year): 18
Add...
Update...
Delete


40 529 - Flx - Work Order (Default) (Read-only)
File Edit View Tools Actions Help
Save and Close
Work order Default Template
Due today.
Customer Info
Requestor
LAGRANGEBENOT
Affected End ...
Multiple
E-mail:
Telephone number:
Location:
Login name:
Organization
Configuration Items
Preview
Configuration Item
Config...
Wo...
Work order
FLX-POLARISCLIENT-QUA
Polaris...
40 ...
20/06/2007 - Pol...
Add...
View...
Remove...
Relate...
CMDB Update NEEDED
CMDB Update DONE
DRP Update NEEDED
DRP Update DONE
Qualifications
Category
Technical / System Operations
IT Impact
4.Negligible
Priority
3.High
Deadline
15/06/2007 12:00
Actual Finish
Work Order Info
ID
40 529
Registration
Created: 15/06/2007 09:49
Created by: Bichara, Selim
Modified: 15/06/2007 09:53
Modified by: Girodroux, Jean
Owner Group
Flow Planning
Status
Open
Suspend Reason
Suspend Until
General
Assignment
To workgroup
PC Support
To person
Girodroux, Jean
Summary
20/06/2007 - Polaris 4.1 - QUA - PCS - Additional computers
Full Description
Please install Polaris version 4.1 on test machines.
The deployment folders is:
\\sjors\support\GFM\Polaris\Client\4.1
WARNING:
The deployment sheet has been updated to include two new computers: NVBM-0872 NVBM-0543
You can use the MSI that were used for the other quality clients already installed
In case of problem please contact Selim Bichara (7060), Benoît Lagrange (7164), Damien André (7591)
Related to
Service call
Incident
Change
20/06/2007 - Polaris 4.1 deployment
Problem
Activity Log
Preview
Created
Created by
Full Description
Subject
Spent time
15/06/2007 09:50 Bichara, Selim IT Impact set to "4.Negligible". 0:00
15/06/2007 09:49 Bichara, Selim Category set to "System Operations". 0:00
15/06/2007 09:49 Bichara, Selim Status set to "Open". 0:00
15/06/2007 09:49 Bichara, Selim Priority set to "3.High". 0:00
15/06/2007 09:49 Bichara, Selim Summary set to "Copy of 20/06/2007 - Polaris 4.1 - QUA ... 0:00
15/06/2007 09:49 Bichara, Selim Full Description set to "Please install Polaris version 4.1 o... 0:00
Add...
View...
Remove...
Start
09:59

Interaction design & movies

- Decide on content
- Research
- Write script
- Make storyboard
- Cast
- And … action!

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Design process

- Understand
  - Field study & assessment
  - Task & requirements analysis
- Explore
  - Ideation
  - Storytelling
  - Mental modelling
  - Classification & conceptual design
  - Prototyping
  - Visual design
- Define
  - Engineering specification
  - Follow-up

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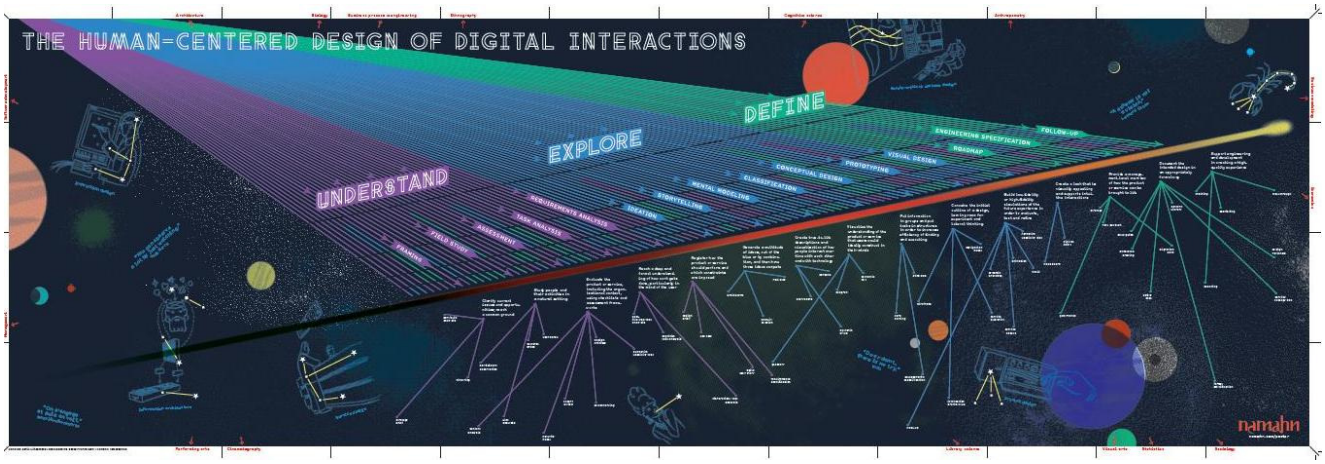
Design process



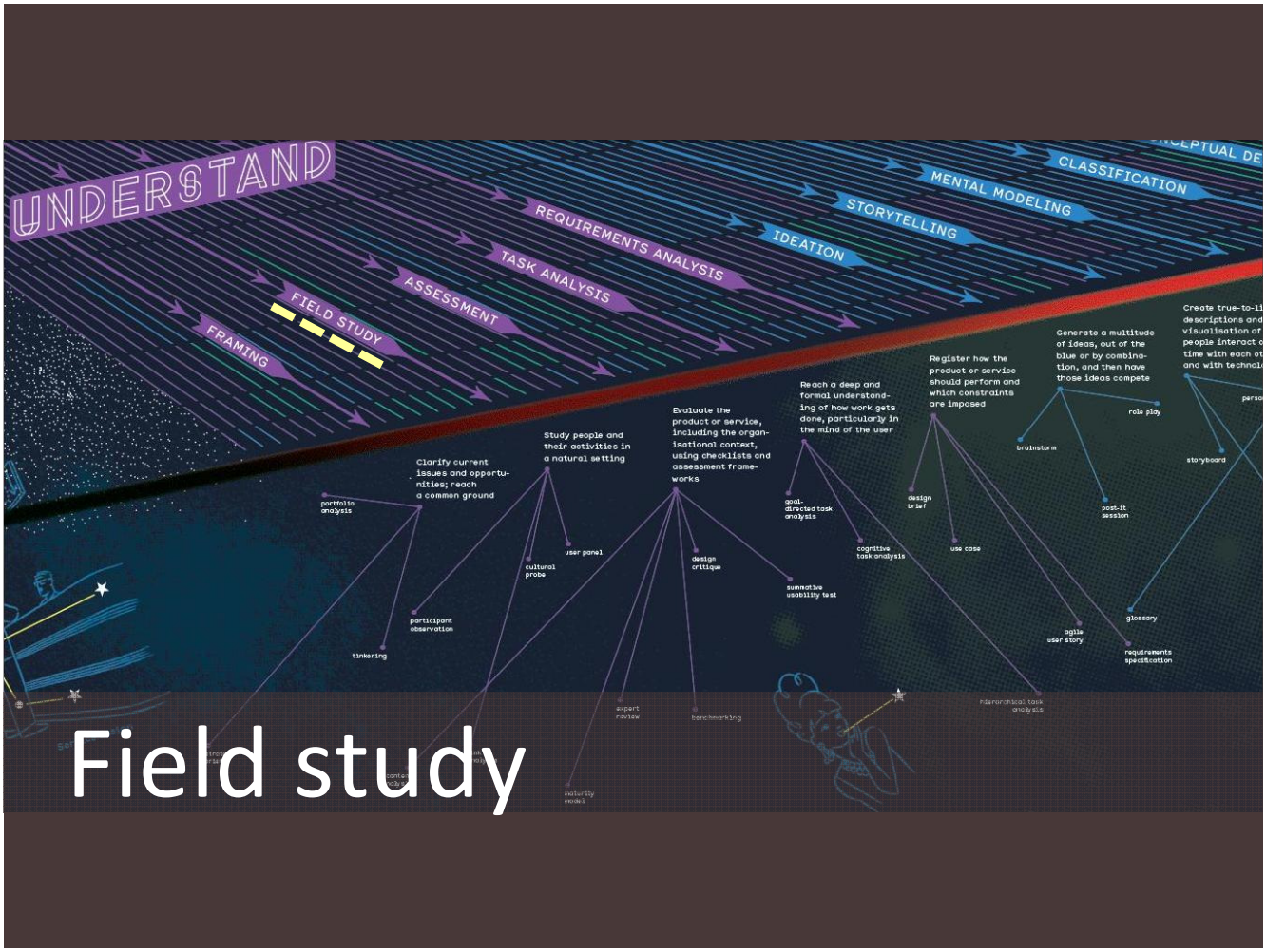
Case – Story whisperer

- Client: Toerisme Limburg
- Mission: design audio-visual GPS for bike tourism with
  - Navigation aid
  - Sightseeing stories

- Challenges
  - Balance requirements from 3 perspectives
  - Involve users throughout process
  - Cooperate with other parties for implementation

Teachers

- Joannes Vandermeulen
- Olivier Renard
- Kristel Van Ael
- Johan Van Maldeghem
- Koen Peters
- Tom Stevens



Field study

Field study

Why?

Why field studies

Difference between what people:

- Tell **other people** do
- **Themselves** tell they do
- **Think** they do
- **Actually** do

How to tackle this problem?

- Go into the field yourself
- Talk to people and observe them

Stills from *Kitchen Stories (…)* - http://www.imdb.com/video/screenplay/vi1789135561/

Field study

Origin

Africa - Kenia | image from flickr.com, by Rudi Roels

The Samburu are part of the Maa speaking people as are the Maasai. About 95% of the words of both languages are the same. The name 'Samburu' is also of Maasai origin and is derived from the word 'Samburr' which is a leather bag used by the Samburu to carry a variety of things. Samburu practice polygynous marriage, and a man may have multiple wives. A Samburu settlement is known as a nkang or manyatta. It may consist of only one family, composed of a man and his wife/wives. Each woman has her own house, which she builds out of local materials, such as sticks, mud and cow dung. Large ritual settlements, known as lorora may consist of 20 or more families. However, settlements tend towards housing two or three families, with perhaps 5-6 houses built in a rough circle with an open space in the centre. The circle of huts is surrounded by thorn bush fence.

Lightening department stenographers, 1935 | image from flickr.com, by Seattle Municipal Archives

Colonial priest | image: http://www.missio-aachen.de/links-services/download/abenteurer-gottes.asp

Field study

Techniques

Techniques

- * **Participatory observation**
- * Cultural probe
- * User panel
- * Questionnaires
- * Shadowing
- * Expert interview
- Journal
- Video diary
- Blogging & forums

Participatory observation

- A qualitative research technique
- Observation and participation
  - Observation: look and learn
  - Participation: experience yourself

- Focus on
  - Intentions | Knowledge | Skills | Experience
  - Goals | Tasks
  - Context

Participatory observation

- You need to spend **time** with **people** relevant to your design issue.
- You need to establish their **trust** in order to be admitted into their natural habitat.
- It enables you to gain a first-hand **understanding** of habits, rituals, natural language, relevant activities and artifacts.

Participant or observer?

Field Study

Participant	Observer
Immersion	Scientific recording
Intense	Neutral
Personal Involvement	Objective Detachment
Insider	Outsider

complete participation — nonparticipation

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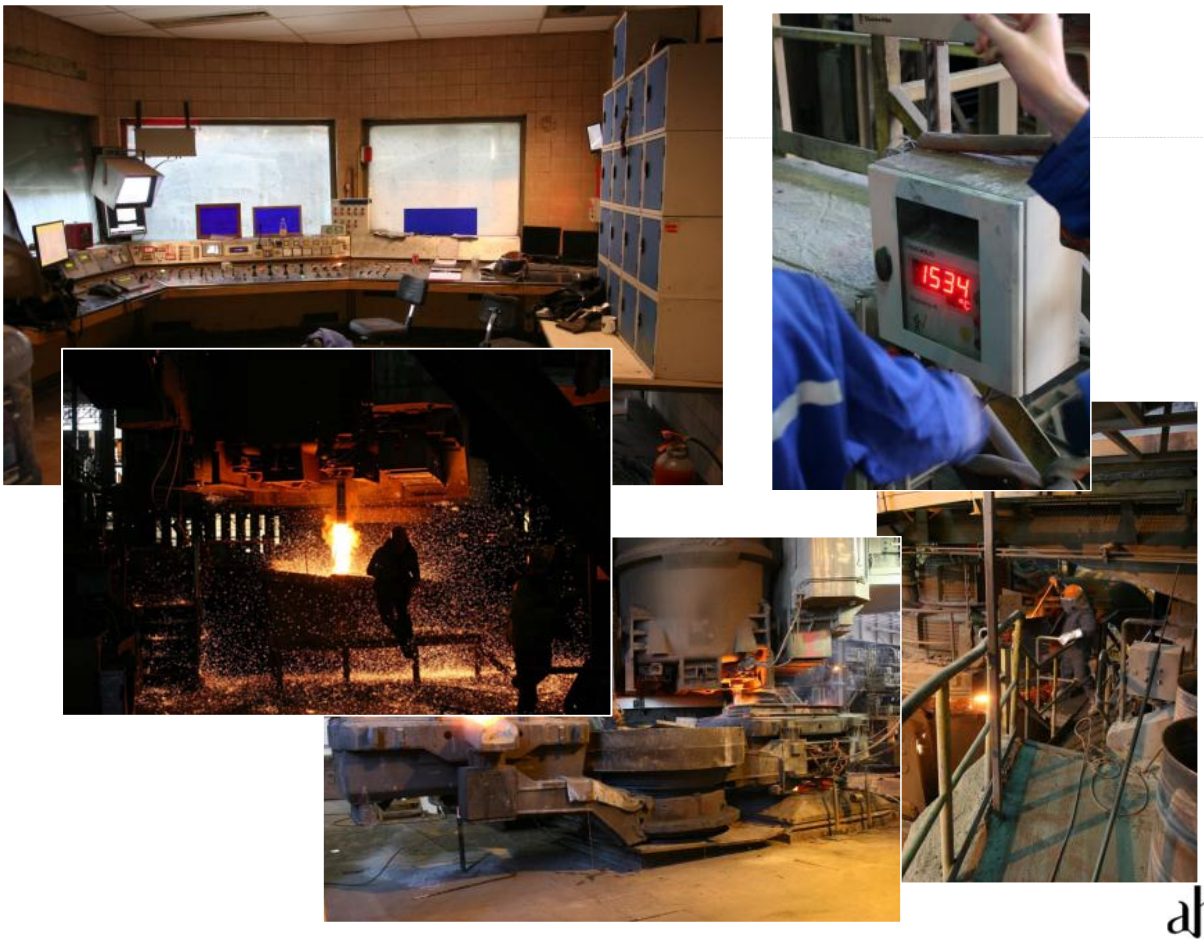

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Field study

How?

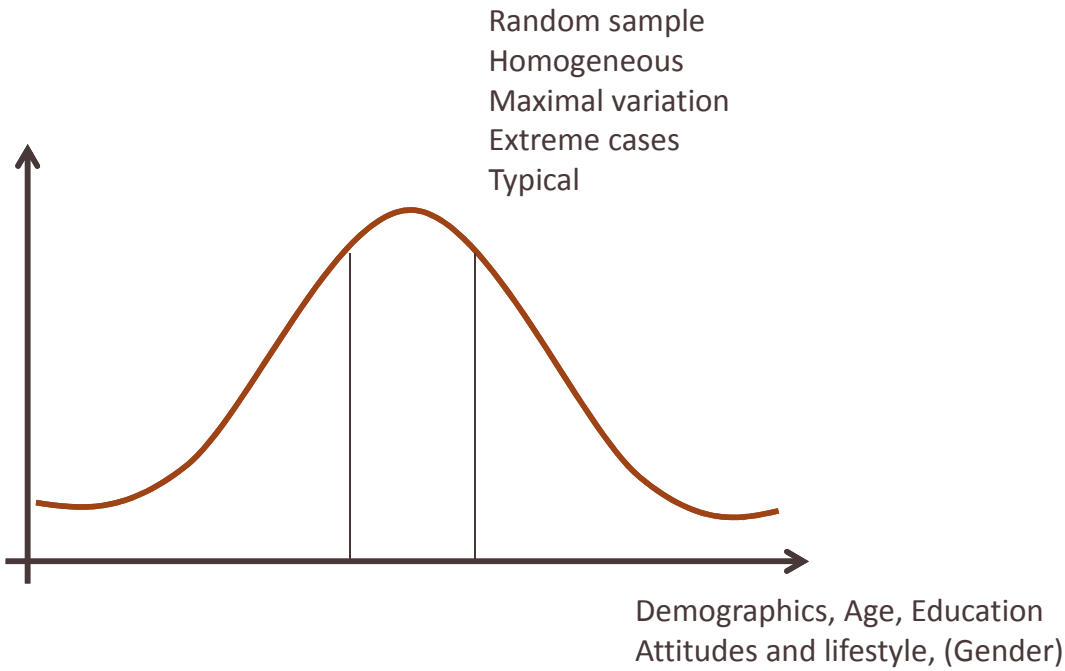
Preparing field studies

1. Define the research challenge
2. Recognise existing knowledge
3. Select a (user) sample
4. Select a research method

Sample

- Determined by logistics and research question
- Open v. closed communities
  - Find the gatekeeper
  - Informal introductions
- User segmentation

User segmentation



Conducting field studies

- Skills
  - Observation
  - Interviewing
  - Analysis and synthesis
- Means
  - Pen/paper
  - Camera
  - Video
  - Artifacts

Observation skills

- Physical setting
  - Room layout and organisation
  - Workplace organisation
- People
  - Relationships
  - Routines and activities
- Personal observations
  - Eye contact | Yawning | Positioning | Arms folded | Stepping aside | Hands on hips ...

Patterns of human interactions, by Martin & Sommerville (2004), Patterns of human-computer interactions, by Tidwell (2007)

Focusing your observations

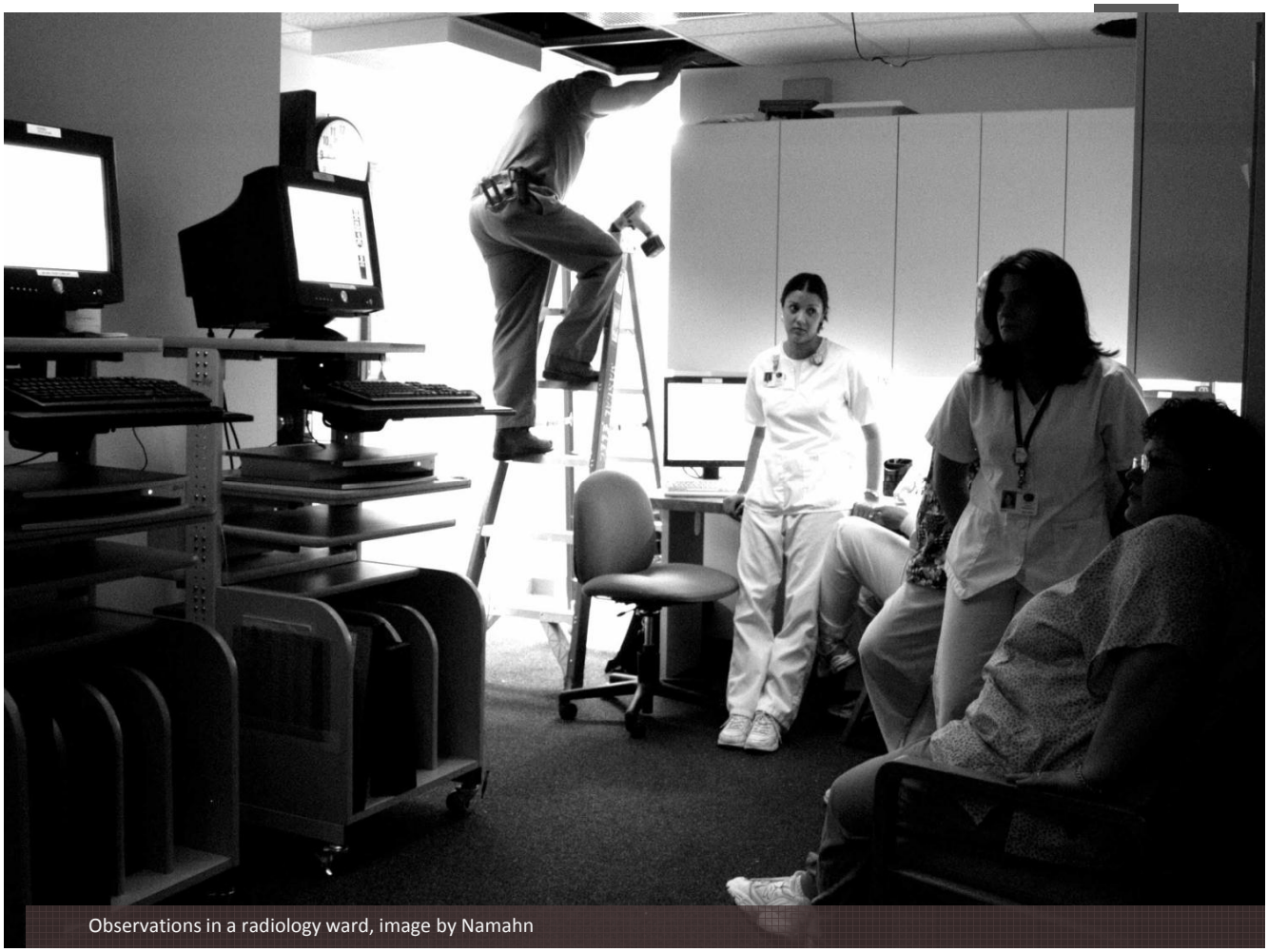
Patterns of human interactions

- Multiple representations of information | Public artefact | Accounting for an unseen artefact | Working with interruptions | Collaboration in small groups | Receptionist(s) as a hub | Doing a walkabout | Overlapping responsibilities | Assistance through experience

Patterns of human-computer interactions

- Safe exploration | Instant gratification | Satisficing | Changes in midstream | Deferred choices | Incremental construction | Habituation | Spatial memory | Prospective memory | Streamlined repetition | Keyboard only | Other people's advice

Patterns of human interactions, by Martin & Sommerville (2004), Patterns of human-computer interactions, by Tidwell (2007)



Observations in a radiology ward, image by Namahn

Interviewing skills

Q: "So you feel that grilling outdoors fosters family togetherness?"
A: "Sure."
Q: "Is there anyone in your family who doesn't enjoy grilling?"
A: "My father."
Q: "But you feel it's a bonding ritual all the same?"
A: "Yeah, kinda."
Q: "How does grilling work in the context of your life? Would charcoal have interfered with the process of social bonding?"
A: "I'm not sure, really. We just prefer gas."

Interviewing skills

- Opening | Question-Response | Closing

- Wording
  - Verbal probing
  - Use open-ended questions for stories and salient details
  - Don’t ask leading questions
  - Don’t use jargon

- Attitude
  - Dress code
  - Eye contact
  - Active listening

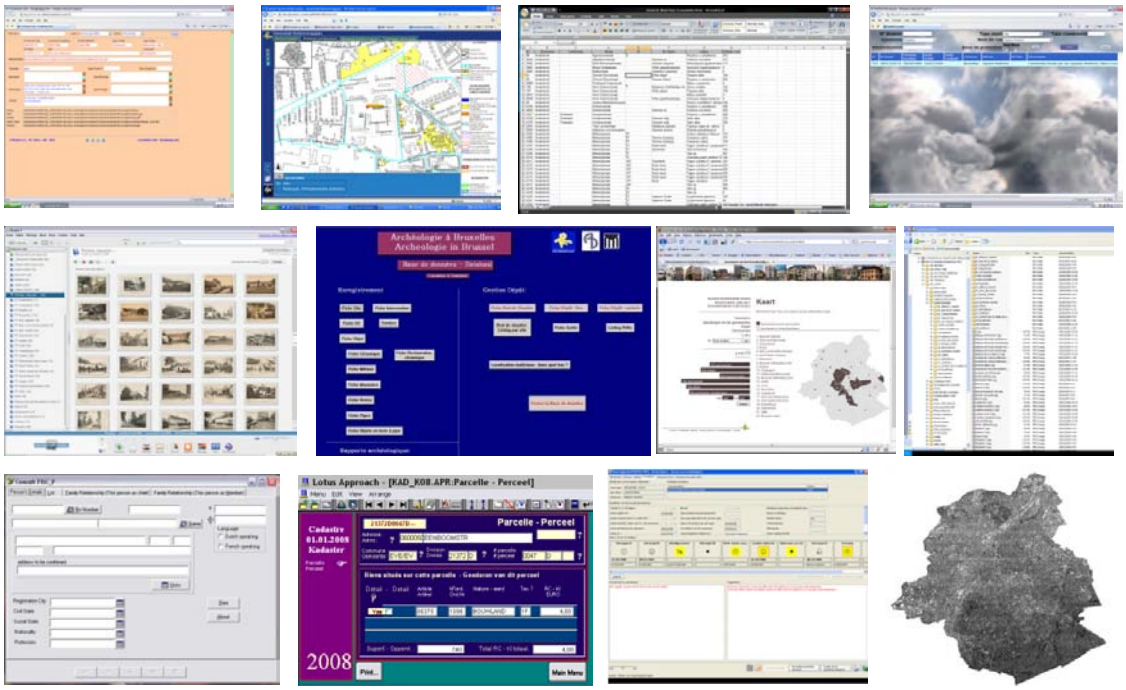
Field study

Outcome

Outcome

- Field notes
  - **During** the observations, **after** the interviews
  - Opinions | Concepts | Ideas | Critique | Motivations | Needs | Tasks | Stories | Solutions...
  - Images, sketches, ...
- Your notes will
  - Inform you
  - Inspire you
- Starting from the raw materials, you will analyse, interpret and report

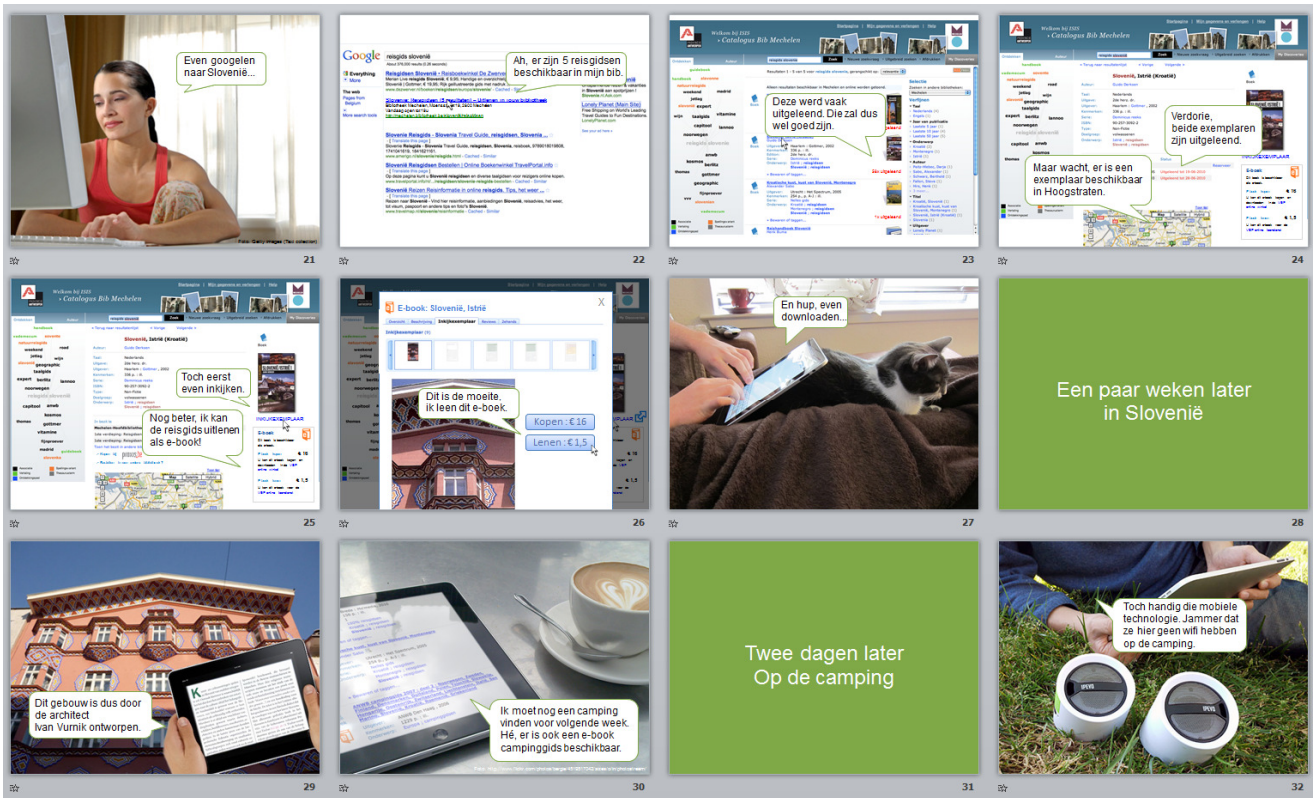
Example

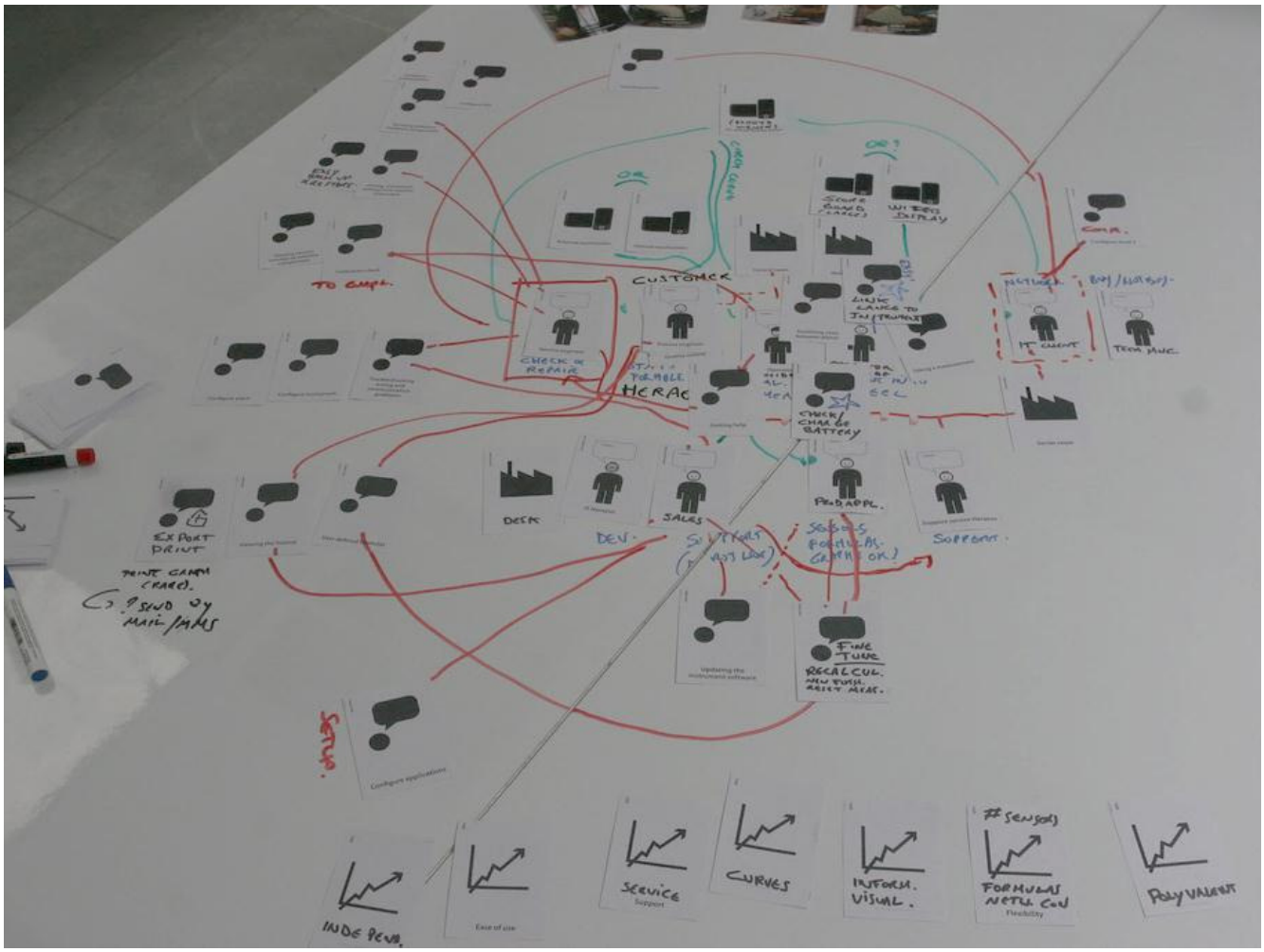


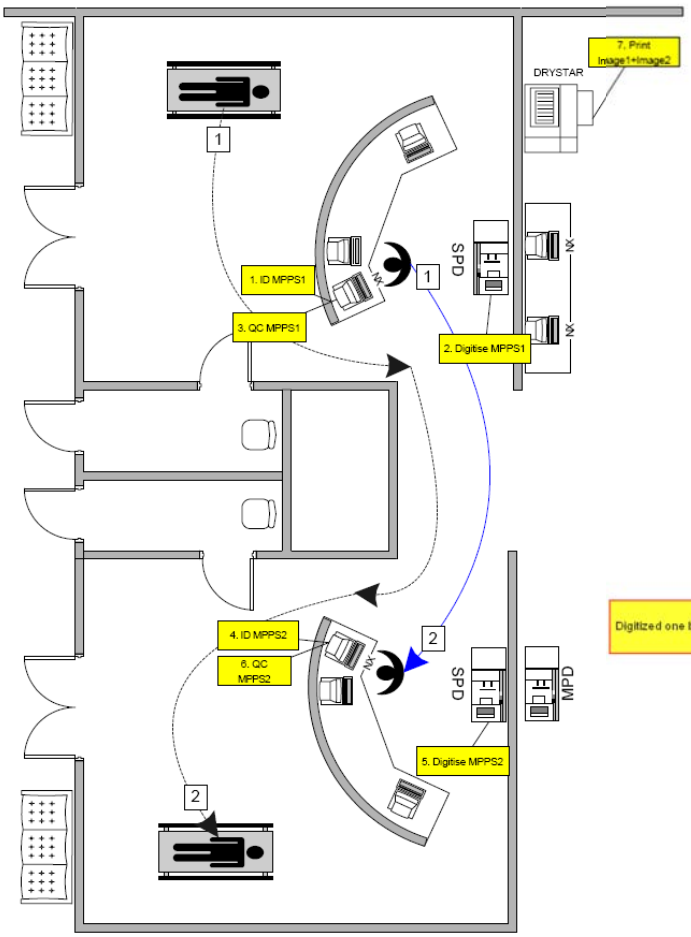
Amount of applications used by the Brussels' 'Directie Monumenten & Landschappen'

Working with your field notes

- Report
- Laying the basis for design
  - Personas or user profiles
  - Current state scenarios of use
  - Day in the life
  - Link analysis
  - Goal & task analysis
  - Context map
  - Photonovel


Even googelen naar Slovenië...
21
Ah, er zijn 5 reisgidsen beschikbaar in mijn bib.
22
Deze werd vaak uitgeleend. Die zal dus wel goed zijn.
23
Verdorie, beide exemplaren zijn uitgeleend.
Maar wacht, er is een exemplaar beschikbaar in Hoogstraten.
24
Toch eerst even inkijken.
Nog beter, ik kan de reisgids uitlenen als e-book!
25
E-book: Slovenië, Istrië
Dit is de moeite. ik leen dit e-boek.
Kopen : € 16
Lenen : € 1,5
26
En hup, even downloaden...
27
Een paar weken later in Slovenië
28
Dit gebouw is dus door de architect Ivan Vurnik ontworpen.
29
Ik moet nog een camping vinden voor volgende week. Hé, er is ook een e-book campinggids beschikbaar.
30
Twee dagen later Op de camping
31
Toch handig die mobiele technologie. Jammer dat ze hier geen wifi hebben op de camping.
32

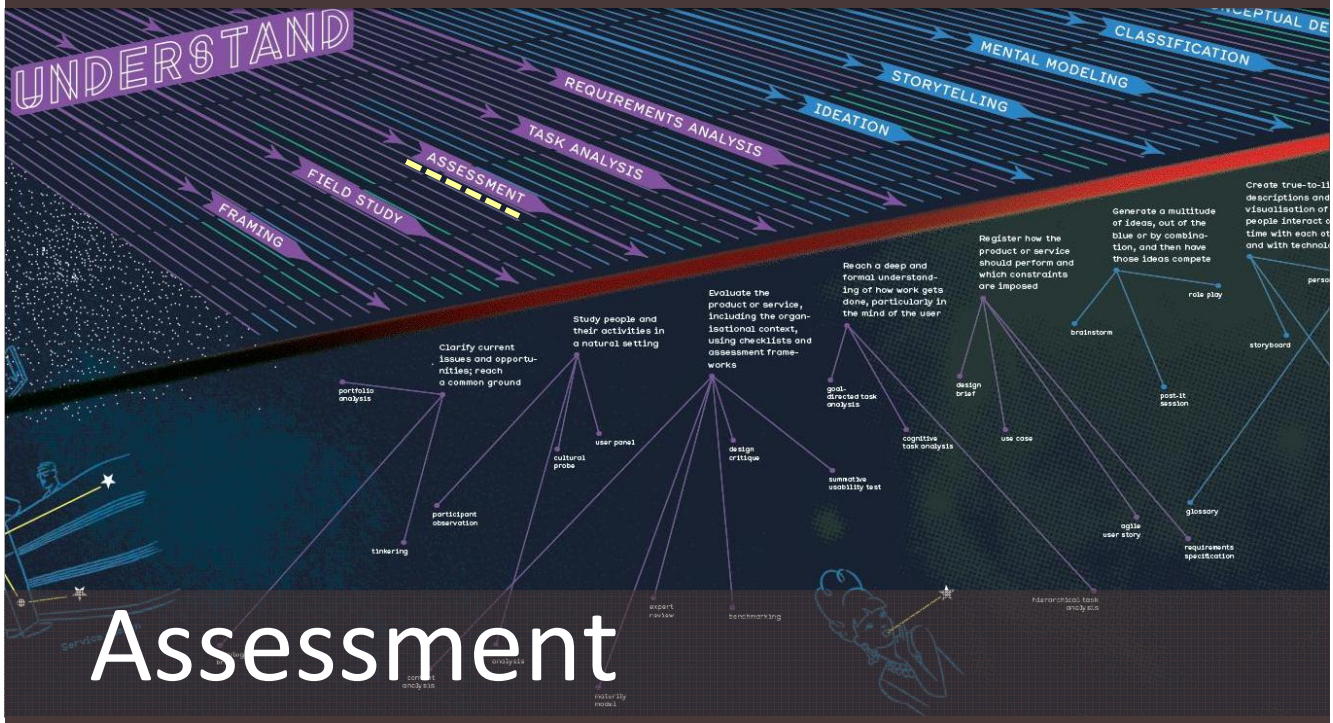

CUSTOMER
CHECK & REPAIR
HERAE
DESK
SALES
DEV.
SUPPORT
EXPORT PRINT
FINE TUNE
SERVICE
CURVES
INFORM. VISUAL.
FORMULAS NETW. CON
POLY VALENT
INDE PEND.



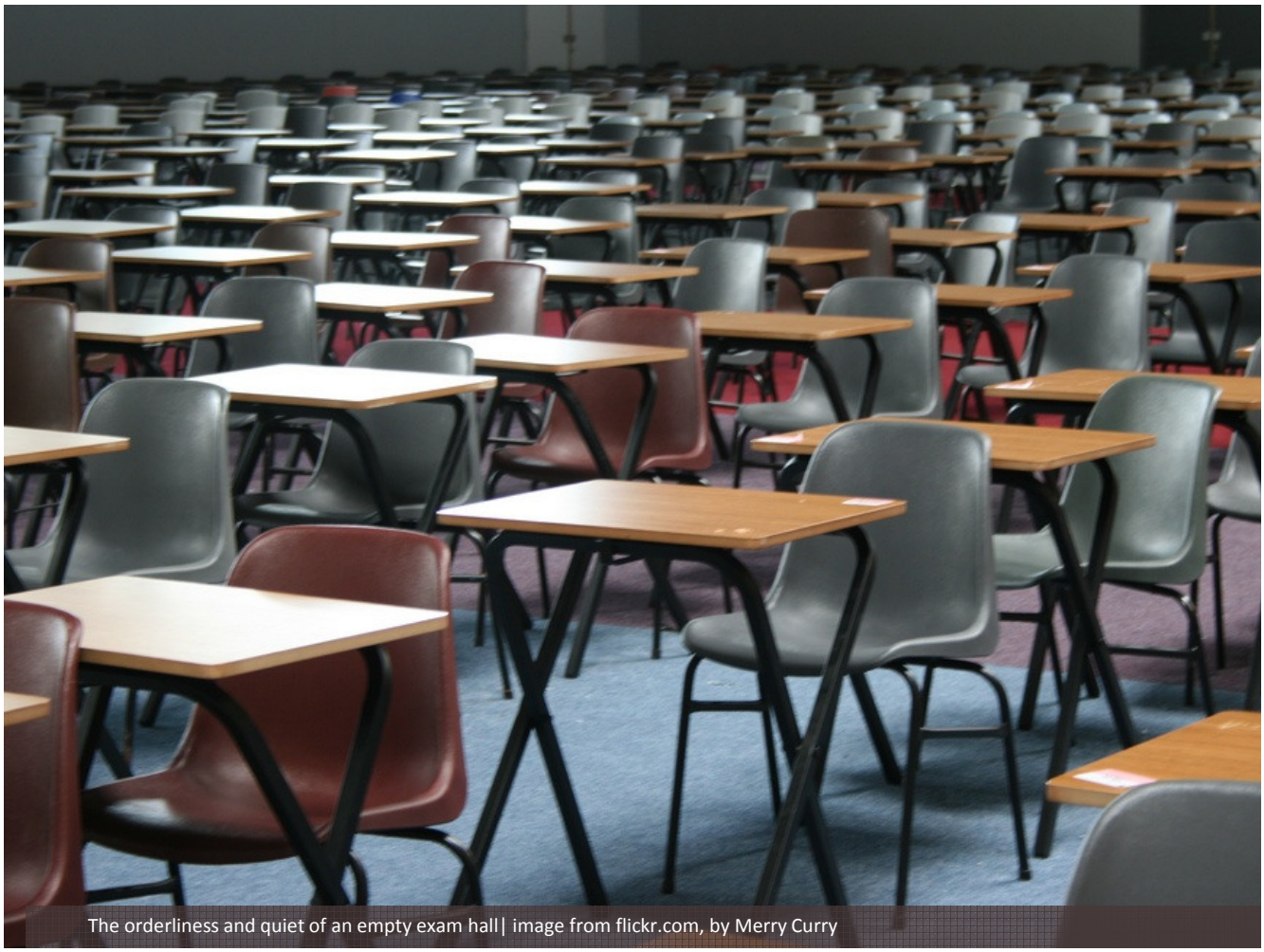
Exercise

Field Study

- ***You receive a request for (re)designing the holiday planner…***
- Create your research plan for this assignment
- Use the form to support you



Assessment



The orderliness and quiet of an empty exam hall| image from flickr.com, by Merry Curry

Assessment

When & why?

Assessment – When & why?

- Existing application
  Basis for redesign: **“What is wrong?”**

- New application
  Check assumptions: **“Did we get it right?”**
  (see *Assessment Revisited*)

Assessment

How?

Methods

- Usability test
- Expert review
- Log analysis
- Questionnaire
- Benchmarking
- A/B testing
- …

Criteria to choose a technique

- What do you want to **learn**?
- **Who** will provide you with feedback?
- What do you want to do with the **results**?
- Qualitative/quantitative

Qualitative/quantitative

- Numbers vs. understanding
  - "85 users thought this application was easy to use" vs. understanding why the application was easy to use
- Statistical value
  - ISO 20282: "At least 20 users shall be selected"

Assessment

Usability test

Usability test

- Observation session
  - during which participants interact with the digital product
  - while performing real-life tasks
- Following a protocol (test case)
- Managed and interpreted by a usability expert
- About usability

Focus

- Findability & understandability of information & functionality
- Tested by means of **tasks** to measure performance:
  - User's expectations & perception of performance ("Did you find this information easily?")
  - Absolute time used to perform a task (h, m, s)

Types of usability tests

- When/Why?

Formative	Summative
Improve design	Evaluate existing design

- Statistical value

Qualitative	Quantitative
Think aloud method	Eye tracking GOMS (Goals, Operators, Methods, and Selection rules) KLM (Keystroke Level Model)

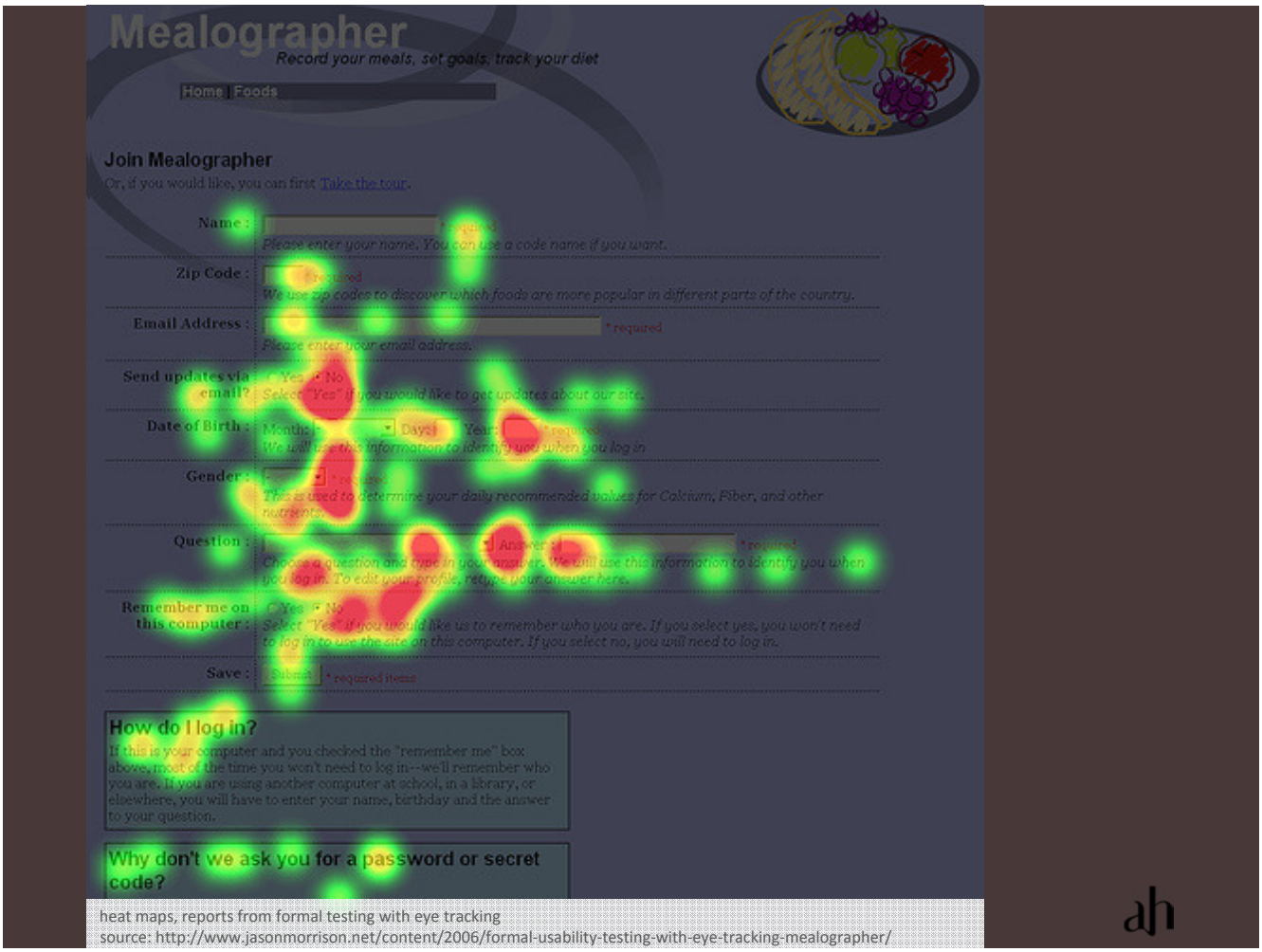
- Formality

Formal	Informal
Usability lab Observation	Dialogue (trying to understand)

Testing technique: think-aloud

- A specific type of activity, in which participants are explicitly instructed to "think aloud" as they complete the assignment

Pros	Cons
No test-leader imposed bias	Bias in information processing
Minimal test-leader training	Need for participant training Participant resistance
Open-ended format	Tendency to stray from the assignment
Qualitative	Impossible to measure



heat maps, reports from formal testing with eye tracking
source: http://www.jasonmorrison.net/content/2006/formal-usability-testing-with-eye-tracking-mealographer/

KLM example

Example Calculation

Change the code in Line 512 from "hte" to "the" ('the'the' in computer language) and then press Enter Key

or

" Change 512 'hte'the' "

Steps

- Mentally prepare
- 6 average speed keystrokes (for word "change")
- 1 average speed keystrokes for space bar
- 3 keystrokes for pressing numbers "512"
- 1 average speed keystrokes for space bar
- Mentally Prepare by reading what needs to be changed
- 6 average keystrokes for typing hte and the
- 3 keystrokes to press the 3 " ' "
- 1 keystroke to press Return Key

Values

K1 = average speed keystrokes (0.20 seconds)

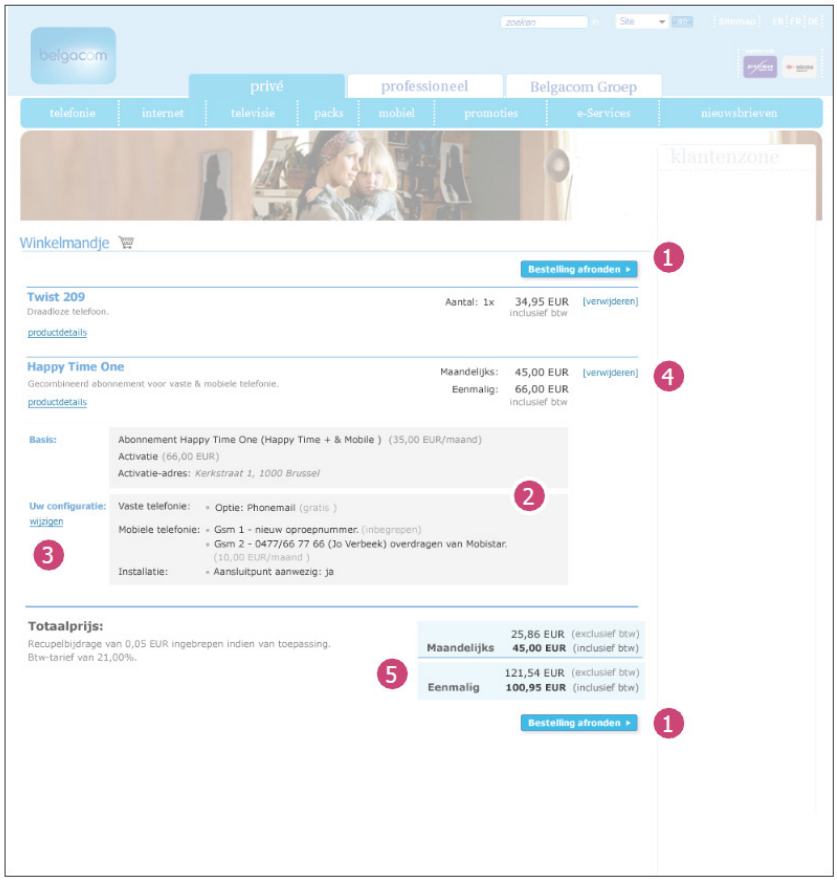
K2 = typing random letters (0.50 seconds)

M = Mentally Prepare (1.35 seconds)

Put above steps into formula: M + 6K1 + K1 + 3K2 + K2 + M + 3K1 + K2 + 3K1 + K2 = 2M + 14K1 + 6K2 = **9.82 seconds**

Reporting

- Report
  - Approach, (positive & negative) findings, Interpretation
  - Focus on how to improve the application
  - Prioritize
- Screen recordings of the tests
  - Use screen capture software
    E.g. Camtasia, Morae
  - Create a montage illustrating the main findings
    = very effective to prove a point (and convince management)



Shopping Basket

Findings

Overall, participants think the shopping basket provides a clear overview of the order.

BASKET CONCEPT

The concept of a shopping basket and its behaviour do not cause problems during nor after the tasks. Even though the expected behaviour is differs from the actual behaviour: e.g. when using the back button, it was expected that the basket was emptied.
It was remarkable that standard basket behaviour was not more obvious to the persons, especially for those with extended online shopping experience. ■■□□

PRICING: NOT TRANSPARENT

- Pricing is not clear. When asked for the interpretation, this takes time and is often wrong. ■■■□
- Promotional information is missed. Most participants mention that they want to see different price totals: what they need to pay now, what they need to pay after the promo price is finished. ■□□□
- Pricing details of the product configuration options are often not noticed. (2) ■□□□
- A few participants noticed that delivery costs are not mentioned. ■■□□
- The difference and meaning of one-time costs and monthly costs is not understood by some participants. Some wonder whether the monthly costs have to do with some sort of a payment plan. (5) ■□□□
- Some participants wonder what the amount of the first invoice will be. Is it the sum of one-time costs & monthly costs? □□□□

BUTTON MIRROR 'FINISH ORDER' (1)

- Button Finish order (Bestelling afronden) is sometimes not clear to participants when asking them about it. ■□□□

CONFIGURATION DETAILS (2)

- Positive feedback about these details being shown here.
- The detailed pricing within the chosen configuration is often not noticed. ■□□□
- Grouping & pricing of these details and their relation to the total subscription price is not obvious to participants.

Assessment

Expert review

Expert review

- Session in which a few carefully selected experts develop a common understanding of the qualities of a product or a service.

- Focus on high level design concepts:
  - Branding & visual design
  - Information design
  - Navigation design
  - Page types
  - Interaction
  - ‘Behind the scenes’
  - …

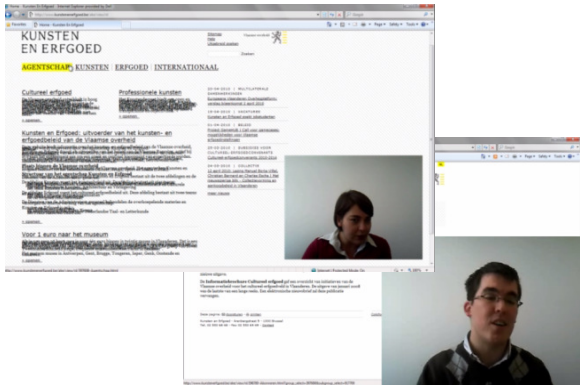
Expert review aspects

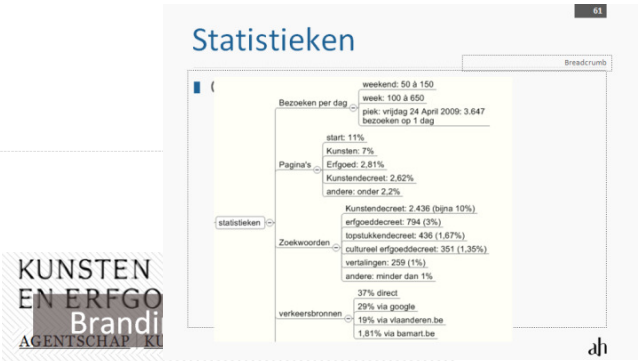
- Impact of being an external

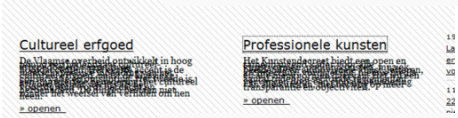
- Subjective

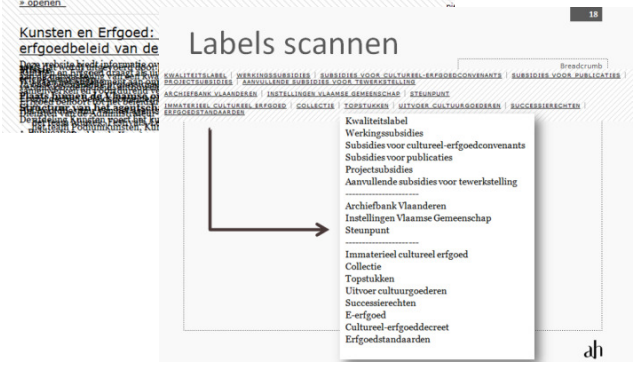
Vlaams agentschap Kunsten en Erfgoed

- Expert review with 4 Namahn experts
- Usability test with 8 users









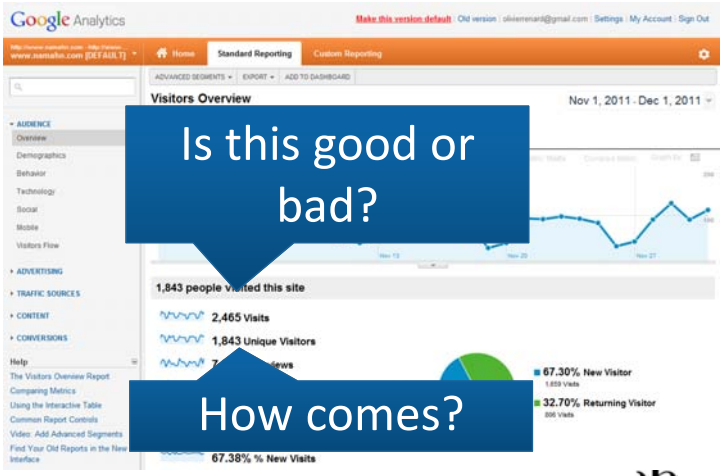
Assessment

Log analysis

Log analysis

- **"Log analysis** is an art and science seeking to make sense out of computer-generated records (also called log records)."

- Example:
  Google Analytics



What to do with logs?

- Analyse
  - Most/least popular content
  - How did people get here?
    Where did they go from here?
  - Search

- Act
  - Omit pages
  - Restructure navigation
  - Adapt language
  - …

Example - Search

- What information is hard to find by browsing?
- User's language vs. language used on the site
- Spelling
- Users search for products that are not even there

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Assessment

Questionnaire

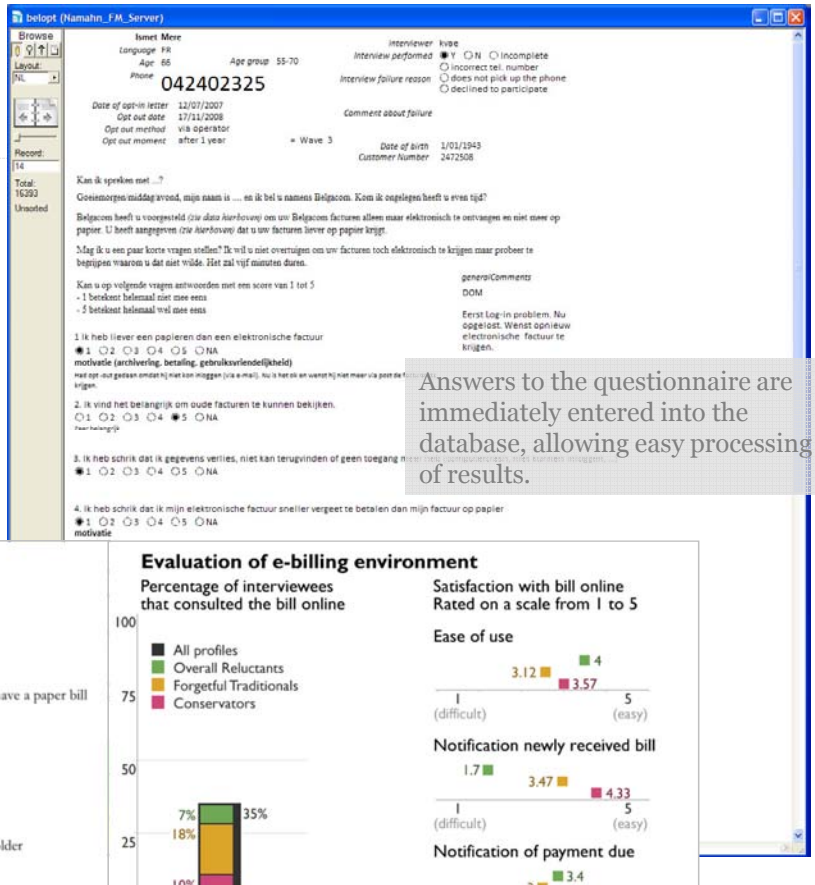
Questionnaire

- "A research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents."

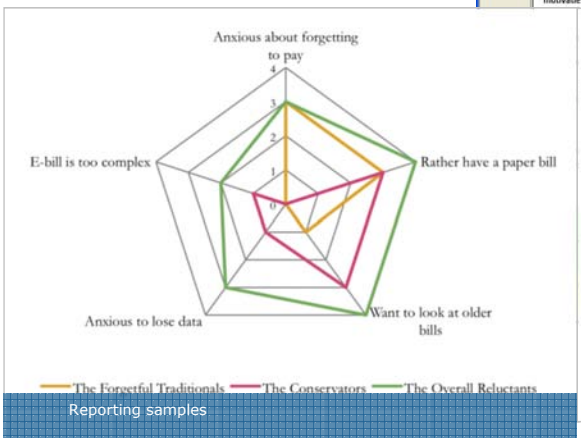
Pros	Cons
Statistical value (Large number of respondents)	Statistical value (Audience: time available, incentive)
Quantitative	Low quality (No deep understanding)
Closed format ("85% liked A over B")	Easy to draw conclusions but difficult to derive recommendations

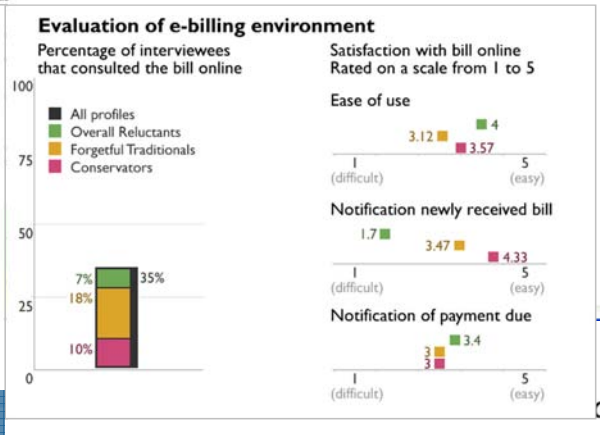
Belgacom Bill Online preparation & interviews

- Setting up a protocol and research approach
- In collaboration with research group MICT (UGent)
- Interviewing 100 respondents
- A mix of: French/Dutch speaking, male/female, mobile/fix.



Answers to the questionnaire are immediately entered into the database, allowing easy processing of results.





Assessment

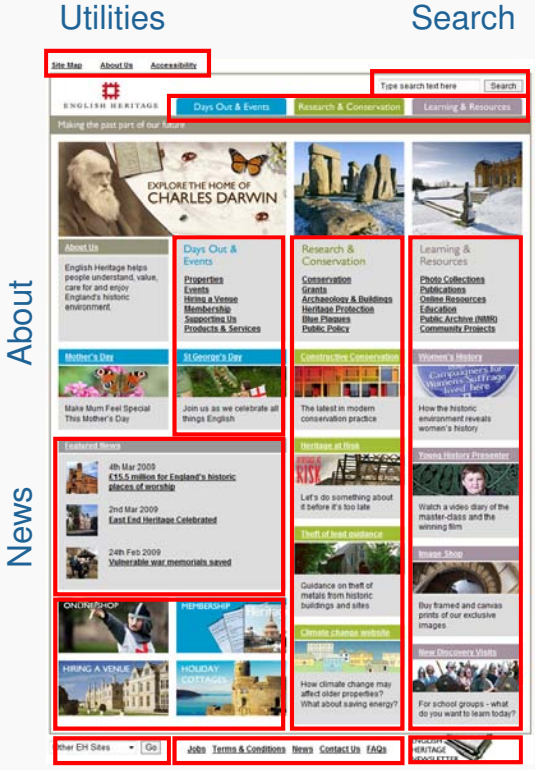
Benchmarking

Benchmarking

- Compare your site/application to other's
- Scope
  - How did they solve this issue?
  - Inspiration
  - Measure

Brussels region

UK



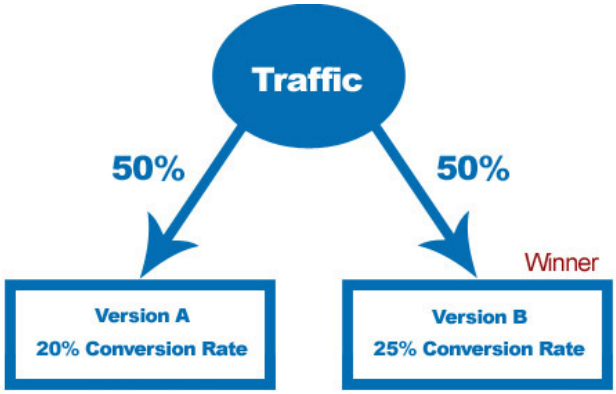
Assessment

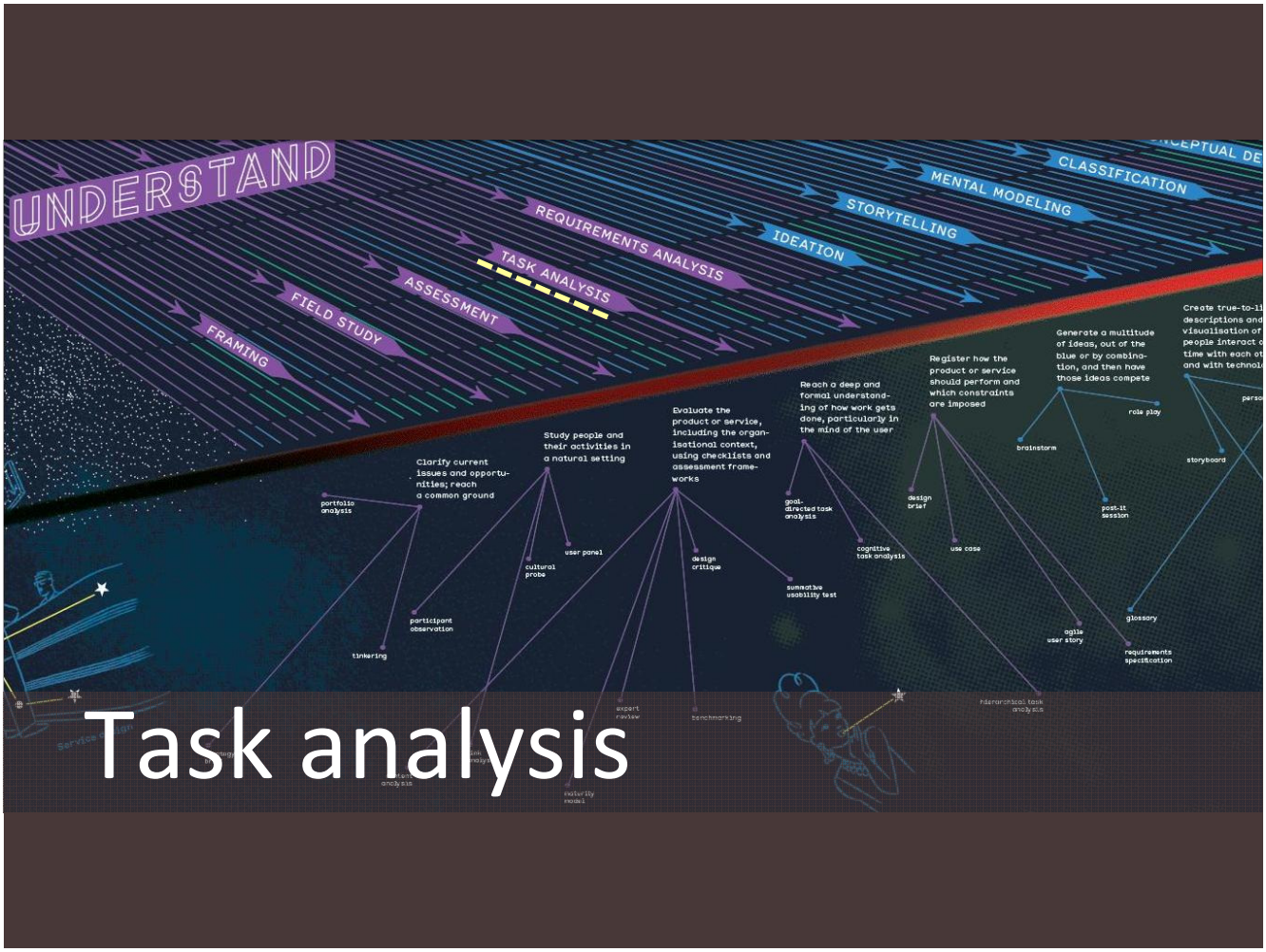
A/B testing

A/B testing

- Compare two versions of a page on a live website

- Requirements
  - Live site
  - Large number of visitors (‘let the audience decide’)
  - Measure conversion





Type 205306
Model "NP"

Operating Instructions

IMPORTANT
ALWAYS USE GOOD, CLEAN OIL
S. A. E. No. 20
For Temperatures Below 32° F. Use S. A. E. No. 10W
ADD OIL FREQUENTLY
CHANGE OIL REGULARLY

Adjustment and Repair
Information • Parts List

MODELS

"N"—"NP"—"NR"
TYPE NUMBERS FROM 205000 TO 205499

INDEX

	Page
Starting the Motor	2
Servicing Reference Chart	3
Instructions for Adjustment and Repair	3
Repair Parts	10
Parts List, Models "N," "NP," "NR"	11-16
Illustrated Parts	17-18
Guarantee	18
Nation-Wide Service Organization	18
Authorized Central Service Distributors	19

Read these instru
before operating
the first time.

Guessing how to run it
necessary inconvenience
ure to receive the fine
into it.

There is a right v
this Motor. This
how.

Each Motor is carefully t
the factory before packi
if correctly operated will
expectations.

DO NOT START THIS
HAVE READ CAREFUL
AND OPERATING IN
PAGE

4 CYCLE
BRIGGS & STRATTON
GASOLINE MOTOR

INSTRUCTIONS

for the use of the

B-24D, E, G, H, & J
PB4Y-1
LOAD ADJUSTER

This publication supplements the Handbook of Weight and Balance Data, AN 01-1B-40 and shall be inserted in the same binder.

Operational instructions from Lindbergh-Aviations.de

Airplane having engine problems from geekologie.com

What is task analysis?

- Research activity
- Leading to a deep, formal and structured understanding
- Covering tasks structure & characteristics

Task characteristics

- Roles & goals
- Steps allocation (manual, mental or automatic)
- Duration & frequency
- Complexity & criticality
- Required information
- Terminology
- Interactions with other people
- Common problems & mistakes
- Environmental conditions
- Necessary tools (e.g. clothing, equipment)

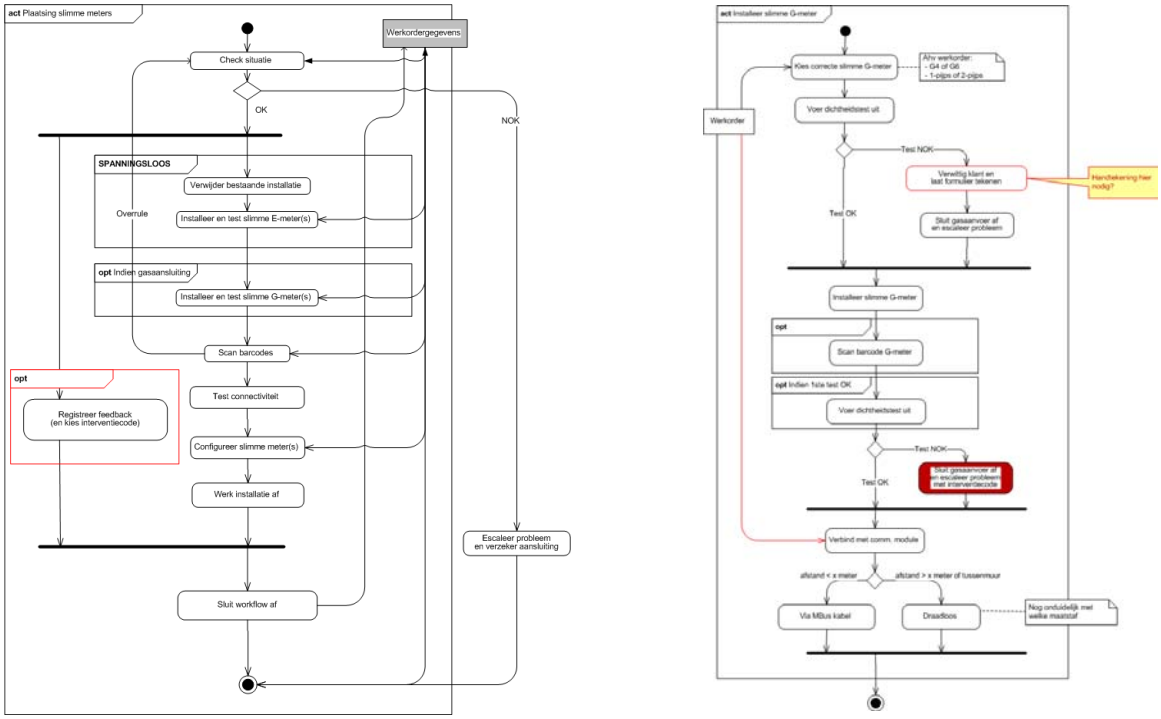
Sources: Hill J.R., Soto P. & Jones D. (2004); Johnson (2010)

Task analysis outcome

- Task hierarchy
- Task characteristics
- Information requirements
- Cognitive demands

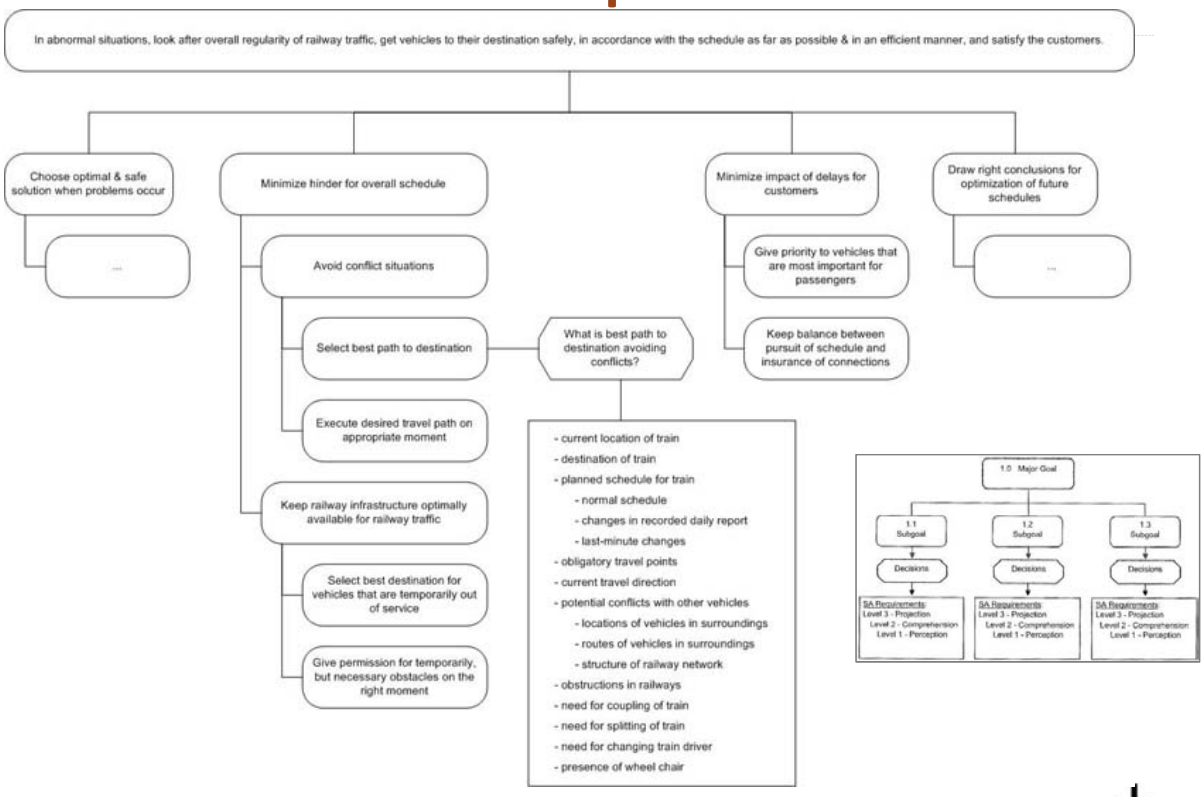
Task hierarchy

Activity diagram

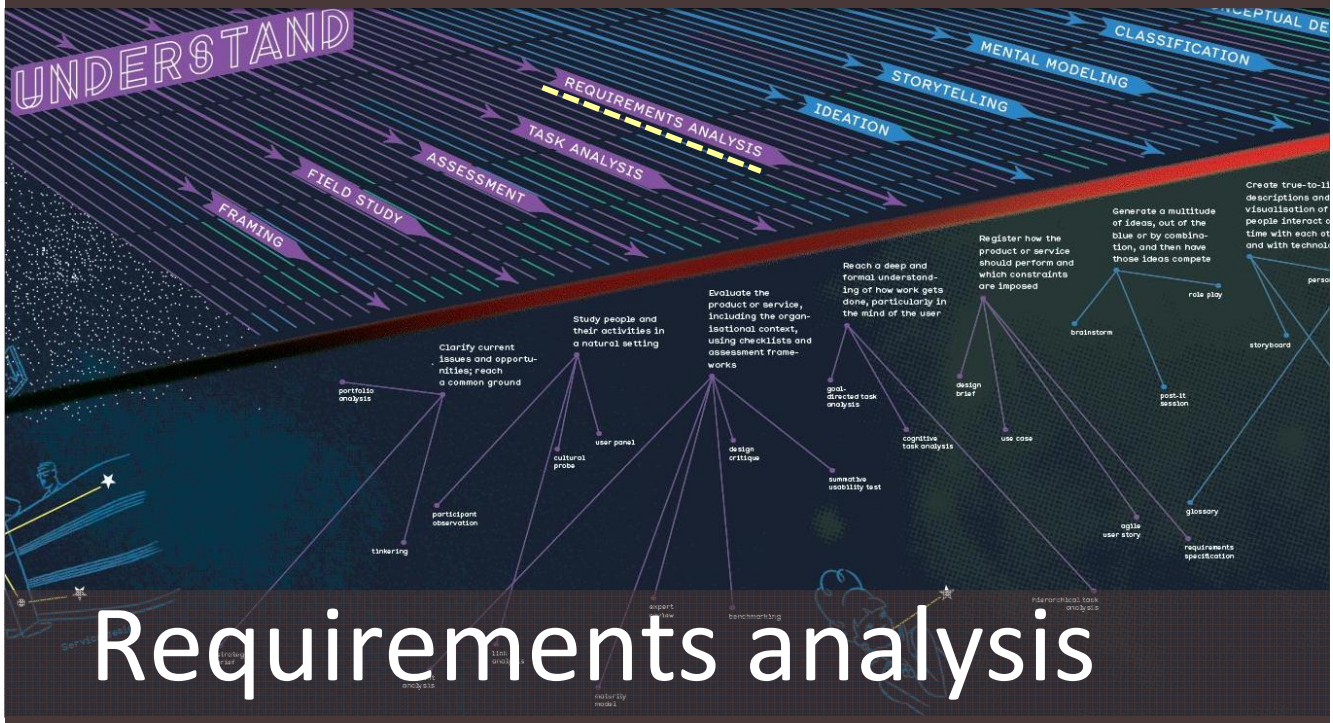


Installation process for smart meters at Eandis

Information requirements



Information requirements for rail traffic optimization



Requirements analysis

Paper files from sax.nu

What are requirements?

- Needs, conditions and constraints
- Both functional and non-functional
- Unambiguous
- Motivated
- Testable
- Prioritized

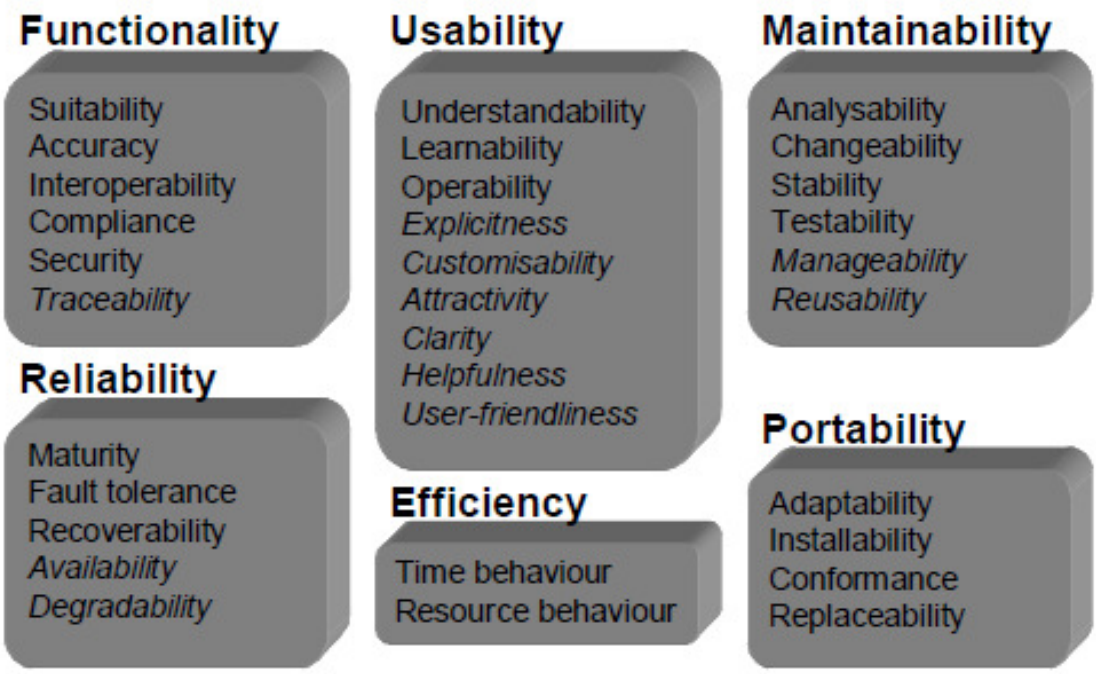
Requirement types

- Robertson & Robertson (1999)
  - Functional
  - Data
  - User
  - Environmental
  - Usability
- Goodwin (2009)
  - Functional
  - Data
  - Users
  - Goals
  - Qualities
  - Constraints

Requirement types - ISO 9126

- Functionality
  - Suitability, accuracy, interoperability, **security**, compliance
- Reliability
  - Maturity, **fault tolerance**, **recoverability**, compliance
- **Usability**
  - **Understandability, learnability, operability, attractiveness, compliance**
- Efficiency
  - **Time behaviour**, resource utilization, compliance
- Maintainability
  - Analyzability, changeability, stability, testability, compliance
- Portability
  - **Adaptability**, installability, co-existence, replaceability, compliance

Requirement types - QuInT



Source: CIBIT SERC, 2004

Requirement types - other

- Accessibility & internationalization
  - www.w3.org
- Touch & mobile
  - http://msdn.microsoft.com/en-us/library/cc872774.aspx
- Animation, responsiveness, social media, fun...
  - http://doloresjoya.com/blog/user-interface-animation/
  - http://www.webdesignshock.com/responsive-web-design/
- Safety
  - http://hf.tc.faa.gov/hfds/download.htm

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Specific requirements

The interface should have a clear visual design

Information displayed on the screen should be clear, well-organised, explicit and easy to read. Visual design should support the user model and communicate the function of that model without ambiguities. The final result should be an intuitive and familiar representation that is a second nature to users.

Parameters by which this criterion can be evaluated:

- Use no more than 4 colours, 4 font sizes, and 3 fonts
- Use sans serif fonts. The best sans serif font is the Tiresias PC font that is designed for optimal screen readability. Installing this font would especially benefit all users over 45 who wear reading glasses. Of the more widespread fonts, Verdana and Arial do very well too.
- Use a readable font size. To determine the font height, we can rely on a practical and commonly used rule that says that the font height should be 0.5 % of the reading distance, if that distance is bigger than 60 cm. For a reading distance of 60 cm, the minimum font height would be 3 mm. For a reading distance of 80 cm (which is the maximum distance that someone will be able to get away from the screen, while still being able to touch the device), the minimum font height would be 4 mm.
- Don't use complementary colours
- Use high contrast colour combinations. The biggest contrast is realized using white on black.

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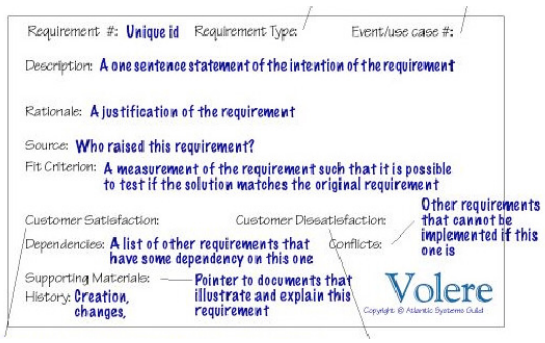
Outcome > formalisms

- Mind map
- Structured list, e.g. Rational RequisitePro

ID	Description	Category	Department(s)	Person/content owner	Priority	Type	Status	Comment	Link to
1	Easily add and publish audio, video, slide-shows and photos on the intranet	Multimedia	Communication	F. Tourneur	M	Functional	approved		
2	Access to usage statistics, with information on how many users have viewed certain pages/section, for how long, etc.	Usage statistics	Communication, QSMS	S. Bülles, S. Schmitz, S. Van Coppenolle, F. Tourneur	M	Functional	proposed	Also asked by QSMS e.g. : hoeveel mensen hebben verslagen bekeken van de Ondernemingsraad (OR) of comité PPP	
3	Access to a *photo database/library* about Fluxys, that you can use in folders, brochures,	Multimedia	Communication	S. Bülles	M	Functional	proposed	Vraag beter beschrijven	

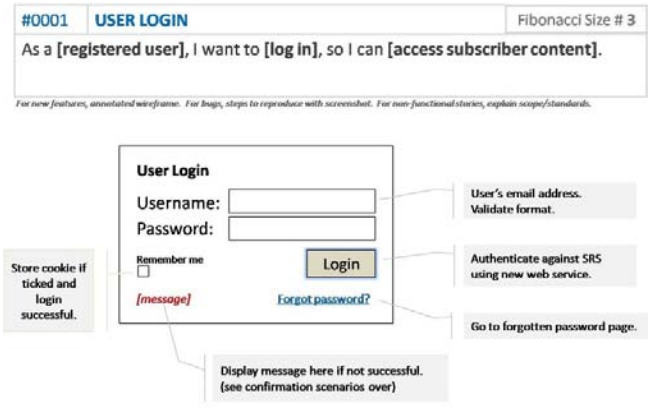
- Card, e.g. Volere



Source: Robertson (2006)

Outcome > formalisms

- Note, e.g. Sparx Systems EA
- User story, cf. agile



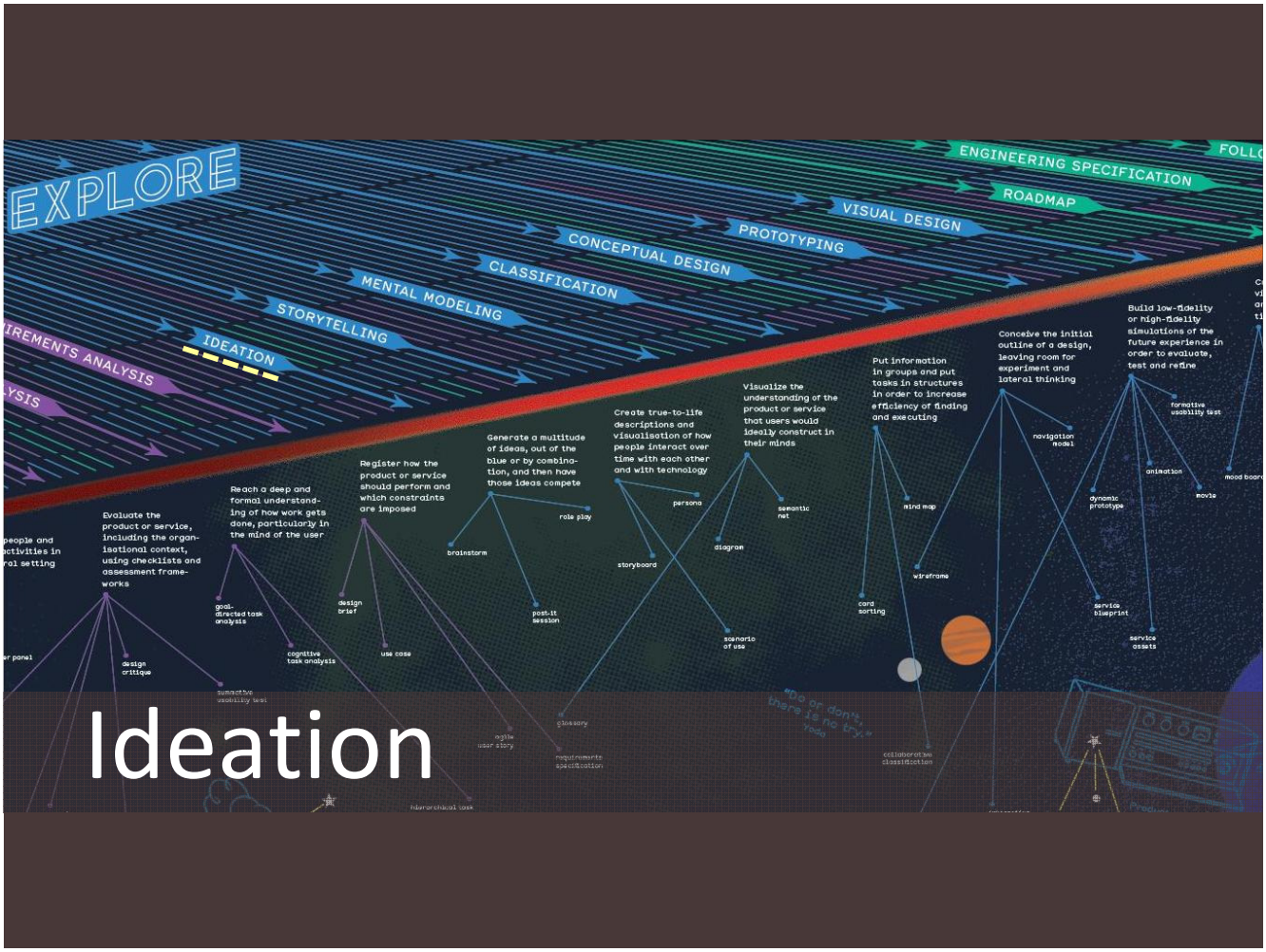
- Use case, e.g. Cockburn

USE CASE #	< the name is the goal as a short active ver	
Goal in Context	<a longer statement of the goal in context if needed>	
Scope & Level	<what system is being considered black bc <one of : Summary, Primary Task, Subfun	
Preconditions	<what we expect is already the state of the	
Success End Condition	<the state of the world upon successful co	
Failed End Condition	<the state of the world if goal abandoned>	
Primary, Secondary Actors	<a role name or description for the primary <other systems relied upon to accomplish	
Trigger	<the action upon the system that starts the	
DESCRIPTION	**Step**	**Action**
	1	<put here the steps of the scenario from trigger to goal delivery,and a
	2	<...>
	3	
EXTENSIONS	**Step**	**Branching Action**
	1a	<condition causing branching> : <action or name of sub.use case>
SUB-VARIATIONS		**Branching Action**
	1	<list of variation s>

Sources: Cockburn (2001), Waters (2008)

Outcome > design brief

- **Why**: mission statement
  - Issues/challenges
  - Context
  - Users
- **How**: approach
  - Process, methods, deliverables, evaluation
- **What**: structured requirements
- By **when**: planning



About ideation...

Ideation is the systematic search for targeted opportunities in the form of new features, new products, new markets, and new services

Ideation basics

- **Who**: Participants = multidisciplinary team + users
- **When**: Upfront, at the beginning of a product planning session
- **How**: Quantity is the most important rule. The quality of ideas is directly correlated to the quantity of ideas

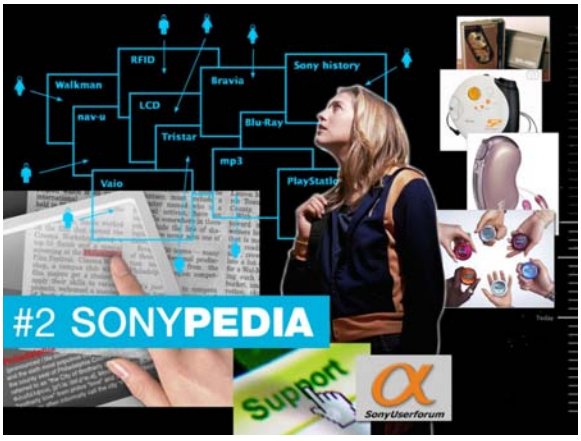
Techniques

Ideation techniques

- Laying the groundwork
  - Trend and industry analysis
  - Customer insights
- Generating ideas
- Selecting ideas
- Presenting ideas

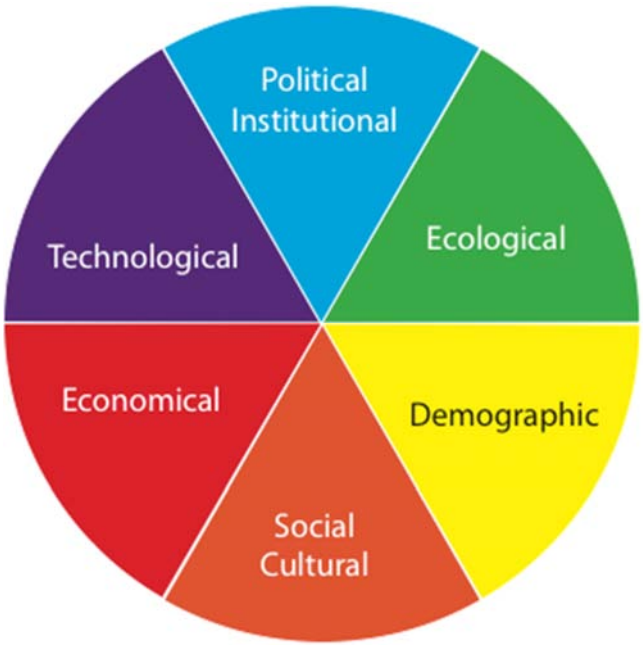
Trends & industry - trend boards

- Get inspired by customer and technology trends



Trends & industry - future wheel

- Anticipate future trends



Customer - personarios

- Create fictitious characters to empathize with; go for extreme users.

Joost (39)

WO opgeleid

Key accountmanager

Wegwijs online

Carriere belangrijk

Wil verder groeien

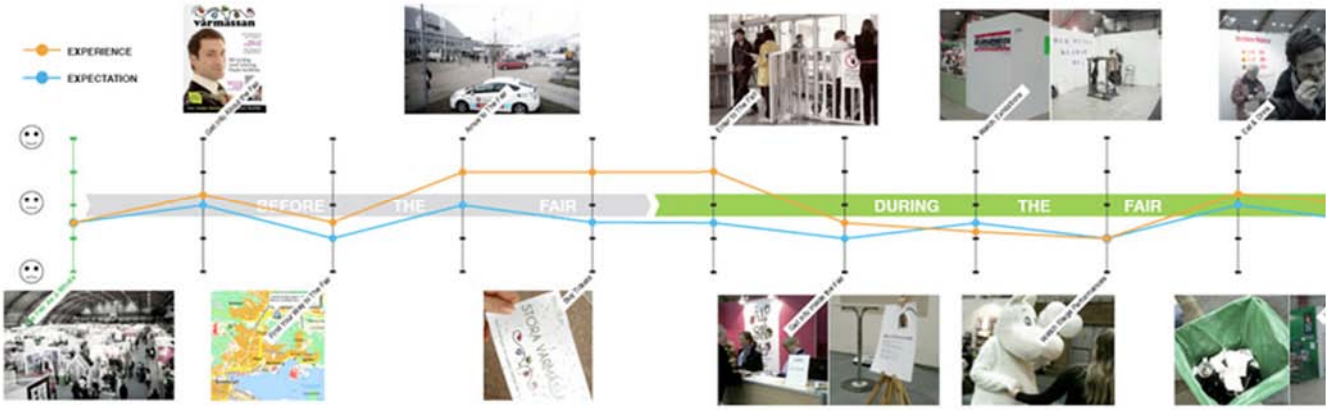
"Ik wil gewoon de beste aanbieders op een rij. Als ik ze naast elkaar heb kan ik zelf een keuze maken. De baas betaalt, maar het moet wel goed!"

Heeft geen geduld om zelf lang naar trainingen te zoeken. Wil gewoon snel het aanbod op een rij om aan zijn baas te laten zien.

Als Joost niks vindt dat voldoet laat hij de training voor dit jaar zitten. Er is genoeg te doen op de zaak. Joost wil de aanbieders snel een vraag kunnen stellen. Hij wil ook kunnen aangeven welke soorten trainingen en aanbieders hij juist niet wil zien.

Customer - customer journey

- Evaluate the experience over multiple touchpoints
- Discuss consistency and shortcomings



Customer - context mapping

1. 4 circles: Write problem in the centre
2. Write causes in the surrounding circles
3. Write the contributing factors outside the circles

Ideation techniques

- Laying the groundwork
- Generating ideas
  - Mind mapping
  - Scamper
  - Lotus blossom
  - Human drives
- Selecting ideas
- Presenting ideas

Mindmapping: associations

1. Start in the centre
2. Use keywords
3. Add colours and images
4. Think fast

SCAMPER: change your problem

Applied to selling

- **S (Substitute)**
  What elements of this product or service can we substitute?
- **C (Combine)**
  How can we combine this with other products or services?
- **A (Adapt)**
  What idea from elsewhere can we alter or adapt?
- **M (Magnify/Minify)**
  How can we greatly enlarge or greatly reduce any component?
- **P (Put to Other Uses)**
  What completely different use can we have for our product?
- **E (Eliminate)**
  What elements of the product or service can be eliminated?
- **R (Rearrange)**
  How can we rearrange the product or reverse the process?

Source: Michalko

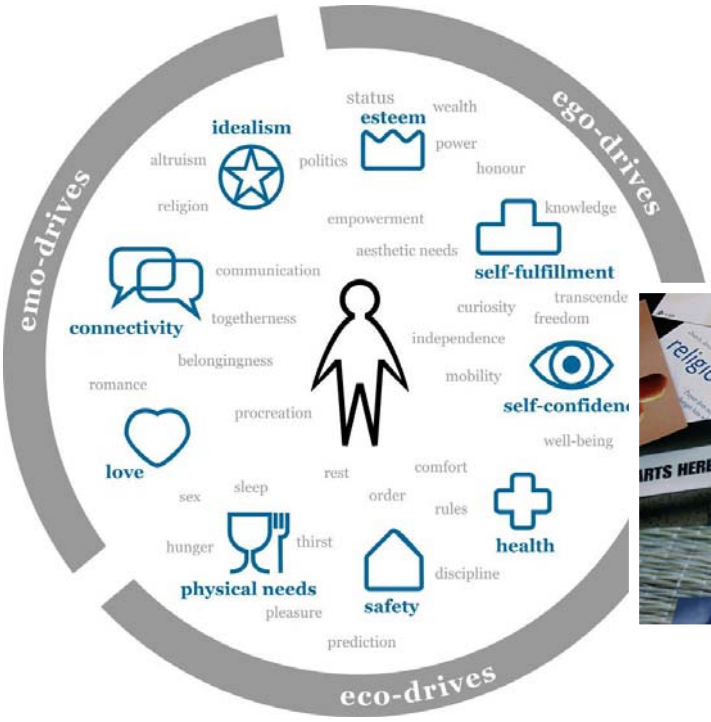
Lotus blossom: breaking up ideas

1. Write problem in the centre
2. Write the dimensions of your subject in the surrounding circles
3. Generated new ideas for each dimension

6 Meeting new people	3 Gathering	7 Connectiveness	6 Personal	3 Unambiguous	7 Dynamic	6 Comparability	3 Different means of payment	7 Direct/Indirect
2 Meeting friends	F Socialness	4 Belonging to a group	2 Reliable	C Information	4 Accessible	2 Rising	G Price	4 Reductions
5 Sharing	I Sympathize	8 Giving	5 Culture	I Context	8 Share	5 Share	I Surcharge	8 Value
6 Appointments	3 Perception	7 Duration	F Socialness	C Information	G Price	6 Freedom	3 Empowerment	7 Efficiency
2 Accurancy	B Time	4 Quality	B Time	TRAVEL	D Independency	2 Lonely	D Independency	4 Flexibility
5 Part of day	I Persona/Work	8 Intensity	E Status	A Context	H Means of transport	5 Impulsive	I Reflection	8 Control
6 Wealth	3 Employment status	7 Je m'en fou	6 Audience	3 Technology	7 Aim	6 Private	3 Public	7 Independent
2 Ideology	E Status	4 Perception	2 Developments	A Context	4 Demographic	2 Group	H Means of transport	4 Dependent
5 Belonging to a group	I Isolation	8 Appearance	5 Laws	I Trends	8 Principles	5 Alone	I Ecological	8 Economical

Source: Matsumura – Clover Management Research

Human drives



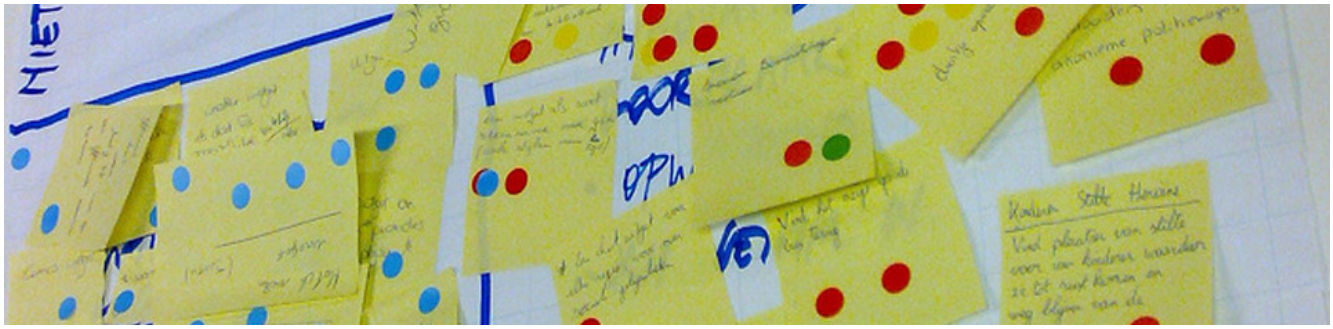
Ideation techniques

- Laying the groundwork
- Generating ideas
- Selecting ideas
  - Multi voting
  - COCD box
- Presenting ideas

Selecting ideas - multi voting

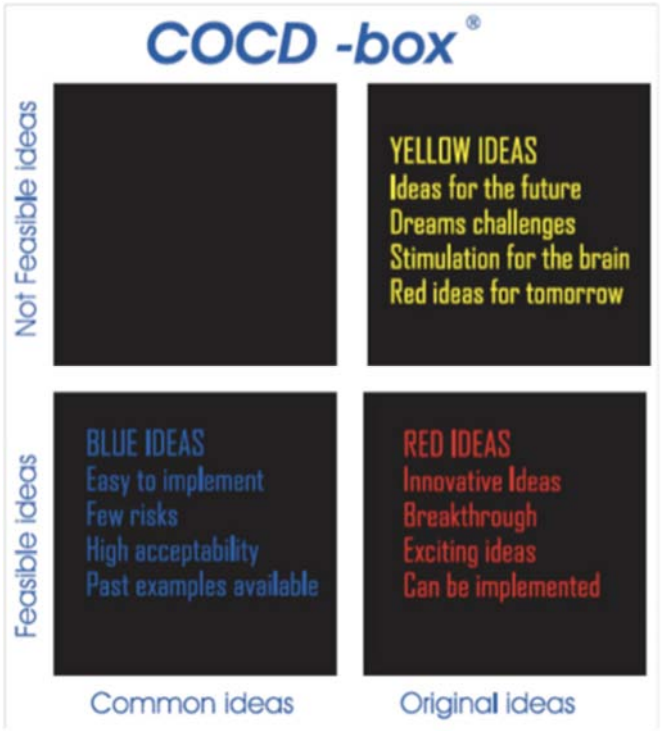
- Multi voting
  - Use selection criteria (adapt if needed)
  - Group ideas and label groups
  - Each person gets a number of dots (3-5) to rank best ideas

- Different colours of dots can be used (red, blue, yellow ideas)



Selecting ideas - COCD box

- COCD box

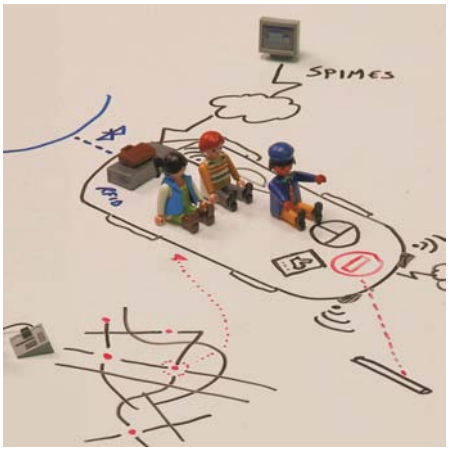


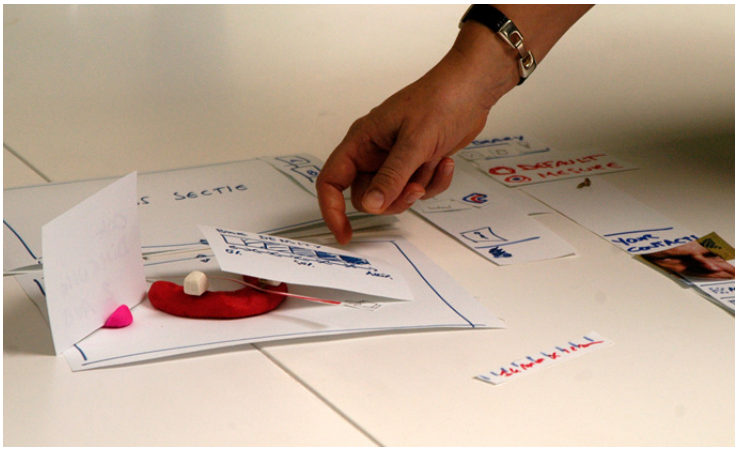
Ideation techniques

- Laying the groundwork
- Generating ideas
- Selecting ideas
- Presenting ideas
  - Rapid prototyping
  - Scenario's

Presenting ideas - rapid prototyping

- Prototype material
  - Post-its, large paper (flip chart), thick markers
  - Lego, Playmobil, wood blocks, …
  - Modelling clay, pipe cleaners, …



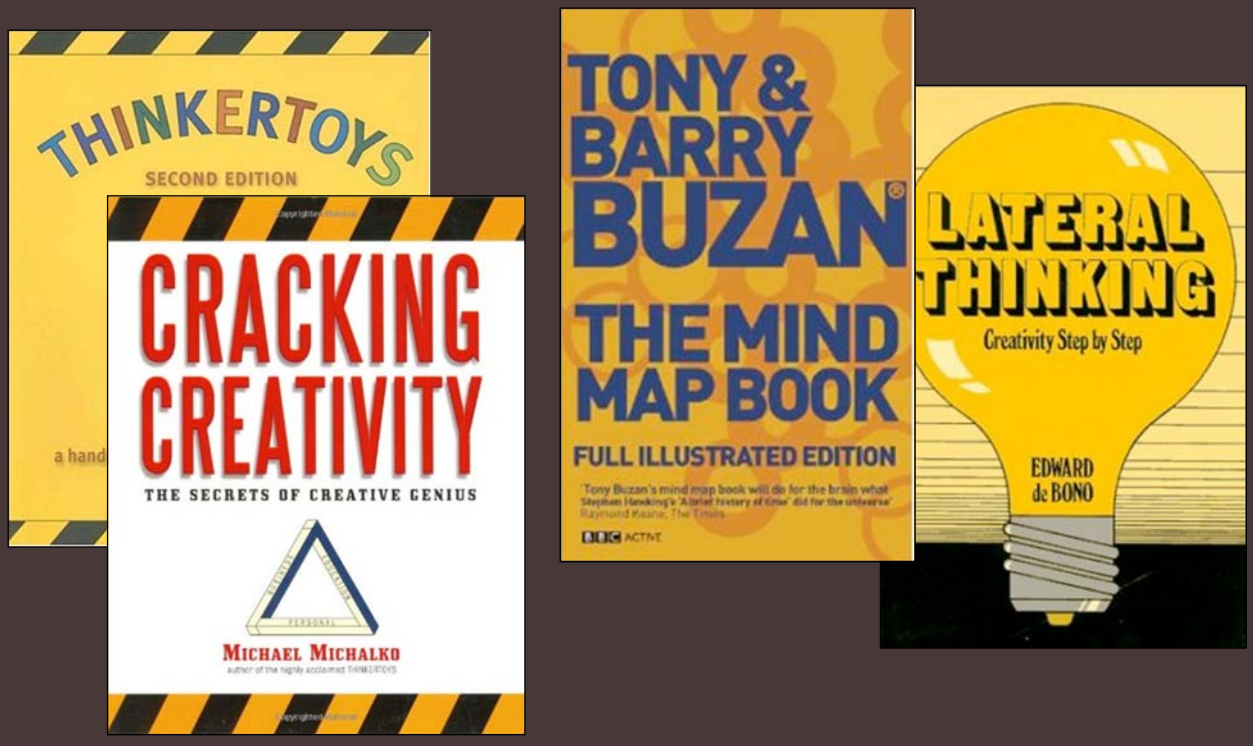


Presenting ideas - scenarios

- Think photo novel or comic strips
  - PowerPoint and Photoshop

ah

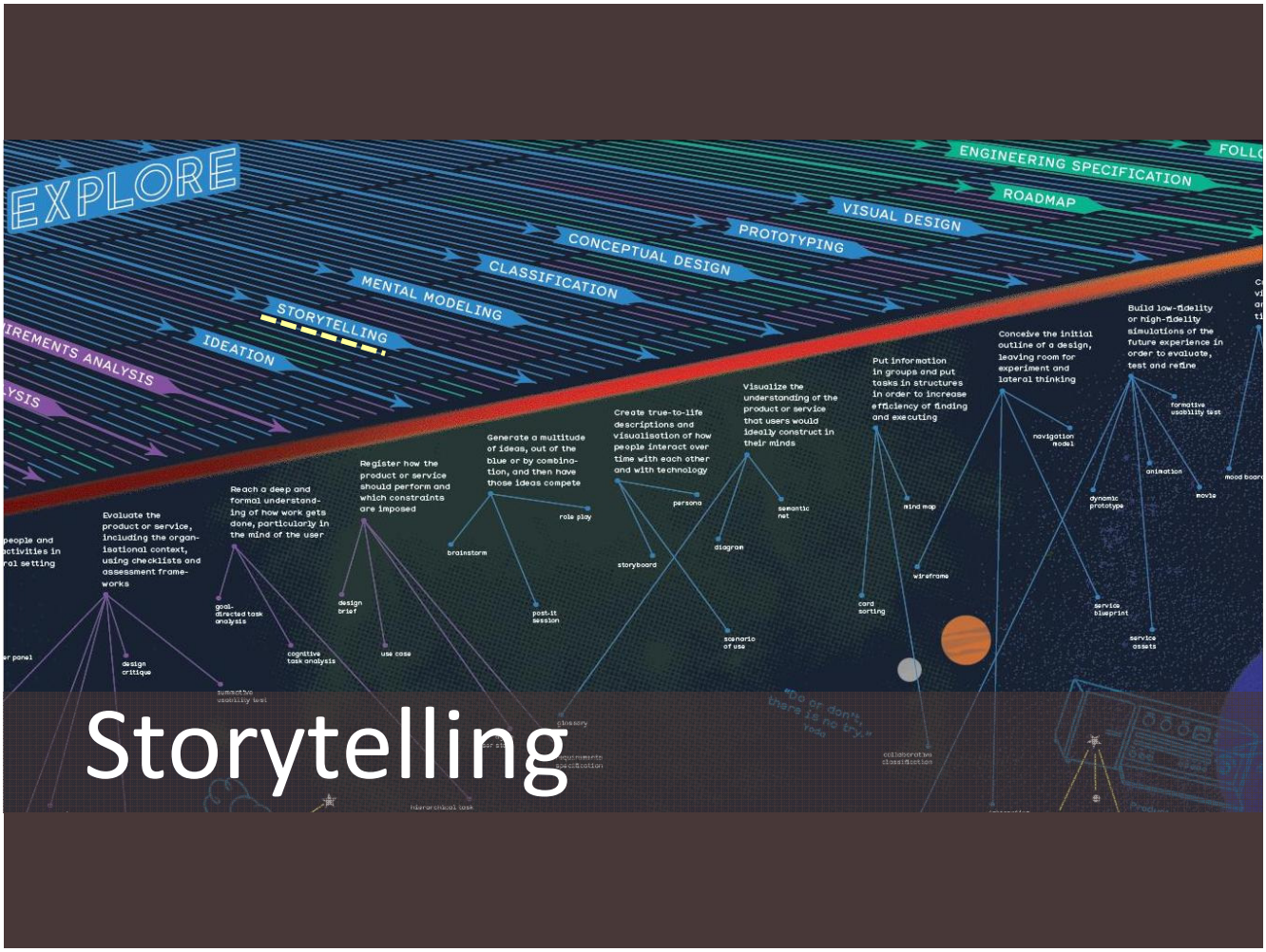
Great reading



Ideation exercise

Electro power the coca-cola bottle

- Post-it session: 5 min.
- Selecting ideas: 5 min.
- Tinkering: 10 min.

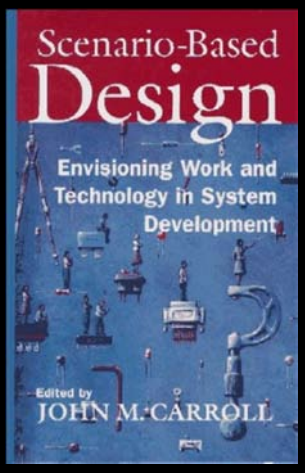


Storytelling

- Stories are used everywhere to communicate ideas
- Also work well for design ideas for workflows/interfaces
- Three basic elements of stories:
  - Plot (task, workflow)
  - Characters (users)
  - Narrative point of view (user-centered)
- What makes them work:
  - Adds time-dimension to the design
  - Point of view of the user

"On June 8, 1993, we gathered at the Kittle House Inn near Chappaqua, New York, for three days of discussions on the nature of use-oriented design representations, and the roles they play and could play in the development of computer systems and applications."

"This topic lies at the heart of a new view of human-computer interaction, one that conceives of user tasks, system designs, and even implementations as scenarios of interaction"



Source: Carroll J.M. (1995)

Scenarios of use - definition

- Story in which one or more users (e.g. a persona) use an artefact in order to execute a task
- Narrative style
- Informal, natural language
- Describes:
  - Context, actors, objects, actions, events, feed-back
- Not only words, also storyboards
  - From the world of film, cartoons
  - also used for product design

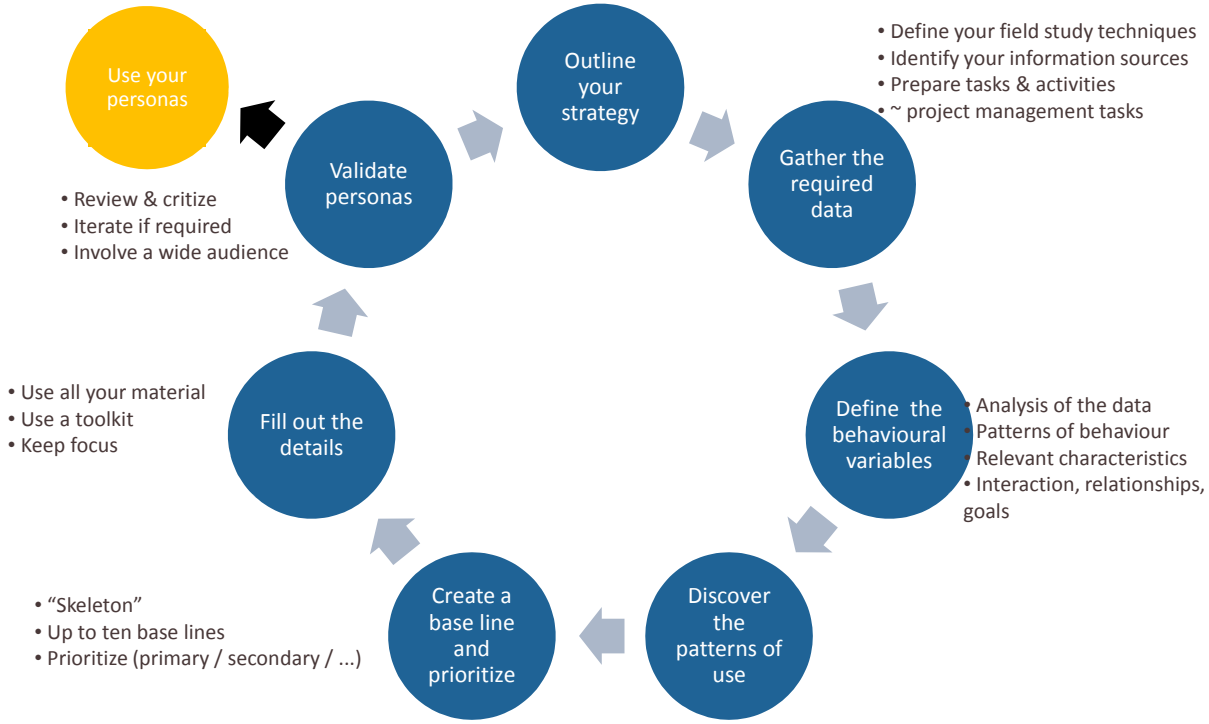
Personas

- *"(…) fictional, detailed archetypical characters that represent distinct groupings of behaviours, goals and motivations observed and identified during the research phase*

- Characteristics
  - Focus on goals, needs, attitudes
  - Made concrete by name, picture, personality...
  - But NOT market segments, user profiles, stereotypes or use case actors

Sources: Goodwinn & Reimann (2002)

Personas



Sources: Cooper (2004), Olsen (2004)

Persona – example

- Pierre Vermeyen
- Biographic background
  - Man, 63, retired building contractor
  - Married with Ria, retired primary school teacher
  - They live in a countryhouse since their retirement
- Relationship to business and product
  - Frequent biker, group of 2 couples
  - Extra information is important incentive
- Goals, needs & attitudes
  - Likes to spend time with his friend and both wives
  - Wants to know everything about region
  - Wants to lead the group
- Context of usage
  - Pierre is used to reading maps while biking
  - They do short biking trips, but want to visit entire region
  - No computer experience

ah

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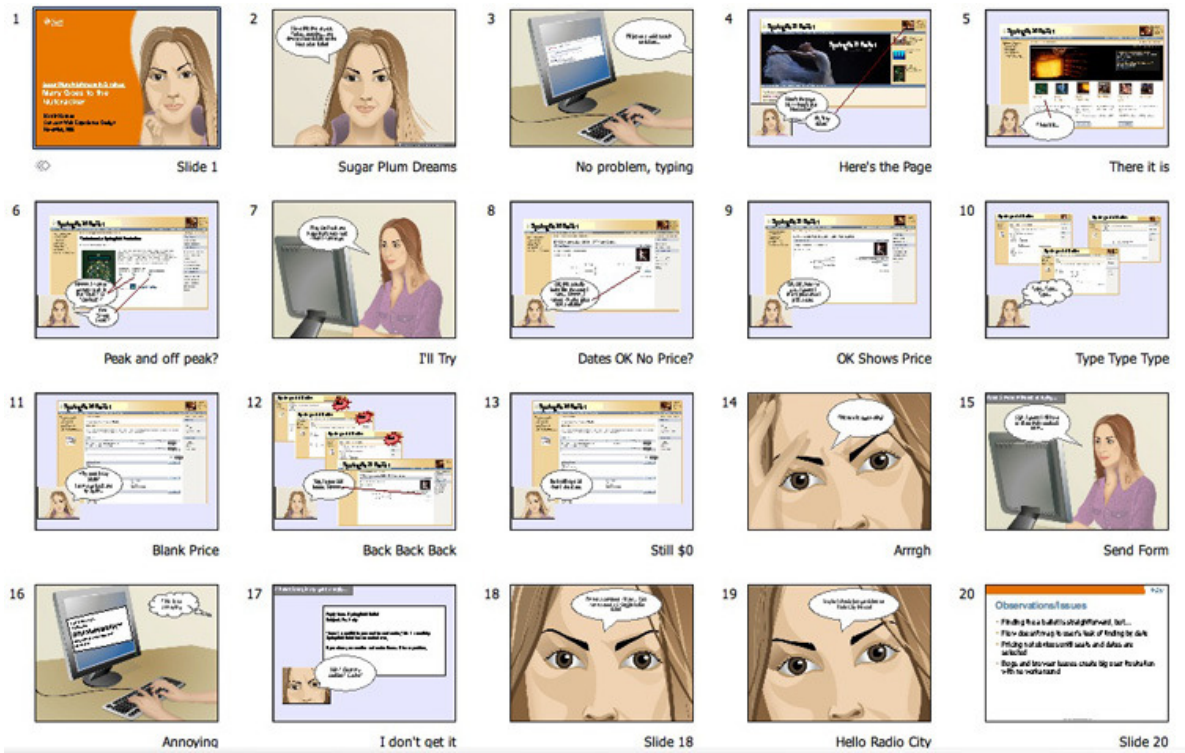


Scenarios of use - role in HCD

- Medium of communication between all stakeholders
- Synthesis of previous steps
  - Field study
  - Personas
  - Task analysis
  - …
- Input verification: did we get it right?
- Get consensus about application scope and user experience in a language that everybody understands

Scenarios of use - role in HCD (2)

- Helps to keep the design scope fixed throughout the design process
- Scenarios of use can be re-used for other purposes:
  - mock-ups – add the “pictures” to the story
  - usability testing – as protocol for your test
  - presenting the design to others

Scenario

At the end of the day, a merchant checks the day totals of all the terminal transactions.

Sequence of screens and actions

#	Screen	Keyboard action
1		The merchant starts from the idle screen. To go to menu mode, he presses 0 on the keypad.
2a		The main menu appears. To go to the menu Handelaar, he presses 2 on the keypad.
2b		OR he presses the navigation button once, and then presses OK.
3a		The menu Handelaar appears. To go to Totalen, he presses 1 on the keypad.

Scenarios of use - role in HCD (3)

- Future state vs. current state
  - Future state
    - How users execute tasks with new products, according to a new process flow
    - Develop ‘vision’ in a concrete and realistic way
    - Explore design alternatives
  - Current state
    - How users execute tasks with current artifacts
    - As a requirement elicitation technique
    - Discover usability problems
    - Mark good aspects of current interaction

Scenarios of use - tips & tricks

- Focus on user, more than on stakeholders
  - Management, marketing, development may all have their own agenda (sometimes hidden)
- Pay attention to the complete experience
  - Frequency of use, some exceptions may be important
  - Day – week – month - year
- Find the right balance between concrete and abstract specification
  - Neither a vision, nor a detailed specification either

Scenarios of use - tips & tricks (2)

- Not the same as requirements or use cases
  - Use requirements/use cases as checklist
  - Manage expectations and feedback
  - Differences with use cases:
    - Informal <> formal
    - Narrative <> structured
    - Representative <> complete
    - Exploring <> specifying
    - Concrete <> abstract
    - Interaction <> task
    - Complete experience <> essential
    - Unlimited <> less than 10 steps

Scenarios of use – other examples

Scenario 1 – Engineer sets up a user profile for a new operator

Jennifer Fleming is an equipment engineer at IC4U. From next week onwards, a new employee called Patrick Lynch will join the team of operators. Jennifer decides to set up the new operator's user profile in the Icos application.

She logs on to the Icos application.
She selects Setup in the taskbar, and selects Operator under User Profiles in the tree view. She then clicks the Recipe… button in the title bar of the Setup – User Profiles - Operator pane. In the Recipe dialog box she selects the user profile recipe of Peter Lang, an operator with similar authorisations to the new operator. She clicks the Save as Recipe… button, and in the dialog that appears she saves it as a new user profile recipe and changes the operator name to Patrick Lynch.

Peter Lang has the authorisation to perform a pedestal calibration on the Icos handler, but Jennifer does not want to give this authority to a new operator like Patrick Lynch before he has been

ah

Story whisperer

1.1 The plan

Mark and Kristien want to go biking with the kids. They are on summer holiday, and because the kids are staying with their grandparents all week, Mark and Kristien think it's very important to have a family activity during the week-end.

They have heard that Limburg is a nice area for biking. But Limburg is rather far away from where they live, and they don't have a bike support on their car. So Mark wonders whether they could rent bikes in Limburg somewhere.

He decides to have a look on the internet. On the Tourism Limburg site he finds an attractive offer. Not only can you rent bikes there, but they also provide you with a kind of PDA that shows the way and tells stories about the interesting spots that you pass by. He thinks the boys would like that. And so would he.

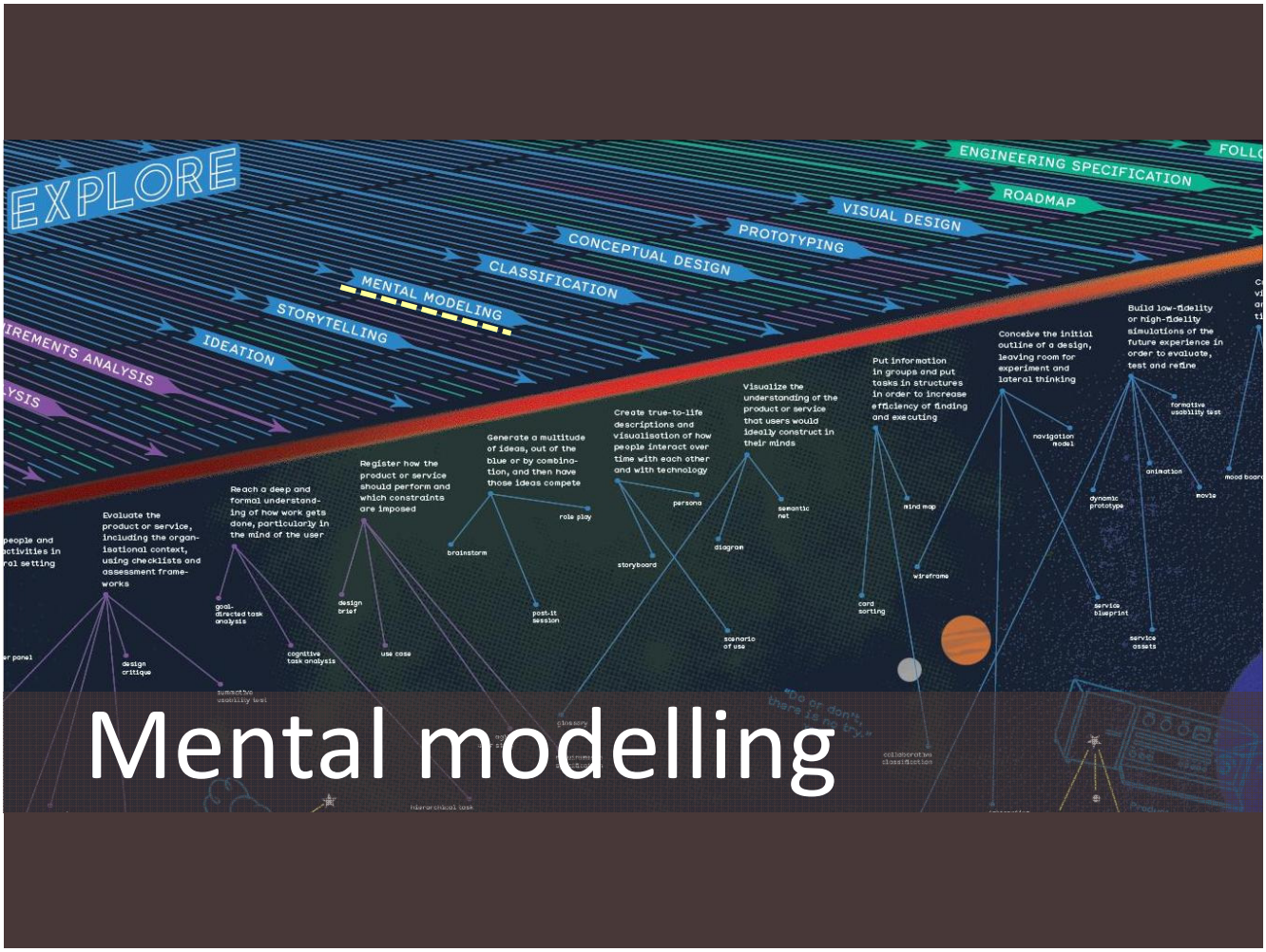
For now, the PDA is only available for the "Haspengouw"-route, so he checks it out a little further. It looks OK, and apparently, you have to be in Alken to rent the bikes and the PDA's for this route.

Mark calls the service point in Alken, where they tell him that he can only rent one PDA for two people, so he rents two PDA's and four bikes.

ah

Exercise on scenarios of use

- ***Write a draft scenario of use***
- Integrate important tasks based on requirements
- Functional completeness is not required
- Try to write at least the outline of the scenario to illustrate the interaction flow



Mental model definition

"In interacting with the environment, with others, and with the artefacts of technology, **people will form internal, mental models** of themselves and of the things with which they are interacting.

These models provide predictive and explanatory power for understanding the interaction."

Source: Norman (1983)

Drawing conclusions

To elicit operational practices, I posed hypothetical situations. Bill's practices were consistent with his theory and his metaphor:

W: Let's say you're in the house and you're cold. . . Let's say it's a cold day, you feel cold, you want to do something about it.

B: Oh, what I might do is, I might turn the thing up high to get out, a lot of air out fast, then after a little while turn it off or turn it down.

W: Un-huh

B: So there are also, you know, these issues about, um, the rate at which the thing produces heat, the higher the setting is, the more heat that's produced per unit of time, so if you're cold, you want to get warm fast, um, so you turn it up high. Um, my feeling is, my, my kind of Calvinist or Puritan feeling is that that's sinful. That, that really ought to turn it to the setting, the warmth setting which you think you'll eventually be comfortable and just bear the cold until the thing slowly heats up the house to that level.

Source: Kempton, 1986

Excerpt from interview with home user of heating system (air-based)

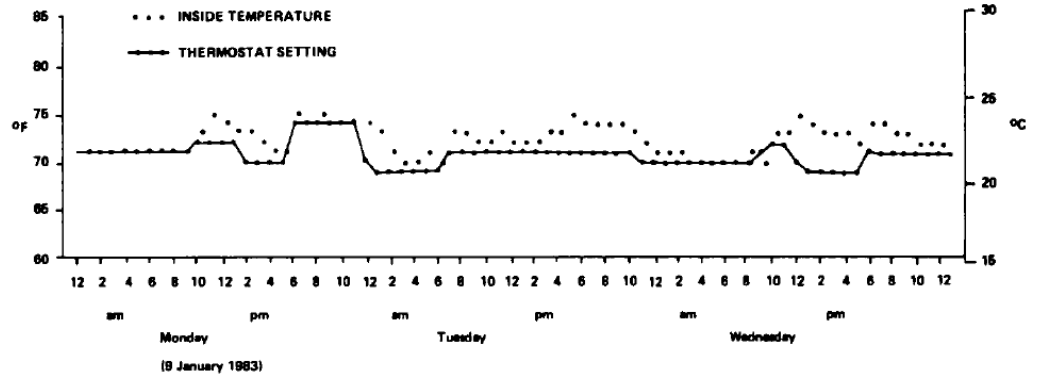


Figure 1. Pattern of thermostat and adjustments consistent with the feedback theory.

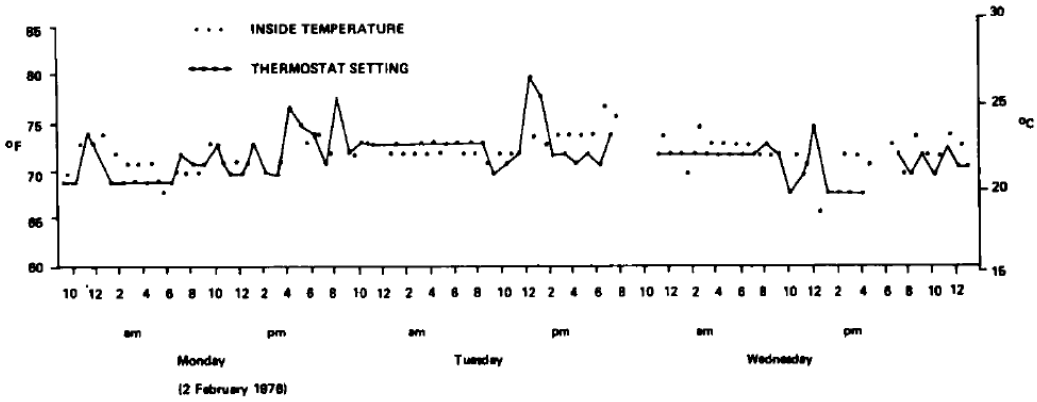
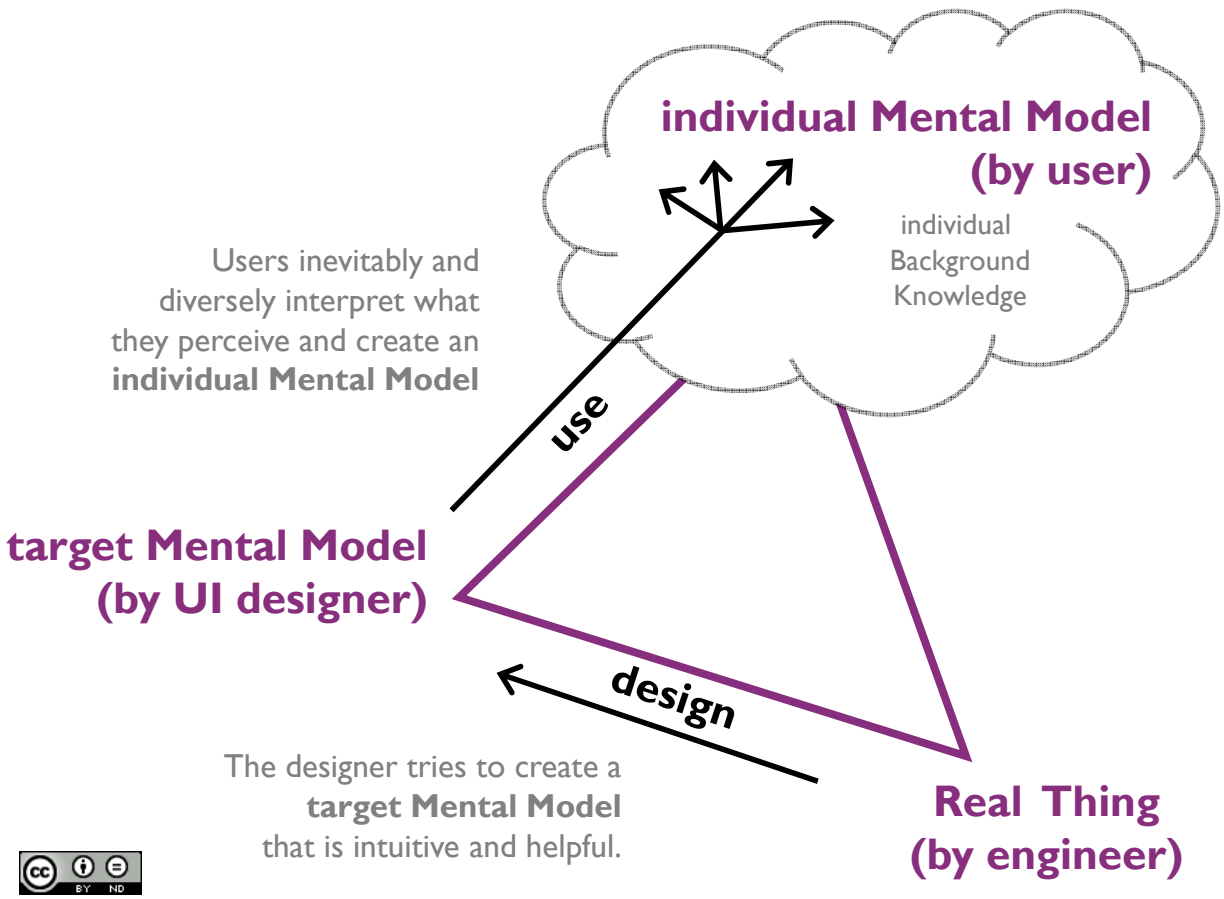


Figure 2. Pattern of thermostat adjustments consistent with the valve theory.

Pattern of thermostat adjustments consistent with the feedback and the valve theories


individual Mental Model
(by user)
individual
Background
Knowledge
Users inevitably and
diversely interpret what
they perceive and create an
individual Mental Model
use
target Mental Model
(by UI designer)
design
The designer tries to create a
target Mental Model
that is intuitive and helpful.
Real Thing
(by engineer)

CC BY ND

Mental model definition

- Is a **theory of reality** that the designer offers to the user. This theory can consist of objects, states, or sequences.
- Can be made easier to grasp if they are **analogous** to mental models that the user has acquired already: metaphors
- May **take liberties** with the underlying reality
- They are often **shared.**
- Different types of users may need **different** mental models

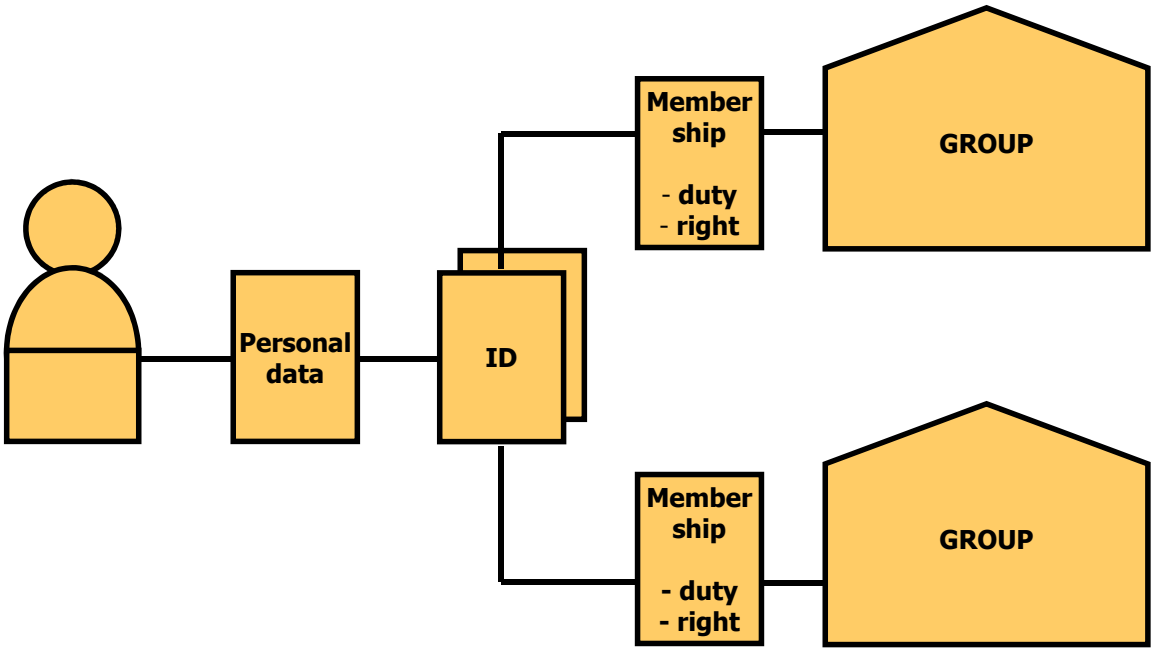
Mental models are …

- Internal, symbolic representations
- Involuntary
- Rapid
- Persistent
- Naive
- Individual
- Simplifying
- Analogous

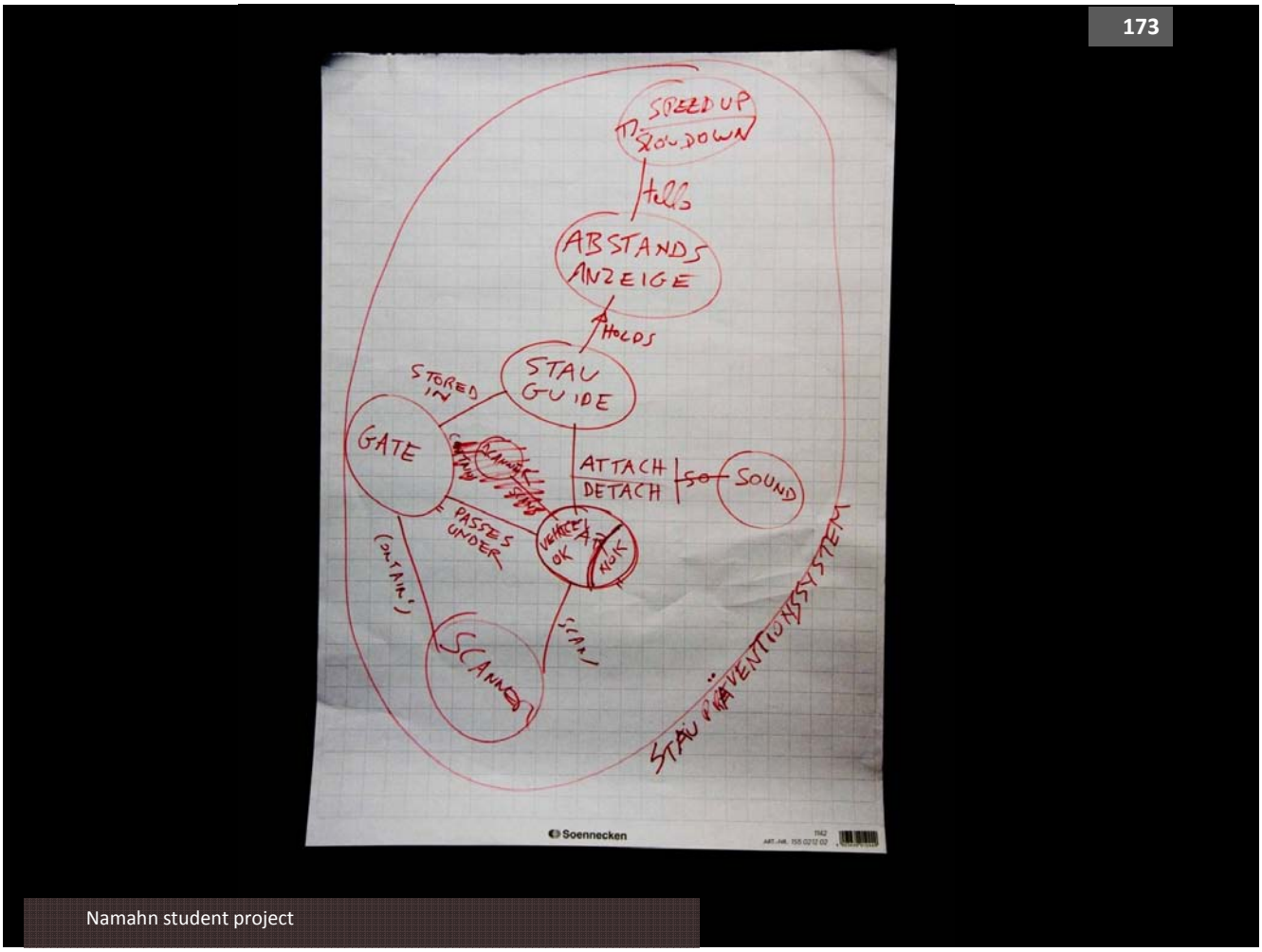
Mental models - importance

- Design of the user interface, of course
- Design of the instructions for use and training materials for users and support personnel
- **Particularly important for innovative products, with no commonly understood mental model**

A simple mental model

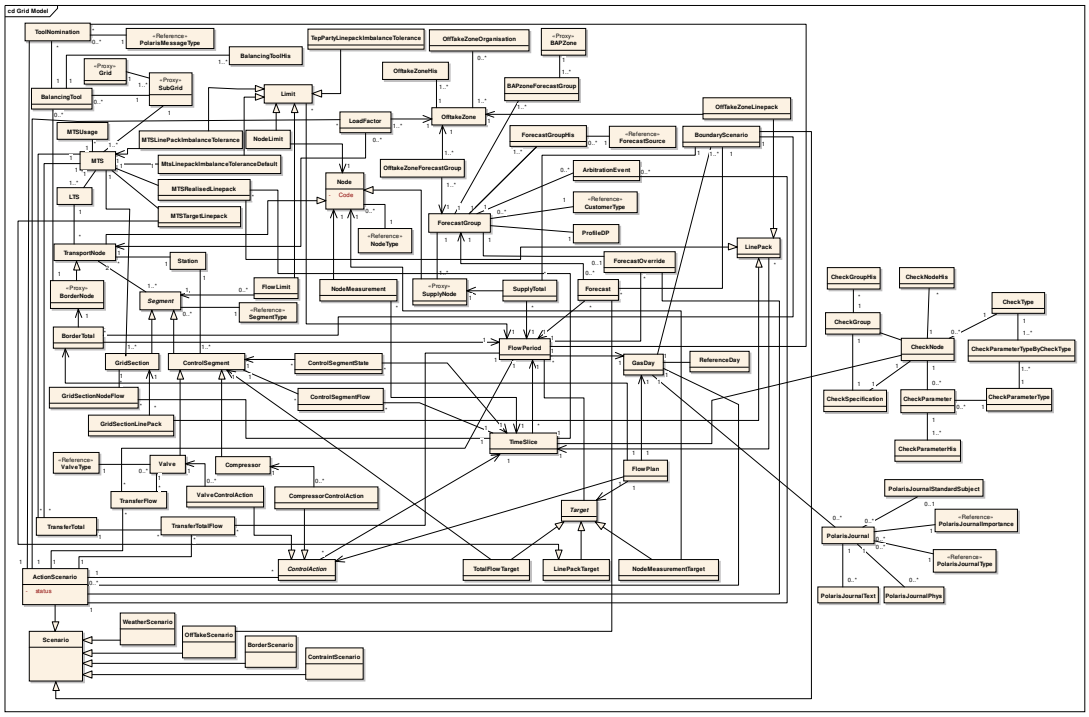


Source: Namahn telecoms client project



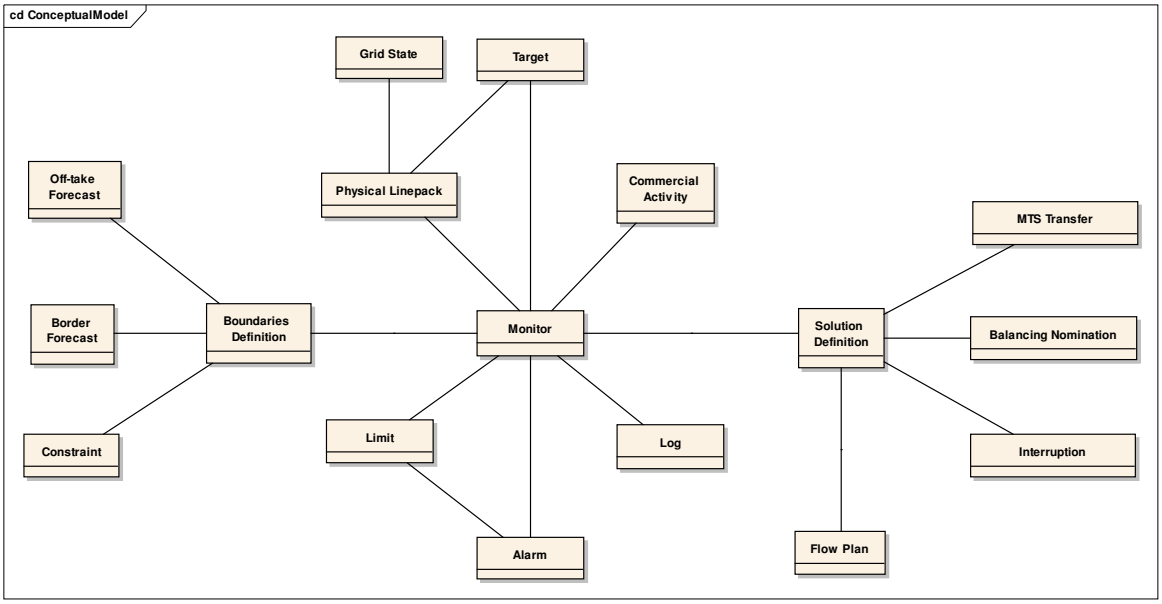
Namahn student project

from a data model …

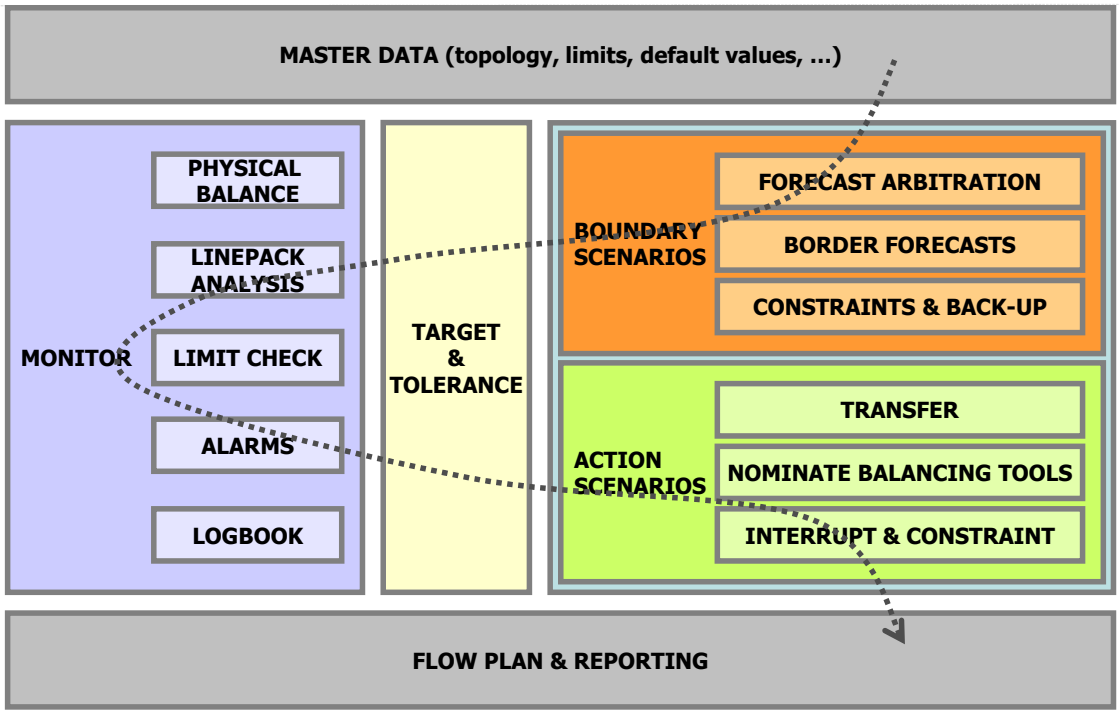


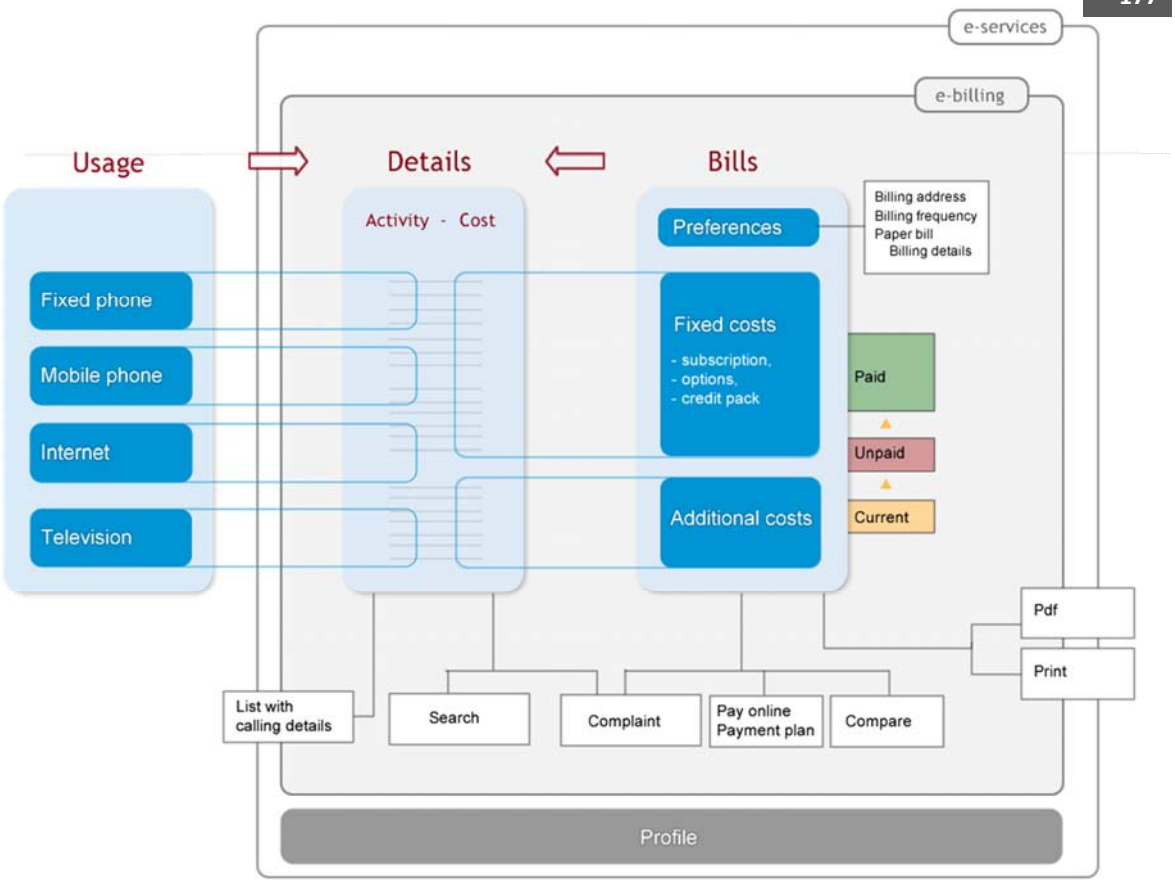
Namahn client project

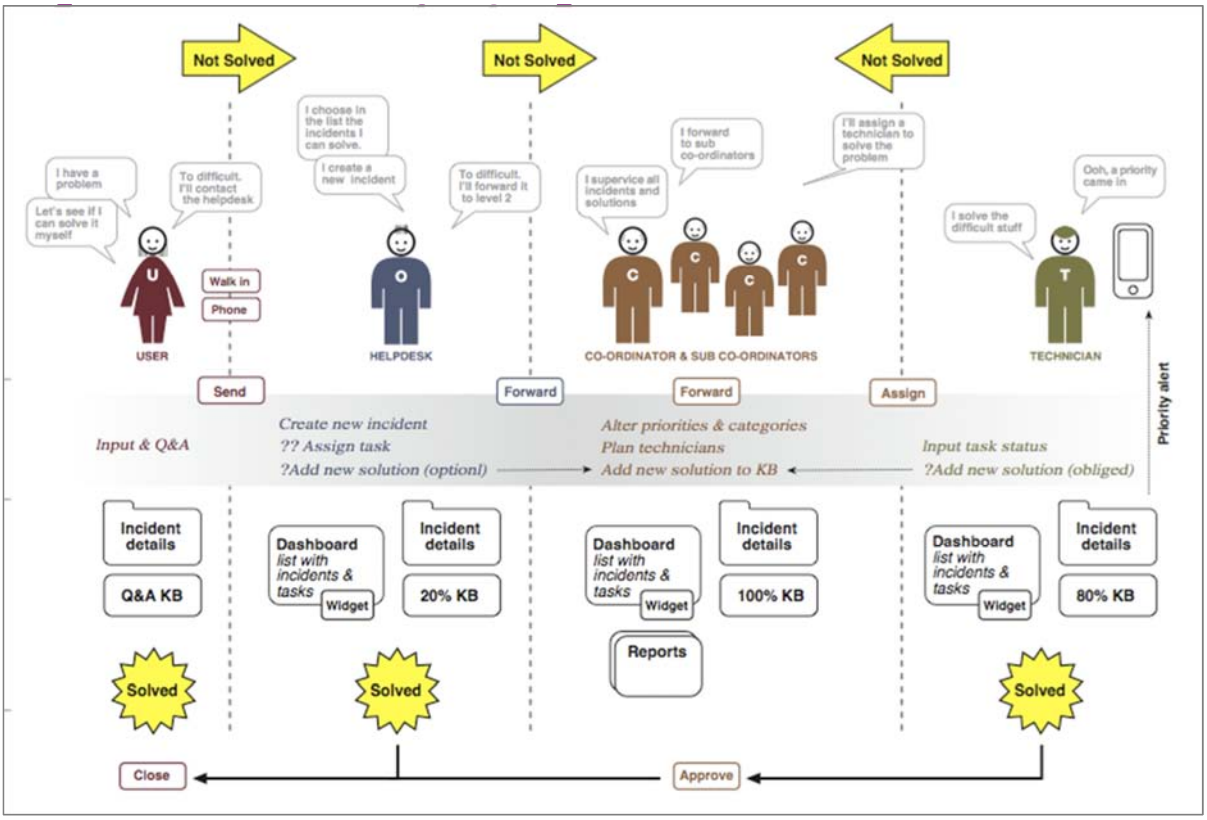
… via a simplified data model…

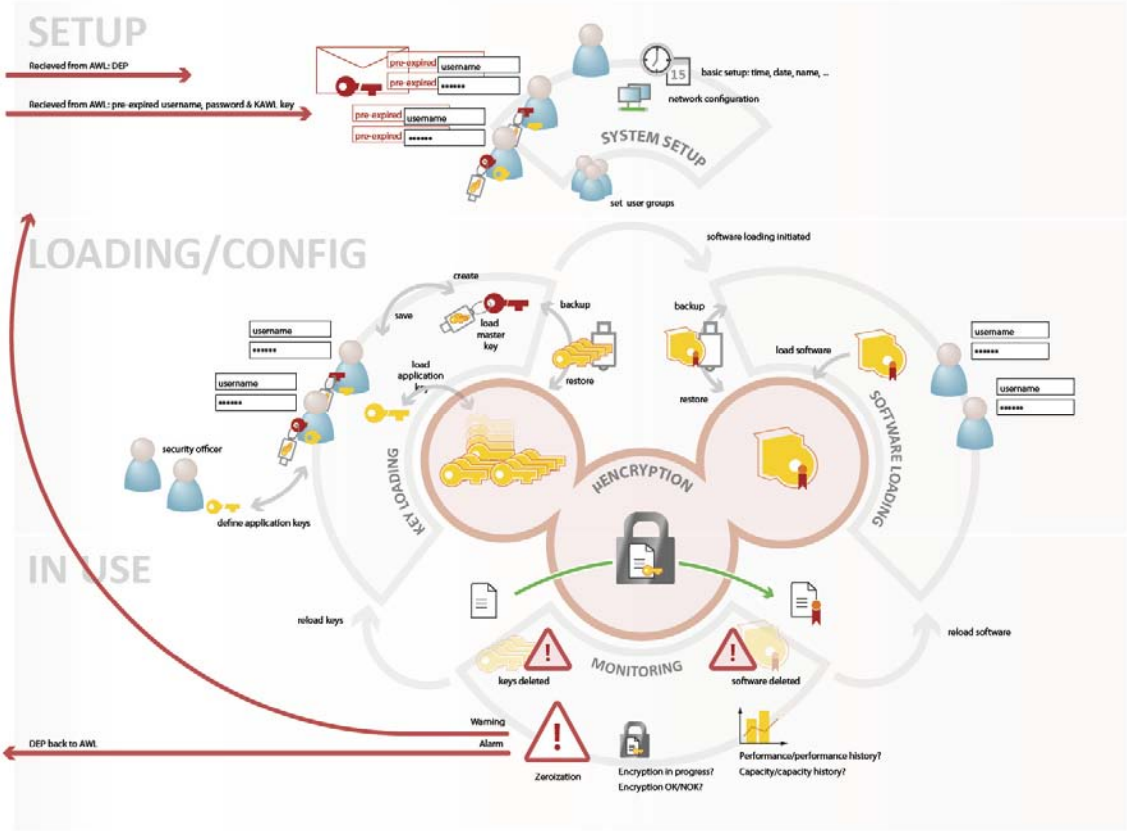


… to a true mental model

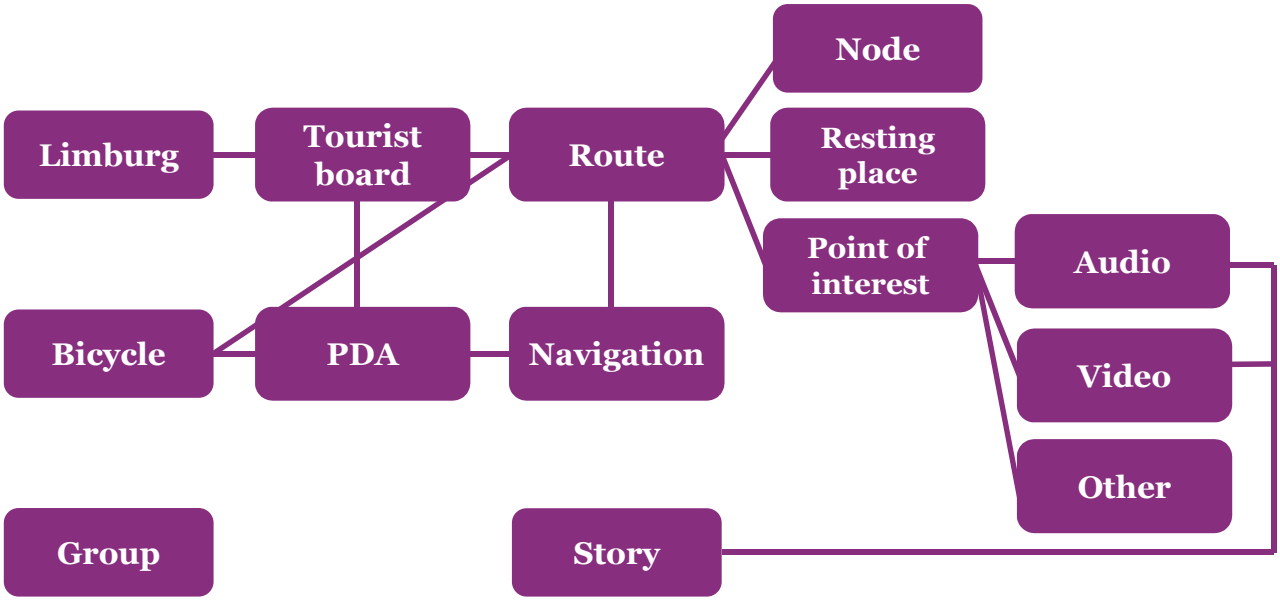



e-services
e-billing
Usage
Details
Bills
Activity - Cost
Preferences
Billing address
Billing frequency
Paper bill
Billing details
Fixed phone
Mobile phone
Internet
Television
Fixed costs
- subscription,
- options,
- credit pack
Paid
Unpaid
Current
Additional costs
Pdf
Print
List with calling details
Search
Complaint
Pay online Payment plan
Compare
Profile


Not Solved
Not Solved
Not Solved
I have a problem
Let's see if I can solve it myself
To difficult, I'll contact the helpdesk
I choose in the list the incidents I can solve.
I create a new incident
To difficult, I'll forward it to level 2
I supervice all incidents and solutions
I forward to sub co-ordinators
I'll assign a technician to solve the problem
I solve the difficult stuff
Ooh, a priority came in
USER
Walk in
Phone
HELPDESK
CO-ORDINATOR & SUB CO-ORDINATORS
TECHNICIAN
Send
Forward
Forward
Assign
Priority alert
Input & Q&A
Create new incident
?? Assign task
?Add new solution (optionl)
Alter priorities & categories
Plan technicians
Add new solution to KB
Input task status
?Add new solution (obliged)
Incident details
Q&A KB
Dashboard list with incidents & tasks
Widget
Incident details
20% KB
Dashboard list with incidents & tasks
Widget
Incident details
100% KB
Reports
Dashboard list with incidents & tasks
Widget
Incident details
80% KB
Solved
Solved
Solved
Close
Approve

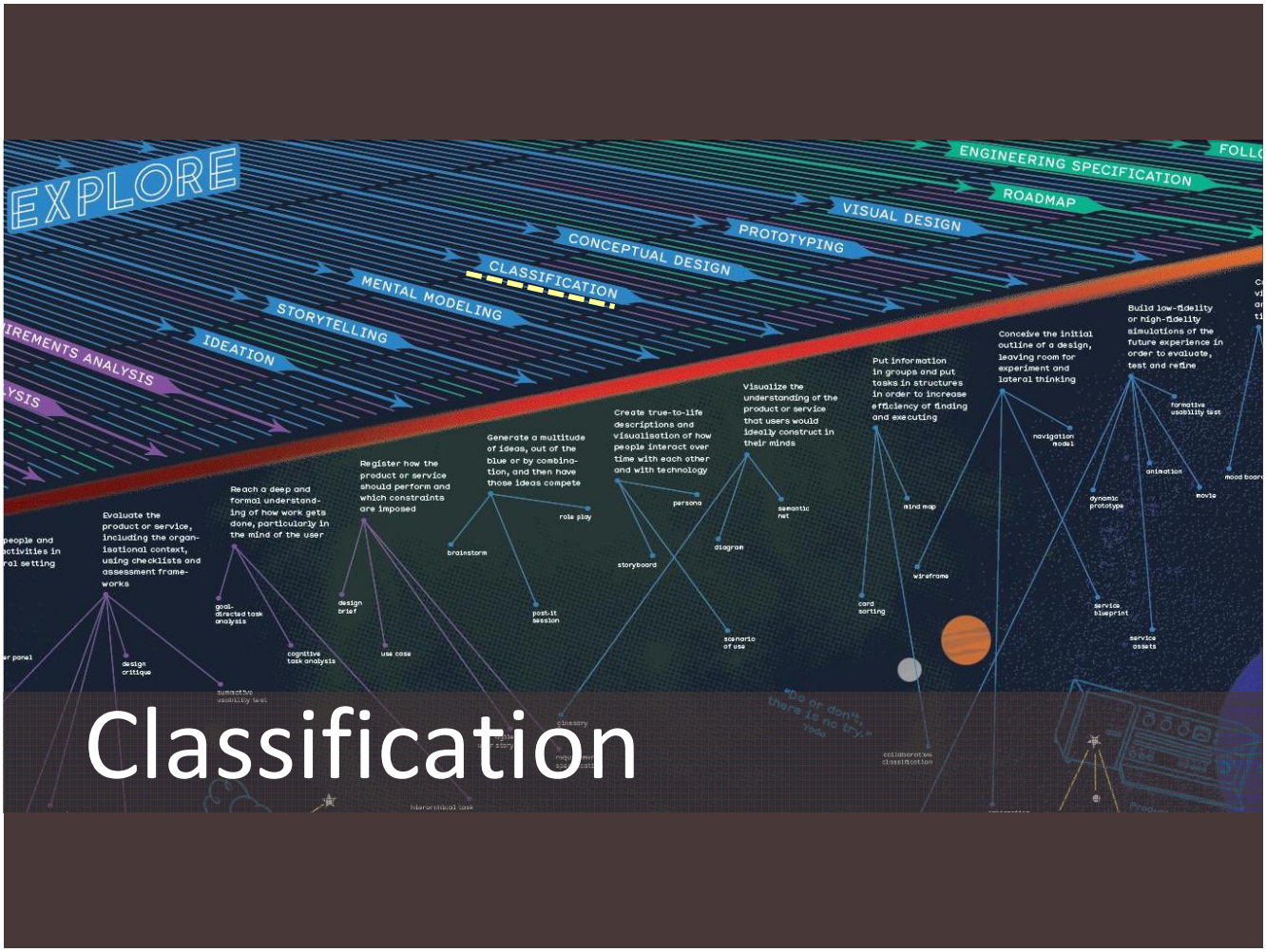


Namahn client project

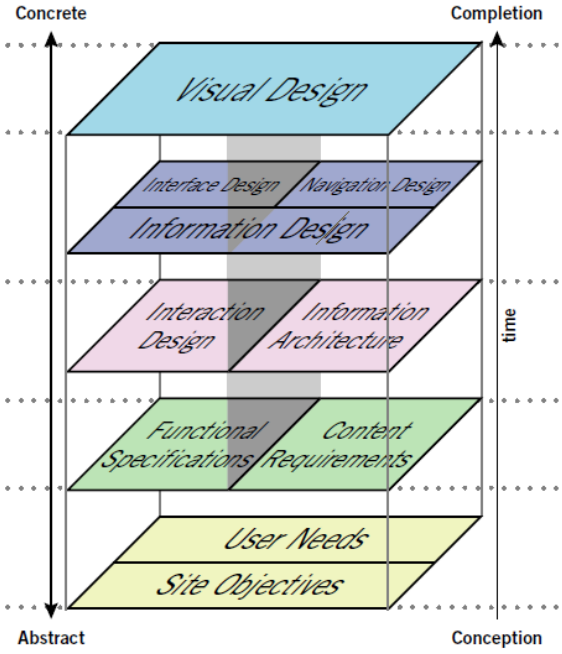


Exercise on mental model

- ***Design a mental model for the holiday management tool***
- Starting from your scenario, create an assembly of entities
- Create the mental model for the employees
- Resist drawing a user interface

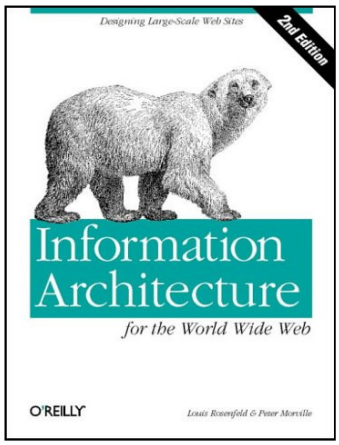


The Elements of User Experience – Jesse James Garrett



Information classification

- From the world of web design
- About structuring content and functionality
- Basic difference: nouns and verbs
- Organise in:
  - Lists of objects
    - e-mails, transactions, songs, search results, pictures
  - Lists of tasks and actions
    - Menu items, taskbar items, palet in drawing tool
  - Lists of subjects and categories
    - menus, genres
  - Lists of tools
    - calender, telephone directory, to do list



Information classification vs. application structure

- information structure (content) and application structure (form) should be kept apart
- Information structure: dividing up objects, actions, tasks
- Application structure: presenting these objects in pages, screens, panels

Information structure vs. application structure

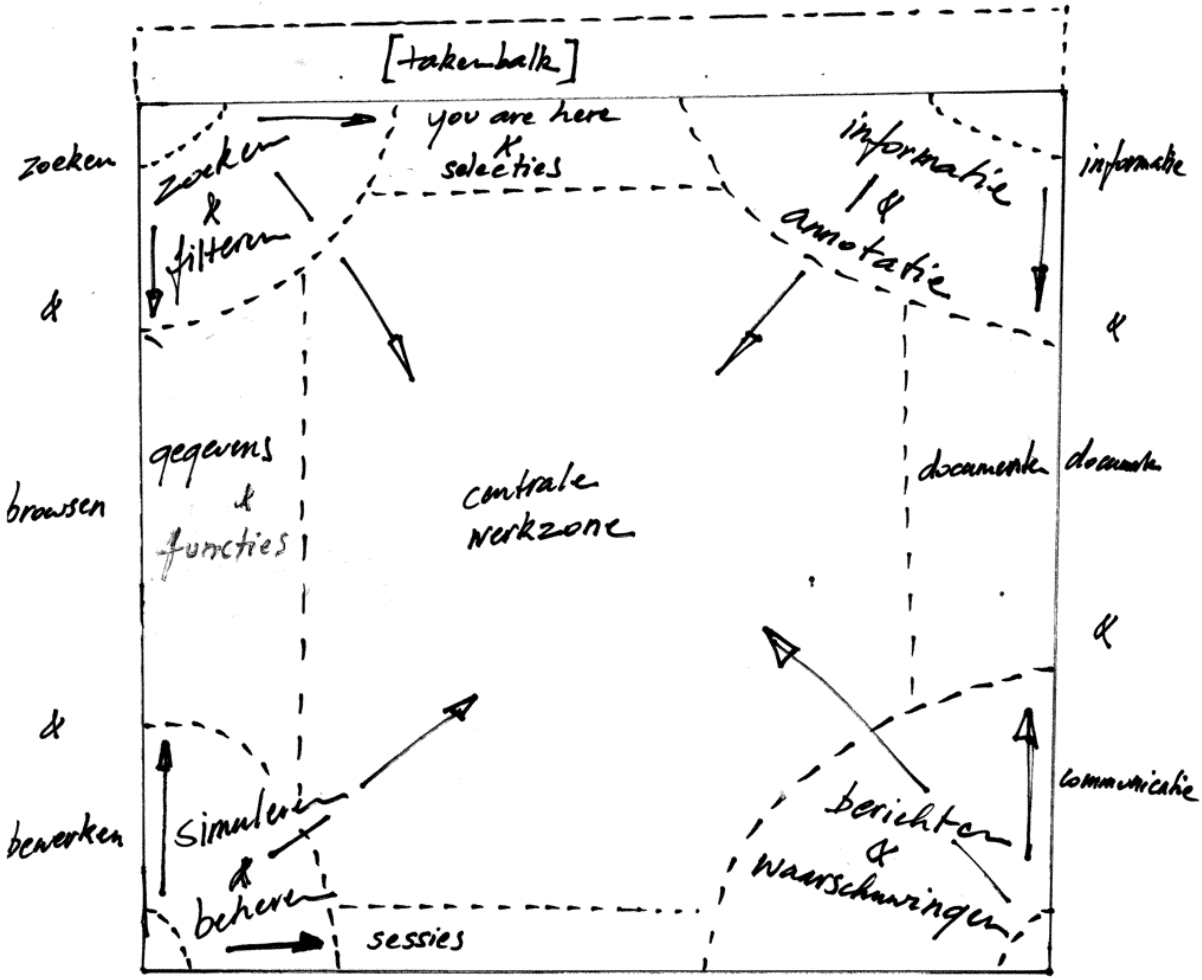
De artikelpagina

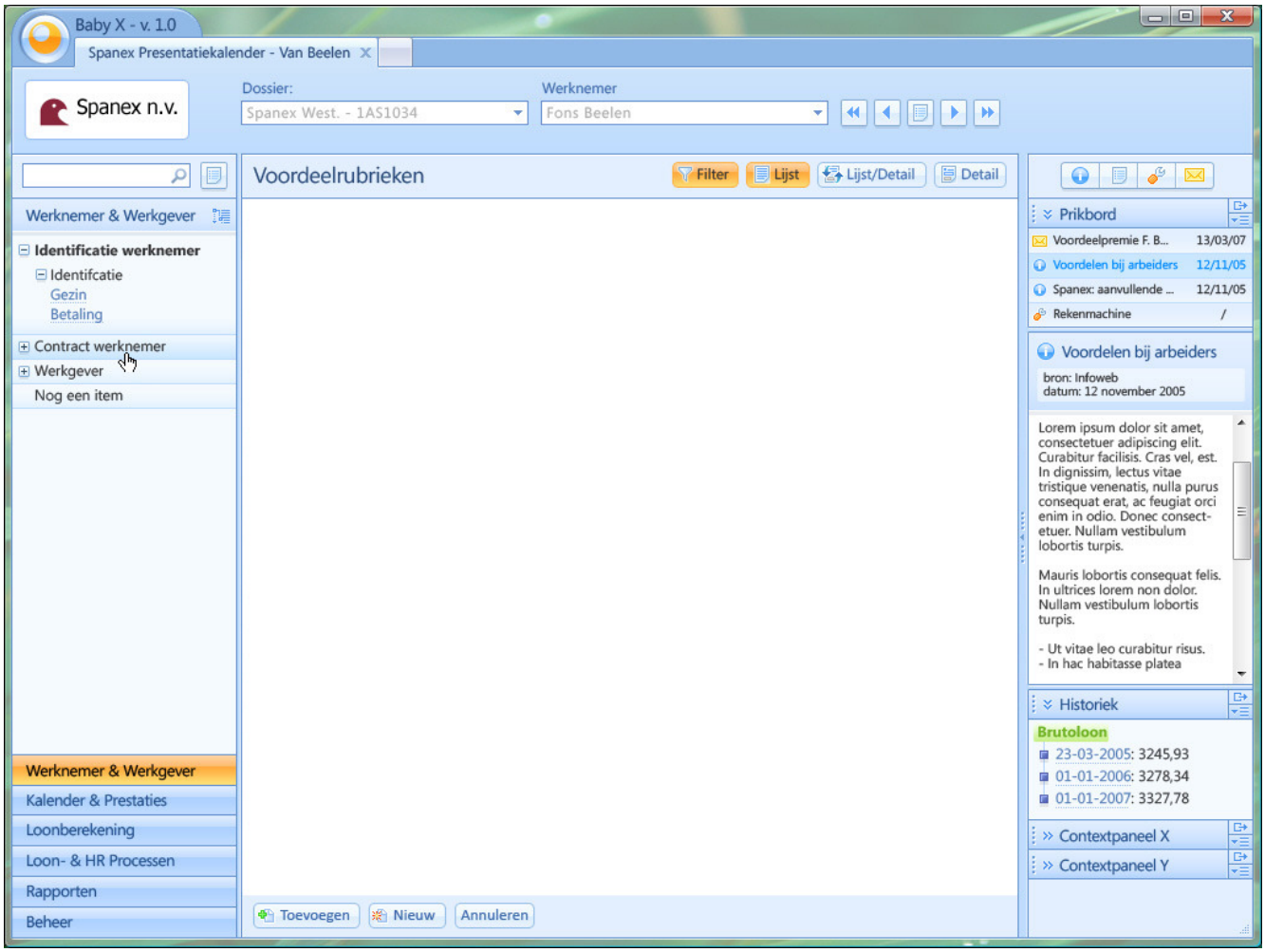
Brusselnieuws.be wenst volgende **elementen op de artikelpagina** te kunnen plaatsen:

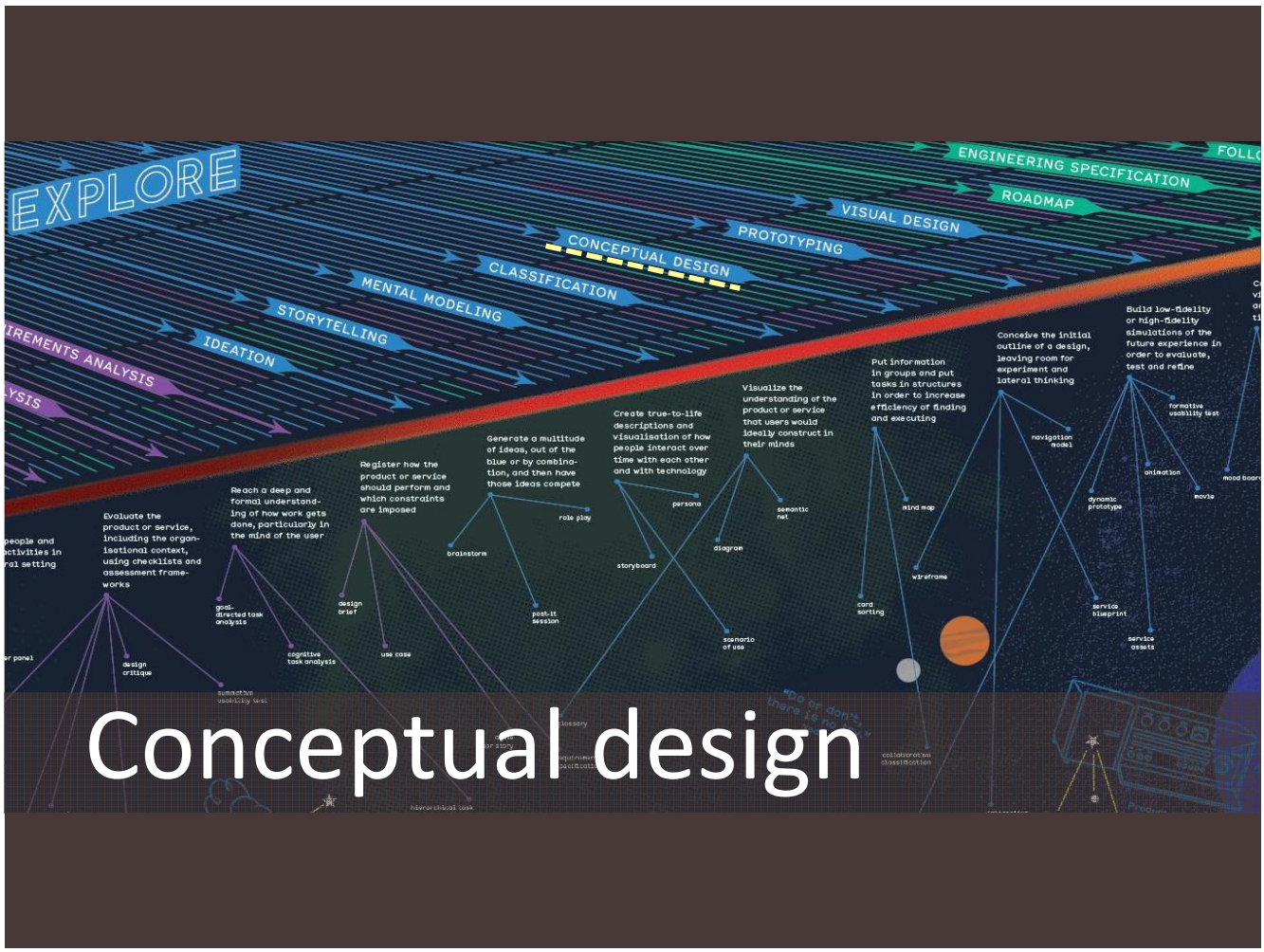
- Identificatie van het artikel:
  - De informatiebron,
  - Het thema waaronder het artikel valt,
  - De titel,
  - Een foto of fotoreeks waar de bezoeker doorheen kan bladeren,
  - De datum, het uur en de locatie van het nieuwsbericht,
  - De inleiding van het artikel,
  - De artikeltekst met eventuele ondertitels,
  - Grafieken.
- Inhoud gerelateerd aan het artikel:
  - Videobeelden,
  - Audio-opnames,
  - Links naar verwante artikels (eerder verschenen, wat volgde, ...),
  - Externe links,
  - Bezoekersreacties.
  - Een indicatie van het aantal personen dat het artikel aanraadde.

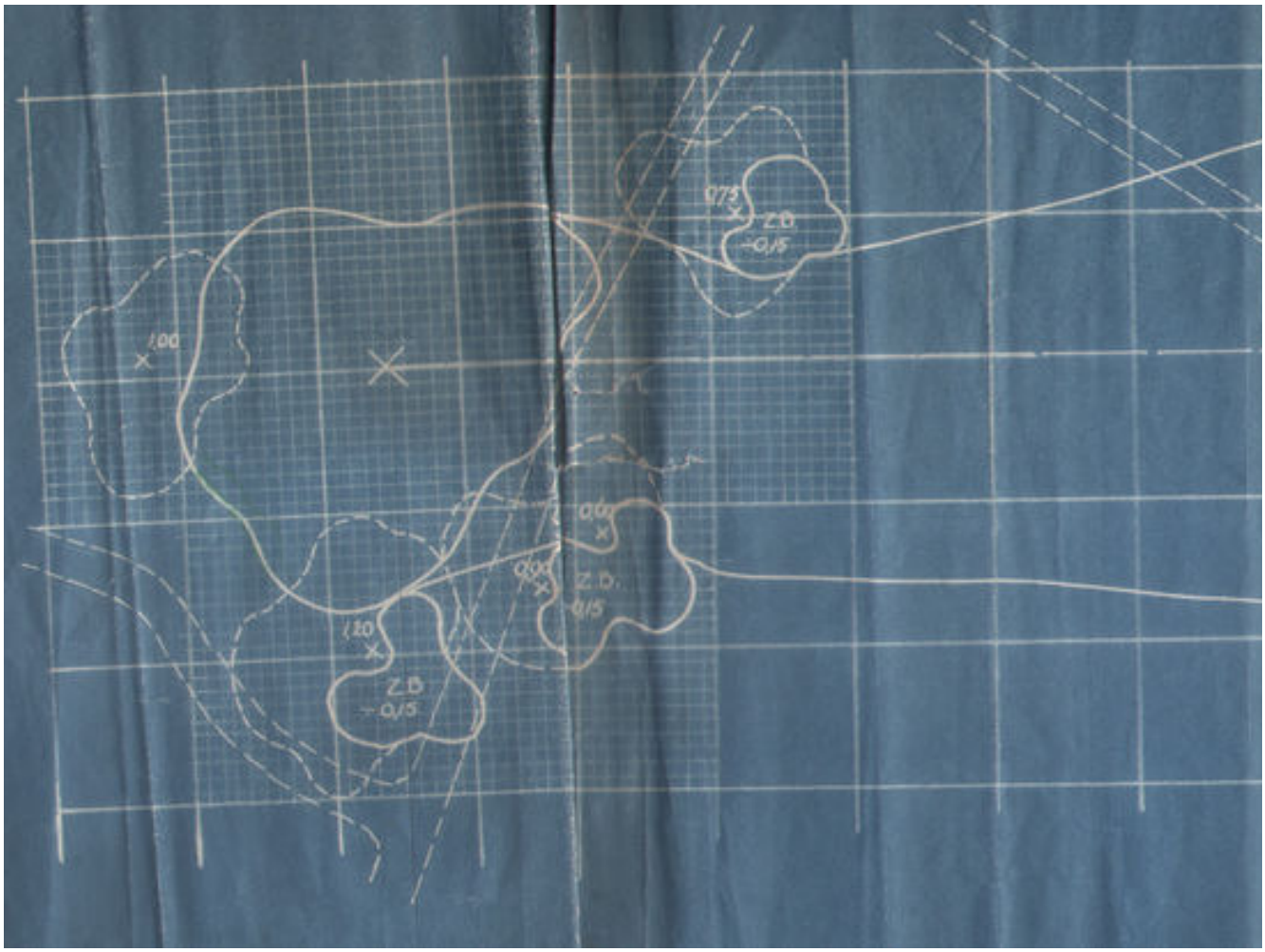
  Noot: Audiobestanden, externe links, etc. kunnen zowel naast als in het artikel geplaatst worden.
- Functionaliteiten gerelateerd aan het artikel:
  - Het artikel printen.
    Noot: De printfunctionaliteit moet niet te prominent aanwezig zijn.
  - 'Houd me op de hoogte'
    Noot: Deze functionaliteit dient zuinig gebruikt te worden. Het kan bijvoorbeeld wel interessant zijn bij een nieuwsflits, of bij een recensie van een restaurant zodat de restauranteigenaar op de hoogte kan blijven van de reacties op de recensie.
  - Een aanduiding van het aantal reacties

ah




Baby X - v. 1.0
Spanex Presentatiekalender - Van Beelen
Spanex n.v.
Dossier:
Spanex West. - 1AS1034
Werknemer
Fons Beelen
Voordeelrubrieken
Filter
Lijst
Lijst/Detail
Detail
Werknemer & Werkgever
Identificatie werknemer
Identifcatie
Gezin
Betaling
Contract werknemer
Werkgever
Nog een item
Werknemer & Werkgever
Kalender & Prestaties
Loonberekening
Loon- & HR Processen
Rapporten
Beheer
Toevoegen
Nieuw
Annuleren
Prikbord
Voordeelpremie F. B... 13/03/07
Voordelen bij arbeiders 12/11/05
Spanex: aanvullende ... 12/11/05
Rekenmachine /
Voordelen bij arbeiders
bron: Infoweb
datum: 12 november 2005
Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Curabitur facilisis. Cras vel, est. In dignissim, lectus vitae tristique venenatis, nulla purus consequat erat, ac feugiat orci enim in odio. Donec consect-etuer. Nullam vestibulum lobortis turpis.
Mauris lobortis consequat felis. In ultrices lorem non dolor. Nullam vestibulum lobortis turpis.
- Ut vitae leo curabitur risus.
- In hac habitasse platea
Historiek
Brutoloon
23-03-2005: 3245,93
01-01-2006: 3278,34
01-01-2007: 3327,78
Contextpaneel X
Contextpaneel Y


EXPLORE
IDEATION
STORYTELLING
MENTAL MODELING
CLASSIFICATION
CONCEPTUAL DESIGN
PROTOTYPING
VISUAL DESIGN
ROADMAP
ENGINEERING SPECIFICATION
Conceptual design



Conceptual design - definition

- Difficult to define, here are some attempts:
  - Visualisation of underlying interface grid or ‘blueprint’ of the application (abstract)
  - Starts with rough sketches, and ends with screen templates and the workflow between them (practical)
  - A set of sketches illustrating the main interaction concept of a digital product. The conceptual design starts with paper and pencil (Namahn poster)

- Even in HCD literature, the activities between first sketch and a finished conceptual design are often unclear

Conceptual design steps

- Being aware of the interface idioms
- Defining the application structure
- Selecting the high-level patterns
- Drawing the navigation scheme

Conceptual design - steps

- Being aware of the **interface idioms**
- Defining the application structure
- Selecting the high-level patterns
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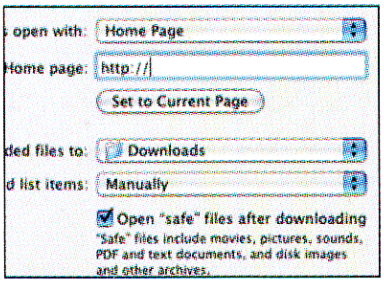
Interface idioms - introduction

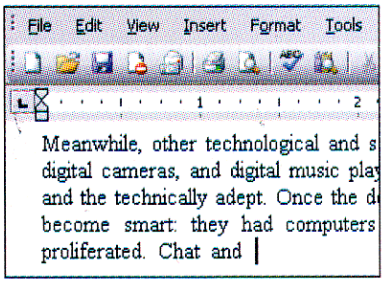
- Before:
  - Windows Style Guide
  - Macintosh Human Interface Guidelines
- Now:
  - Richer interface toolkits (HTML, Javascript, Flash, Java Swing)
  - Demanding users
  - Variation in devices and contexts of use (smartphone, digital TV, kiosk, tablet, e-book reader etc.)

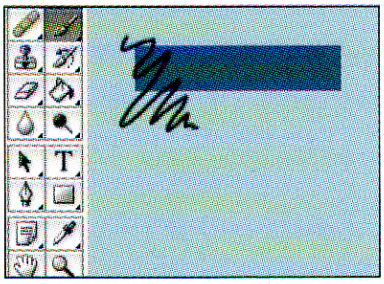
Interface idioms - introduction

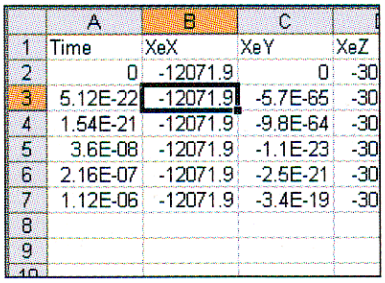
- Result:
  - Growth in interface idioms: recognizable interface types, with their own vocabulary of objects, actions and visual elements
  - Rules are not as strict, but also less clear
  - Styles are being mixed up

Interface idioms – examples









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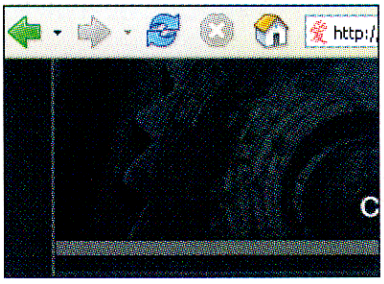
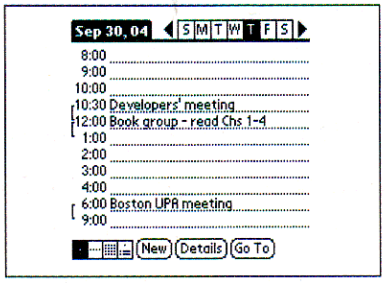
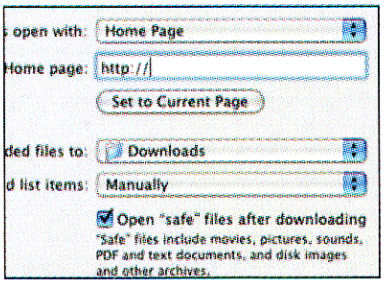
3	5.12E-22	-12071.9	-5.7E-65	-30
4	1.54E-21	-12071.9	-9.8E-64	-30
5	3.6E-08	-12071.9	-1.1E-23	-30
6	2.16E-07	-12071.9	-2.5E-21	-30
7	1.12E-06	-12071.9	-3.4E-19	-30
8				
9				





Interface idioms – examples



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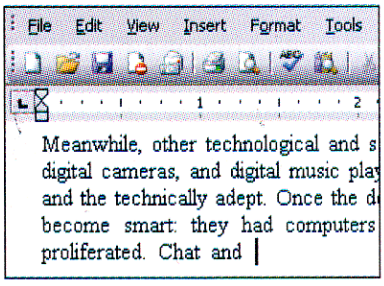
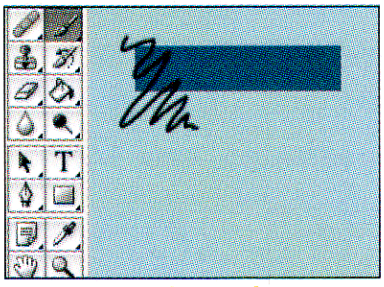
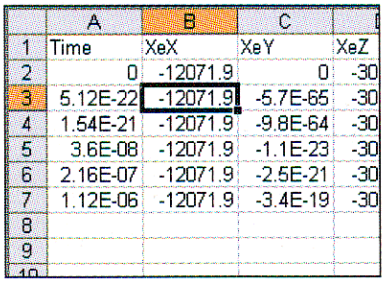


Text editors



Graphic editors



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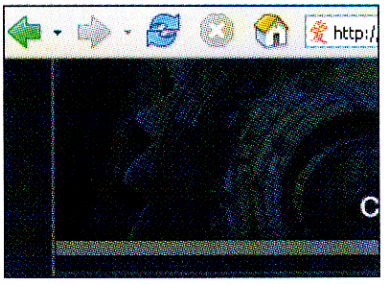
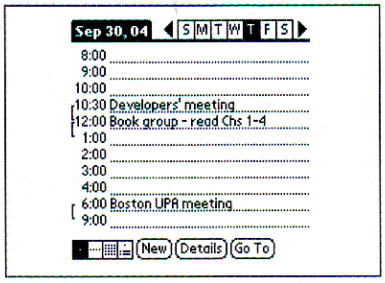
8				
9				

Spreadsheets

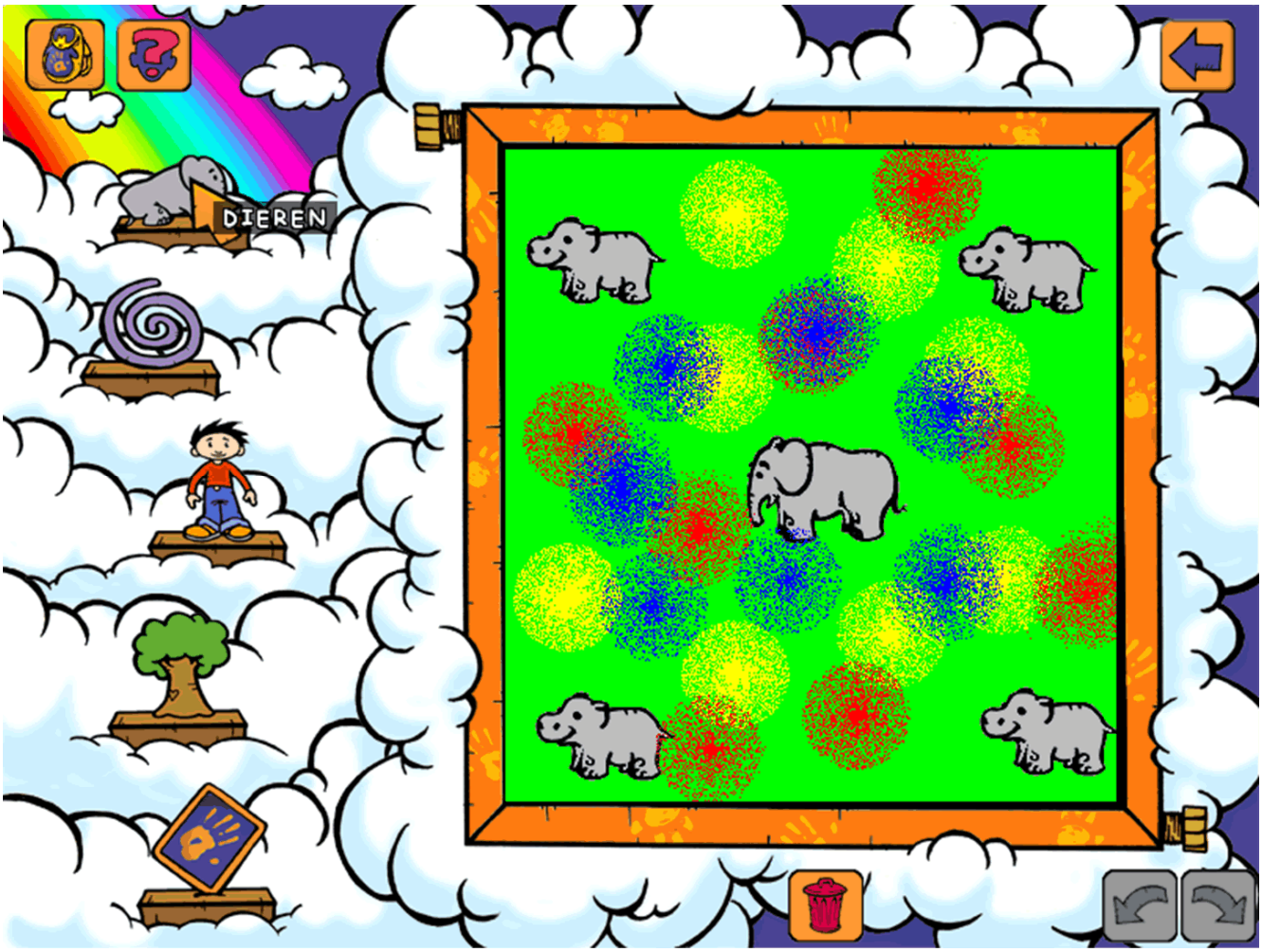


Browsers



Calendars

STEMPELEN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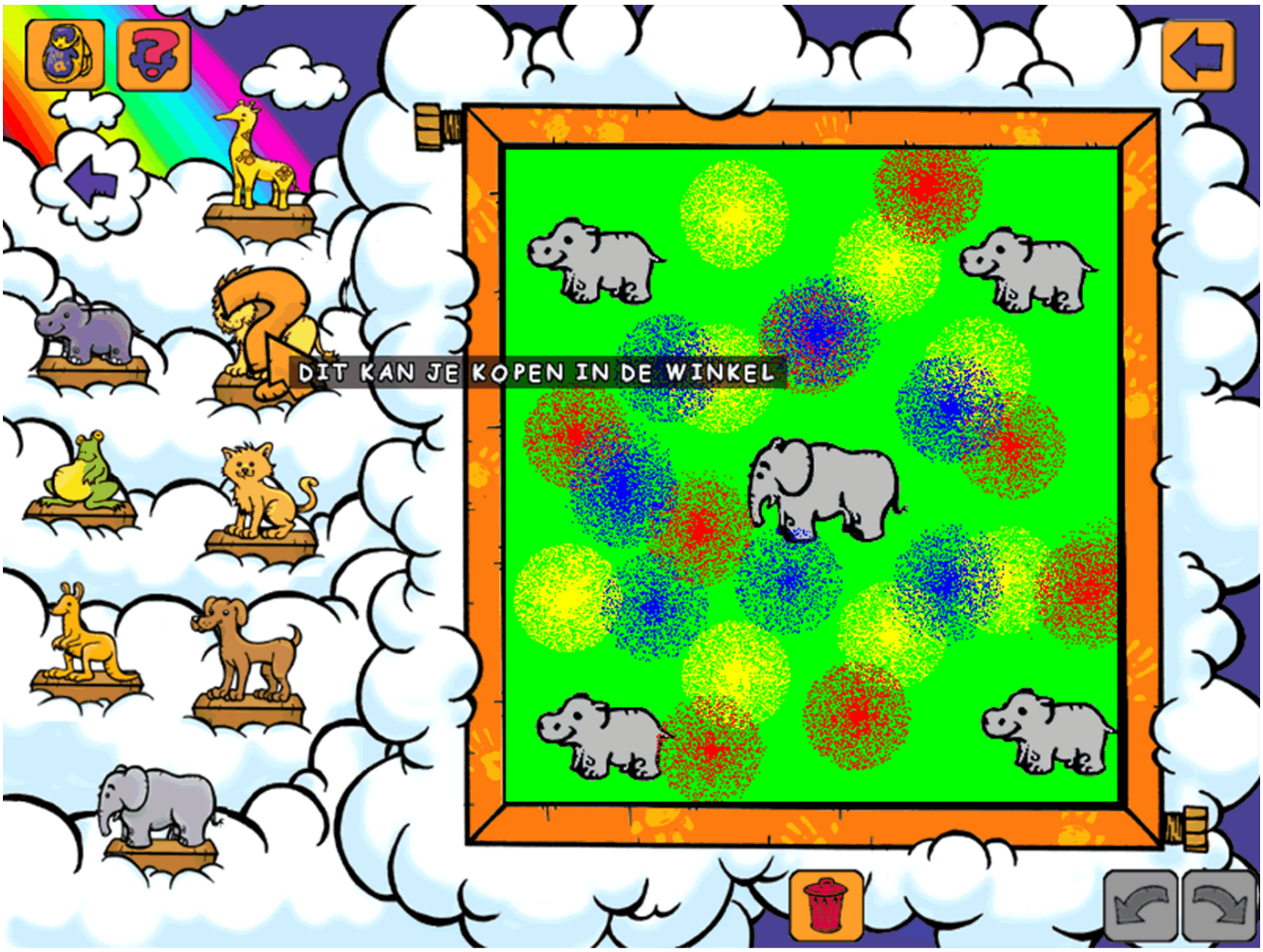
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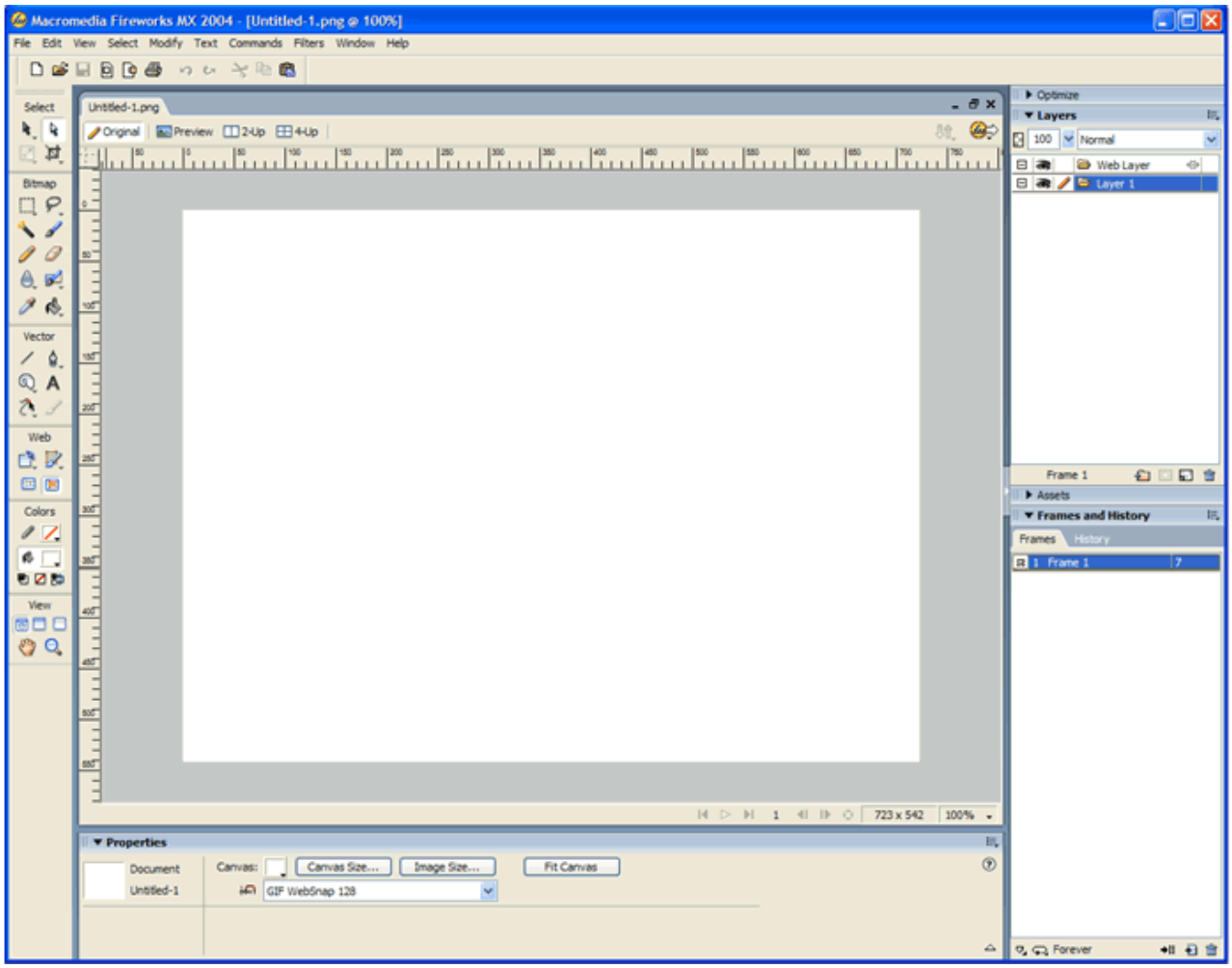
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Untitled-1.png
Original Preview 2-Up 4-Up
Optimize
Layers
Web Layer
Layer 1
Frame 1
Assets
Frames and History
Frames History
Properties
Document
Untitled-1
Canvas:
Canvas Size...
Image Size...
Fit Canvas
GIF WebSnap 128
723 x 542
100%
Forever

Interface idioms - conclusion

- Ease of use is determined by what we are familiar with
- Users need to know that “world” and the rules that apply in it
- The rules need to be applied consistently
- The parts that users are familiar with are patterns

Conceptual design - steps

- Being aware of the interface idioms
- Defining the **application structure**
- Selecting the high-level patterns
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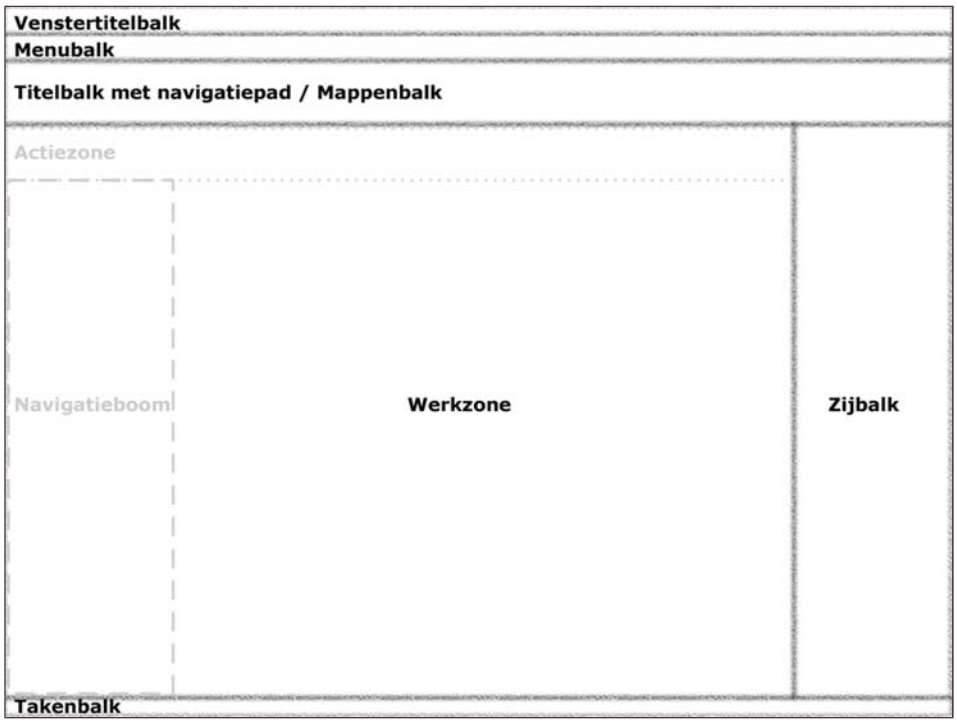
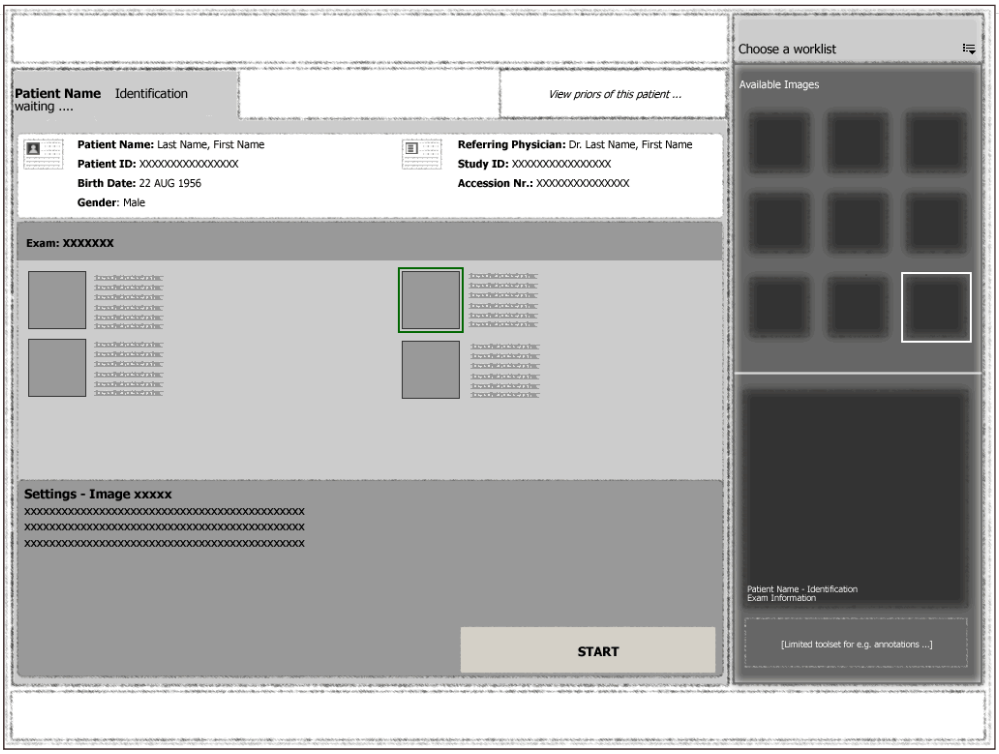
Application structure

- Structure of screens, pages and controls
- Use multiple windows, paging, one window with panels, or a combination of these
- Technology will determine your choices, e.g. smartphones vs. desktop applications
- Do users need to keep the overview, compare things, refer to other things, keep track of activity?

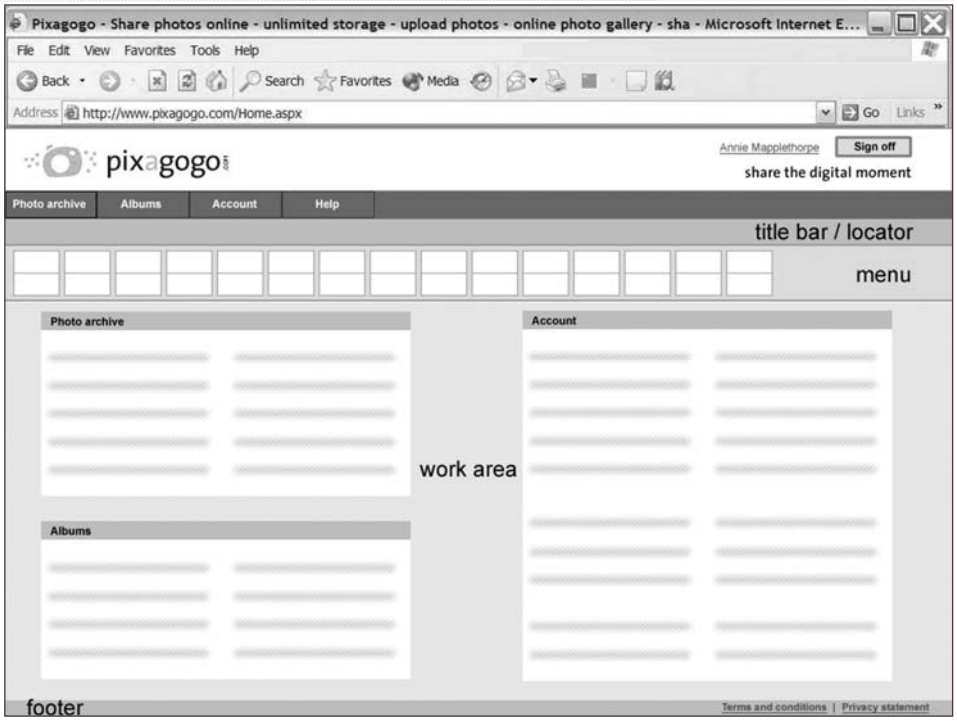
Application structure- examples



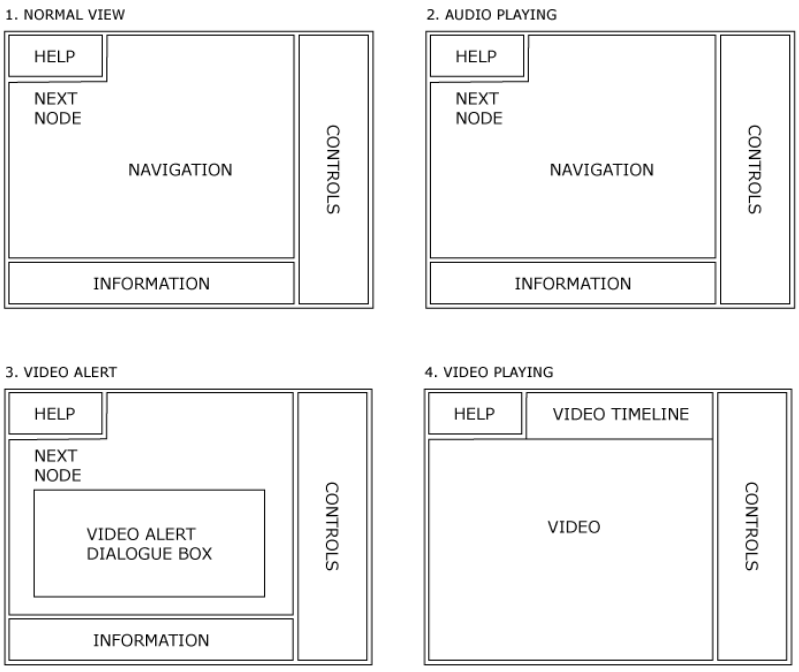
Application structure - examples



Application structure - examples



Story whisperer conceptual design



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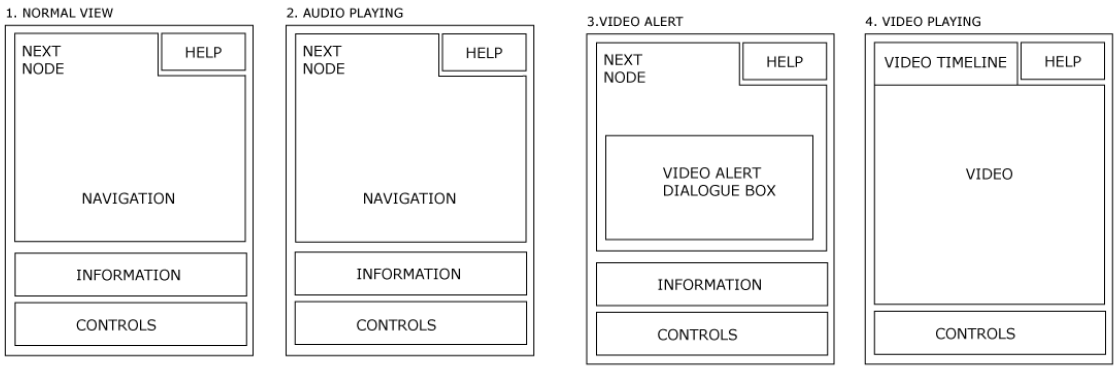

Conceptual design - steps

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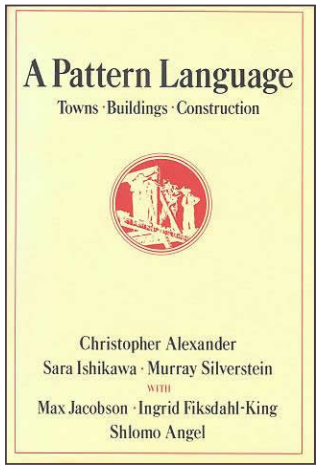
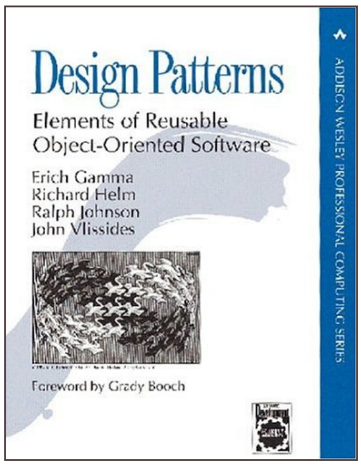
Patterns - introduction

- From architecture
- A Pattern Language, Christopher Alexander, 1977
  - 250 patterns
  - Traditional view of architecture
  - Best practices for human-friendly architecture
  - Ranges from layout of a city to the position of a window



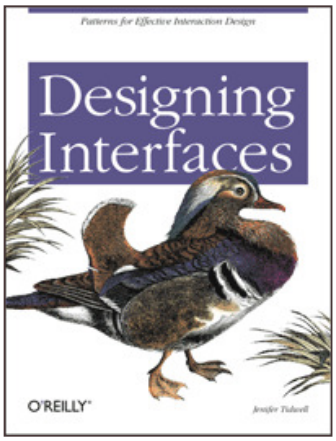
Patterns - introduction

- Used in software engineering
- Design Patterns, Erich Gamma, e.a., 1995
  - Solutions to recurring software design problems
  - Specific to object-oriented software design



Patterns - introduction

- Used in interface design
- Jenifer Tidwell, *Designing Interfaces*

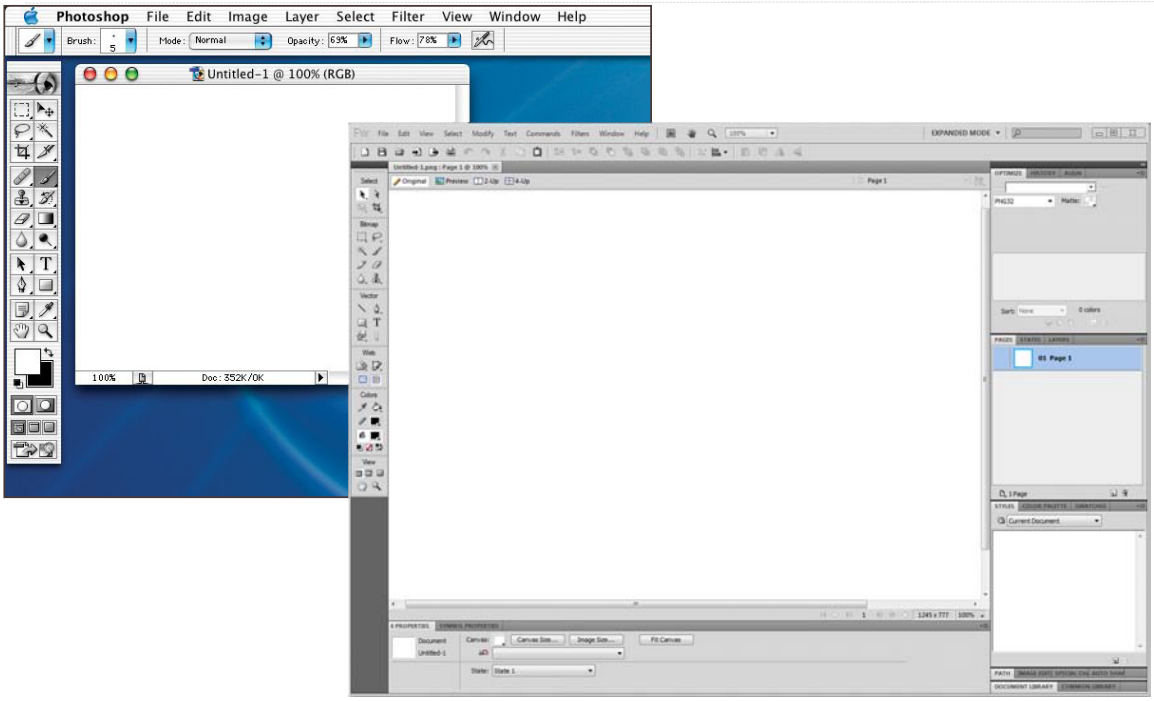


Patterns - introduction

- « structural and behavioural features that improve the habitabilaty of something – a user interface, a web site, an object-oriented program, or even a building »

Source: Tidwell (2005)

High-level patterns – examples



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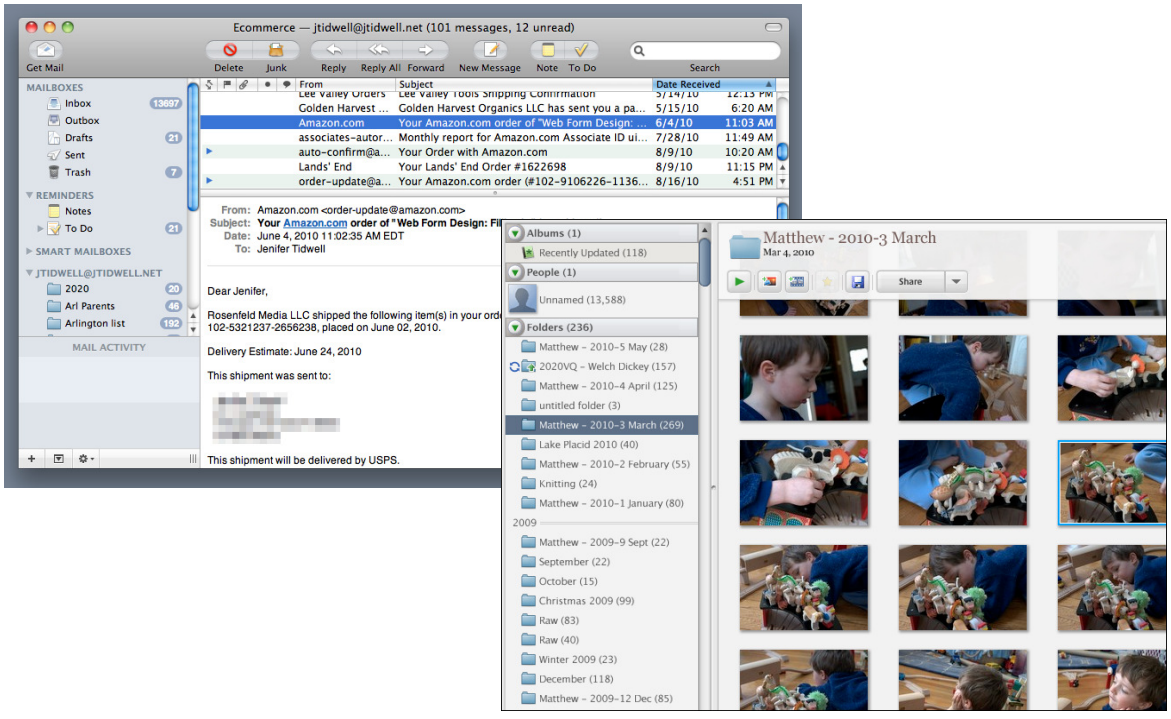

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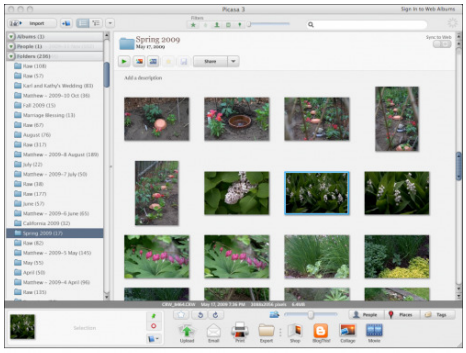

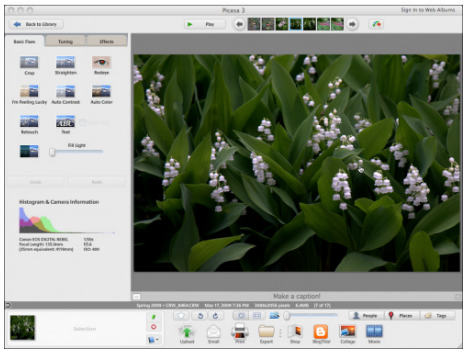

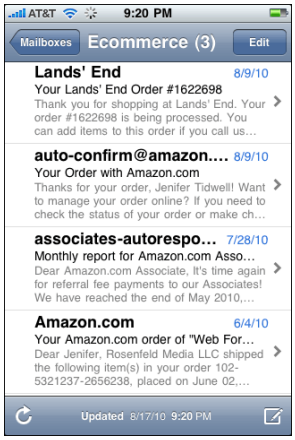

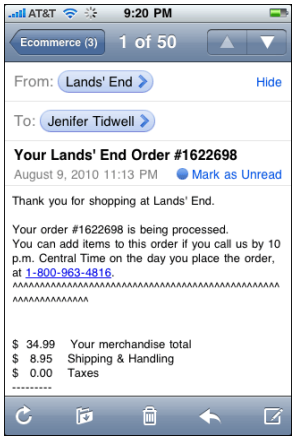

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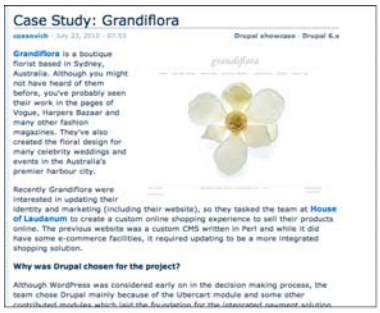
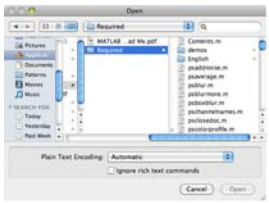
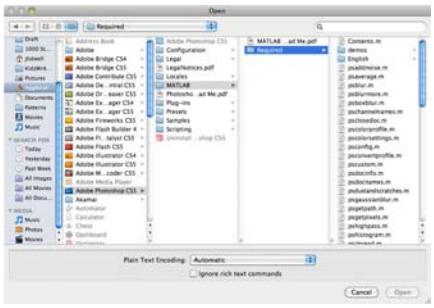






« if you know what users expect of your application, and if you choose carefully from your toolbox of idioms (large scale), controls (small scale), and patterns (covering the range), then you can put together something which feels familiar while remaining original »

Source: Tidwell (2005)

Conceptual design - steps

- Being aware of the interface idioms
- Defining of the application structure
- Selecting the high-level patterns
- Drawing the **navigation scheme**

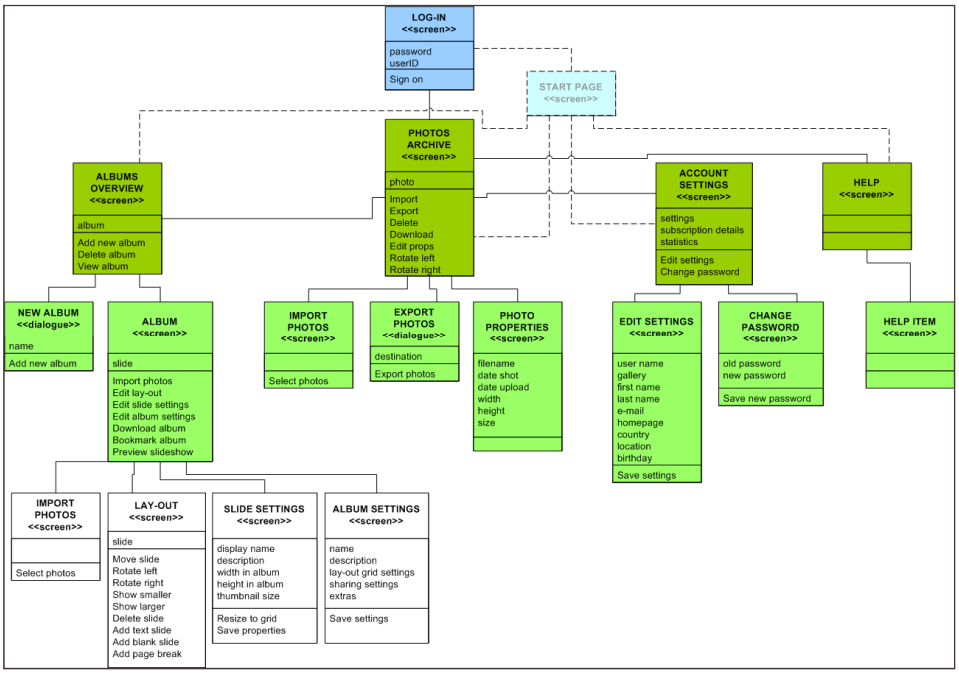
Navigation scheme - introduction

- Where am I? – Where do I go? – How do I get there?
- Signage
  - Clear labels where the user expects them
- Context
  - E.g. logos top left, Cancel bottom right
  - Be aware of user background – e.g. OS
- Maps
  - Overview of the complete navigation system

Navigation scheme - introduction

- Every « context switch » involves a new cognitive effort, so:
  - Keep distances short
  - Most frequent tasks – less « context switches »
  - Less frequent tasks – « hide »
- Master card of virtual navigation: hyperlink
  - « emergency exit »
  - « take me back to a safe/known place »

Navigation scheme - examples



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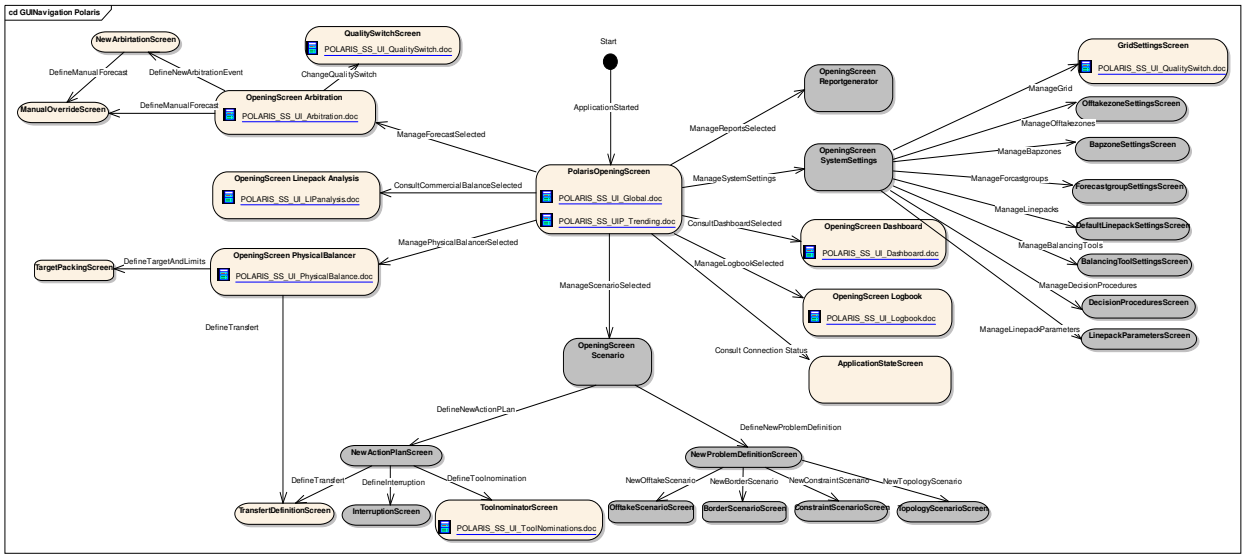

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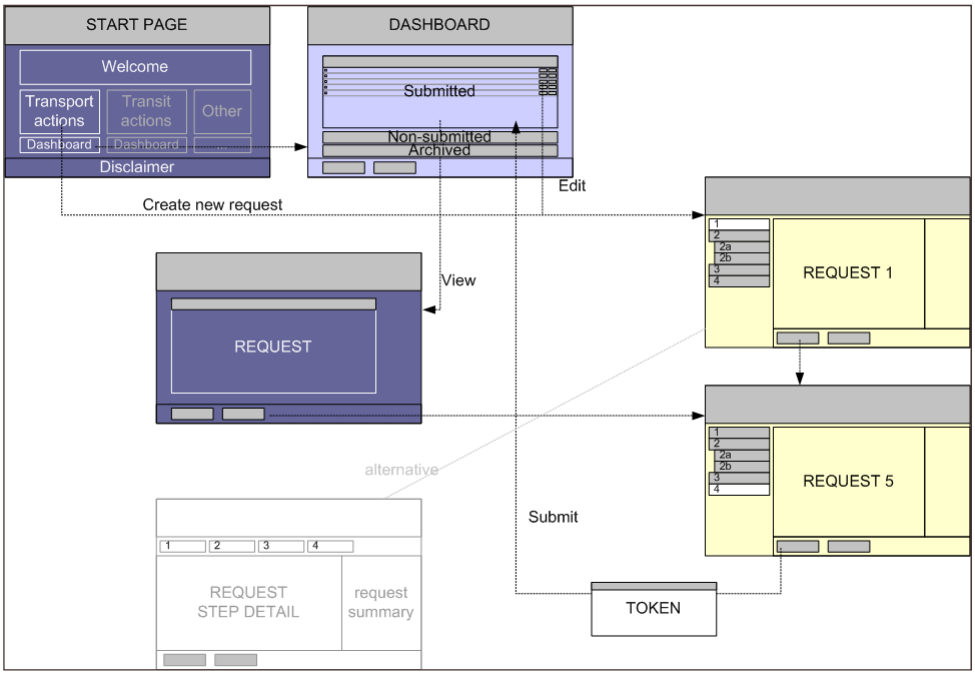

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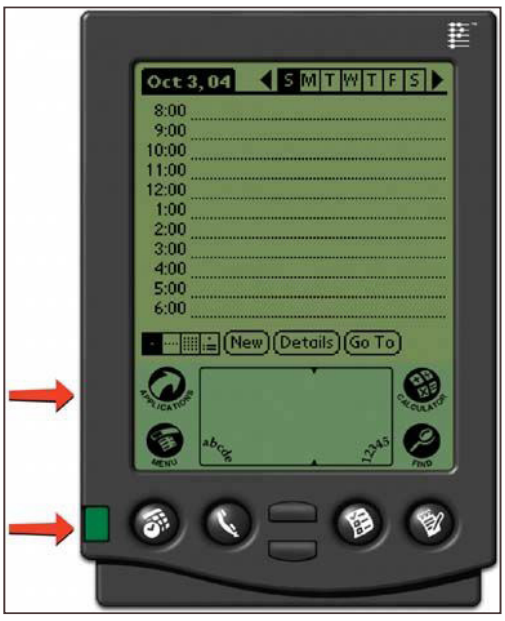


Navigation scheme - examples

Navigation scheme - examples

Conceptual design - content

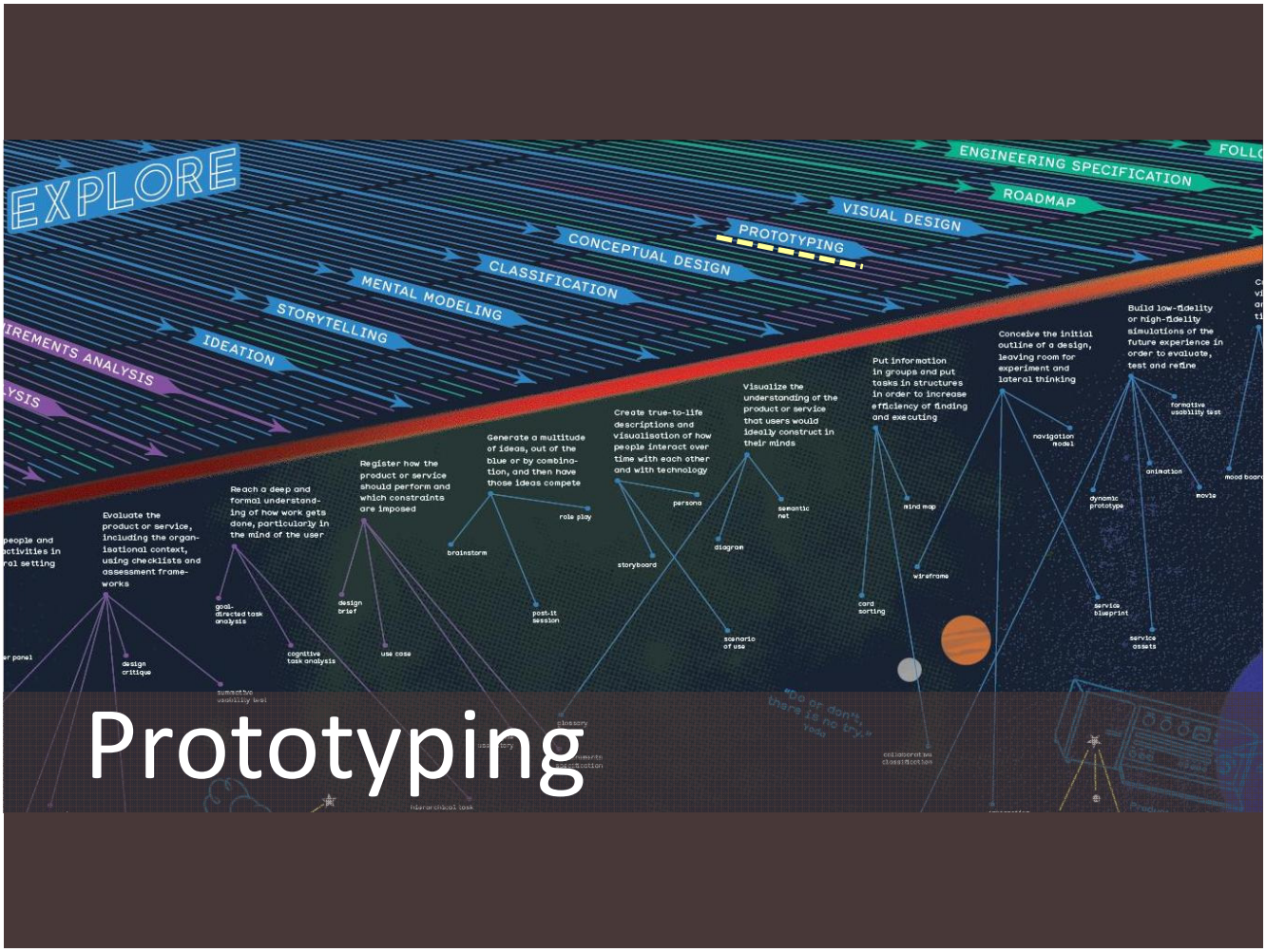
- Application management
  - Sessions
  - User roles, security
- Application's GUI framework (+ main controls)
- Navigation scheme
- Search, filter and browse (content, time, …)
- Consult / edit / save behaviour
- Interaction principles
- Messages, feed-back, information
- User support

Conceptual design - tips

- Use conceptual design to explore ideas
- Check whether all scenarios can be run in the conceptual design
- Check whether the mental model is communicated correctly by the conceptual design

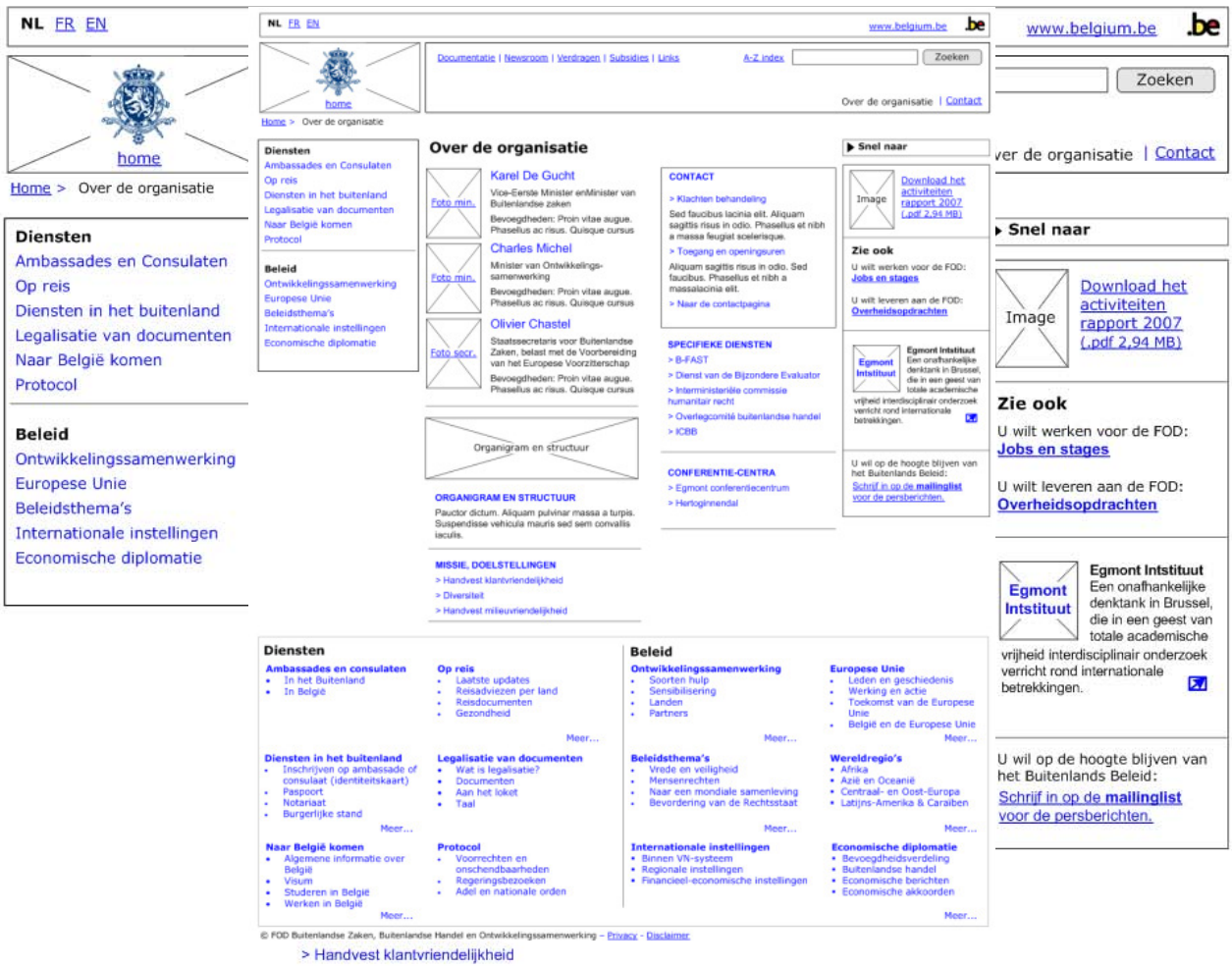
Exercise on conceptual design

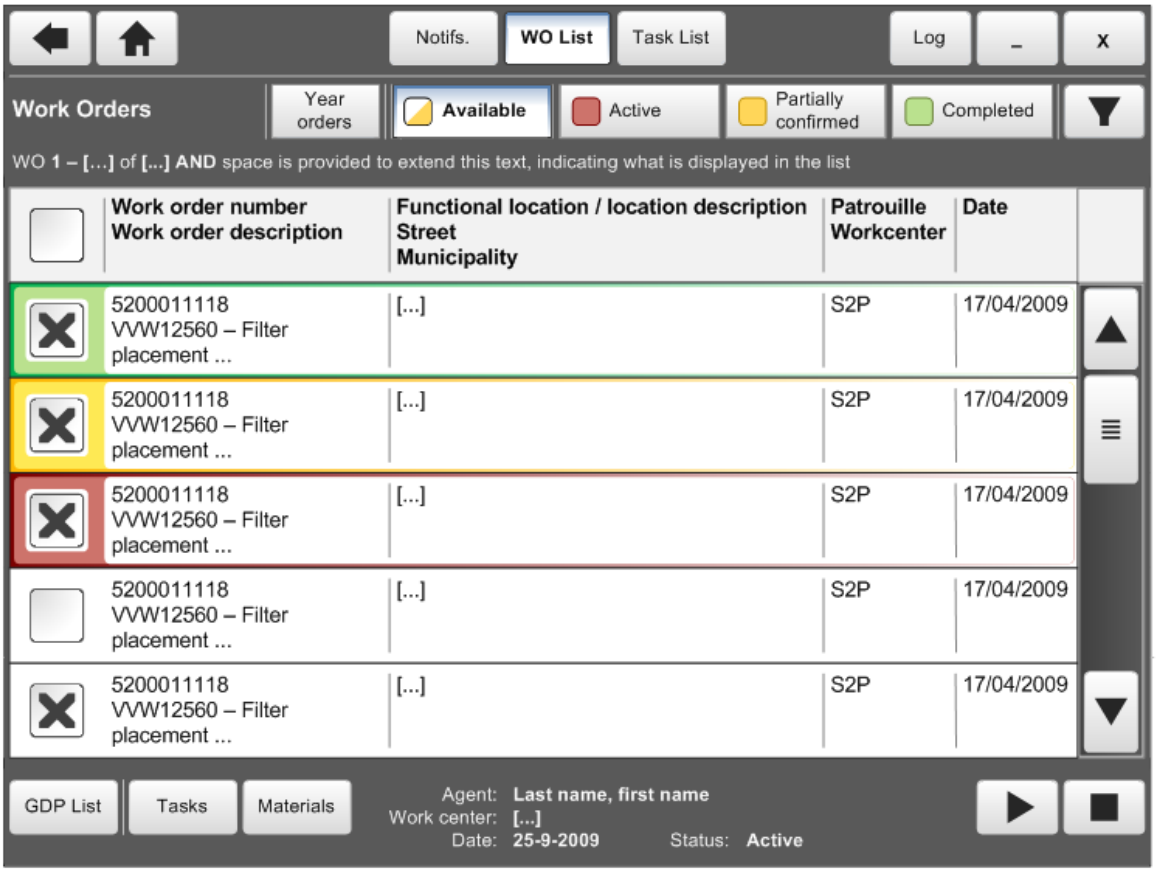
- ***Make a conceptual interface design for the holiday application***
- Further classify information and functions
- Design alternatives and choose
- Think out a navigation concept
- Draw on paper with thick marker



Definition

- Definition:
  - The prototype is a refinement of the conceptual design and results in a more or less realistic, possibly working, simulation of the user interface.
    - Design ideas and concepts are made more concrete, visible and tangible, resulting in low-fidelity or high-fidelity simulations of the future experience
    - Can be used for usability testing
- Terminology:
  - Mock-up, prototype, wireframe, interaction design, detailed design





Prototyping: dimensions

- Level of fidelity (visual refinement)
  - Lo-fi or hi-fi?
- Level of completeness/functionality
  - All page/screen types? Each page type in different states?
  - Level of interactivity: actual working flows?
  - Breadth/depth of functionality?
- Format
  - Early paper mock-ups
  - Digital drawings (psd, png, vsd …)
  - HTML, XAML, Flash …

ah

What kind of prototype do I need?

- What is the purpose of the prototype?
  - (Brief the developers? Conduct usability tests?)
- How interactive does it need to be?
  - (Linking? Dropdowns that work? Transition animations?)
- How much visual refinement is necessary?
  - (Do I need to convince management?)
- (What tool will I use?)

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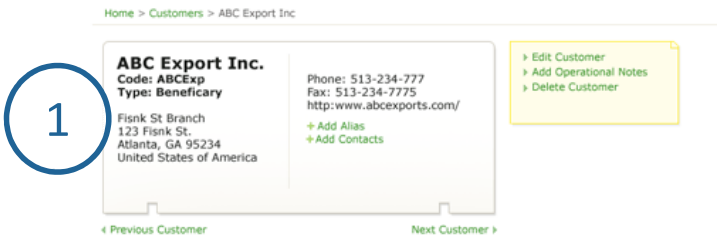
How to become a good designer…

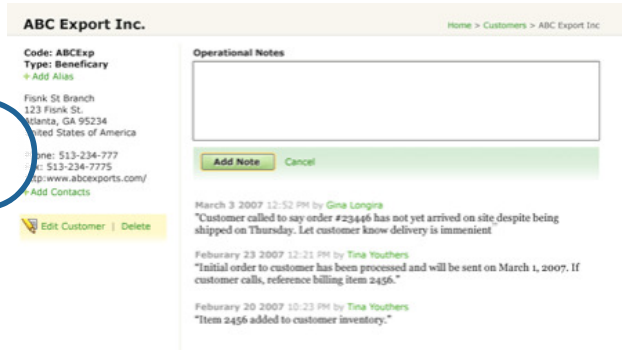
- Designing is no exact science
- Good design depends on both high-level decisions and many, many (many!) carefully executed details…
- Different focus, different goals imply different design solutions!

http://www.uxmatters.com/mt/archives/2008/11/common-visual-design-misconceptions.php



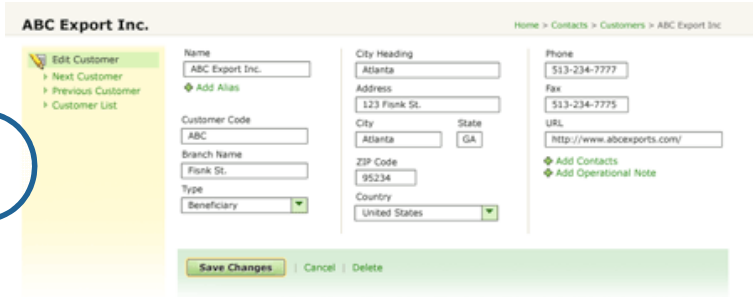
1

-**Primary function: looking up customer contact information**
-**Secondary: view, edit and delete contact information**



2

-**Primary focus: communication between customer and company (notes)**
-**Secondary: view, edit and delete contact information**

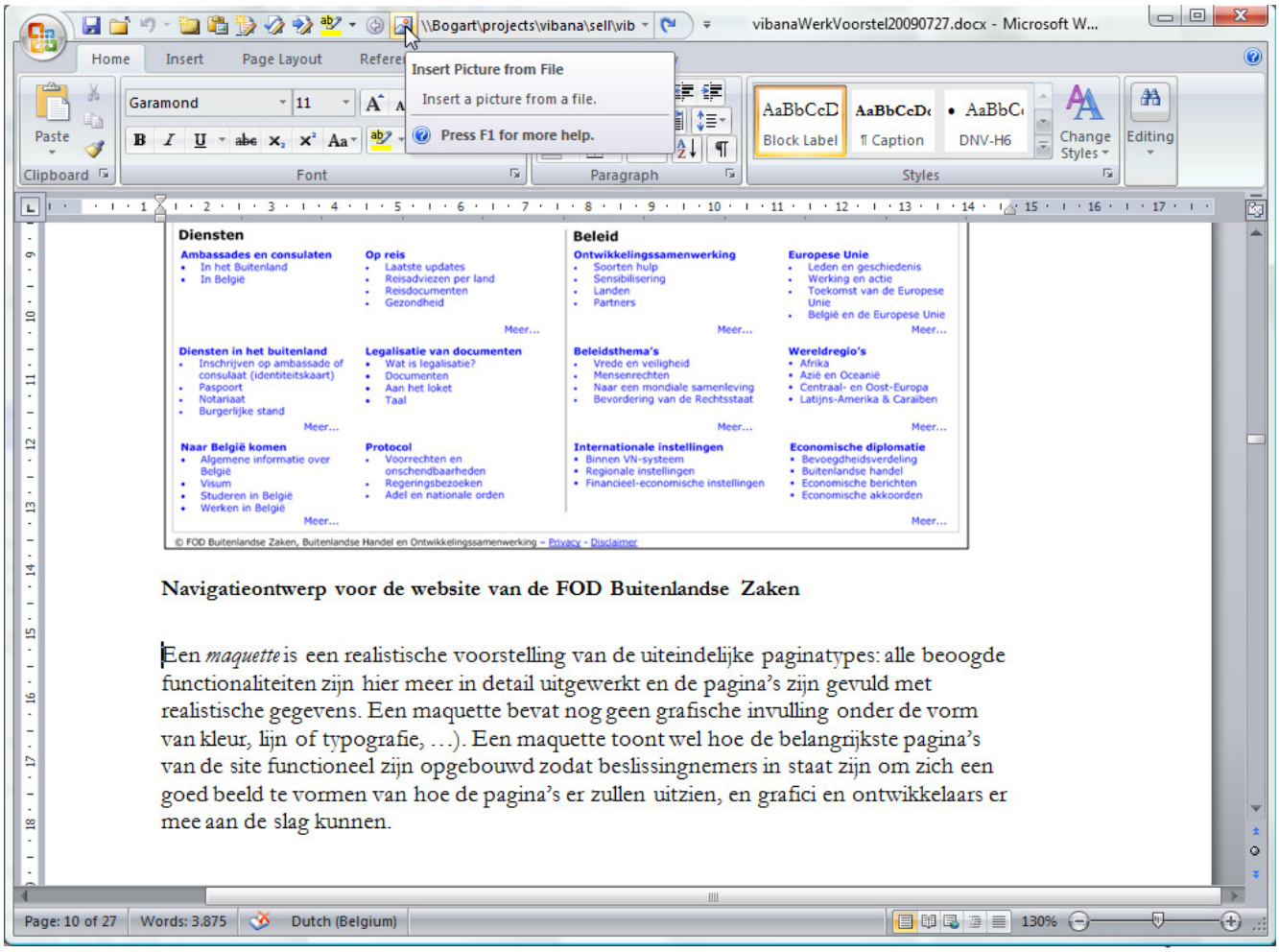


3

-**Primary focus: edit customer information**
-**Secondary: view contact info, track ongoing conversations**

Fitts' law

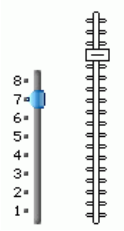
- "The time required to move to a target is a linear function of the target size and distance to the target"
  - Positive rephrasing:
    "The larger the target, the faster it can be pointed to. The closer the target, the faster it can be pointed to."
  - Negative rephrasing:
    "The faster the required movement and the smaller the target, the greater the error rate due to a speed accuracy tradeoff."



Affordance

- Affordance: an aspect of an object which makes it obvious how the object is to be used (Cf. Donald Norman)
  - "Plates (on doors) are for pushing."
    "Balls are for throwing or bouncing."

- Relevance for GUI design:
  - "Buttons drawn as 3D shapes appear to "stick out" and hence afford pushing"
  - "Sliders and scroll bars afford dragging"



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Gestalt grouping principles

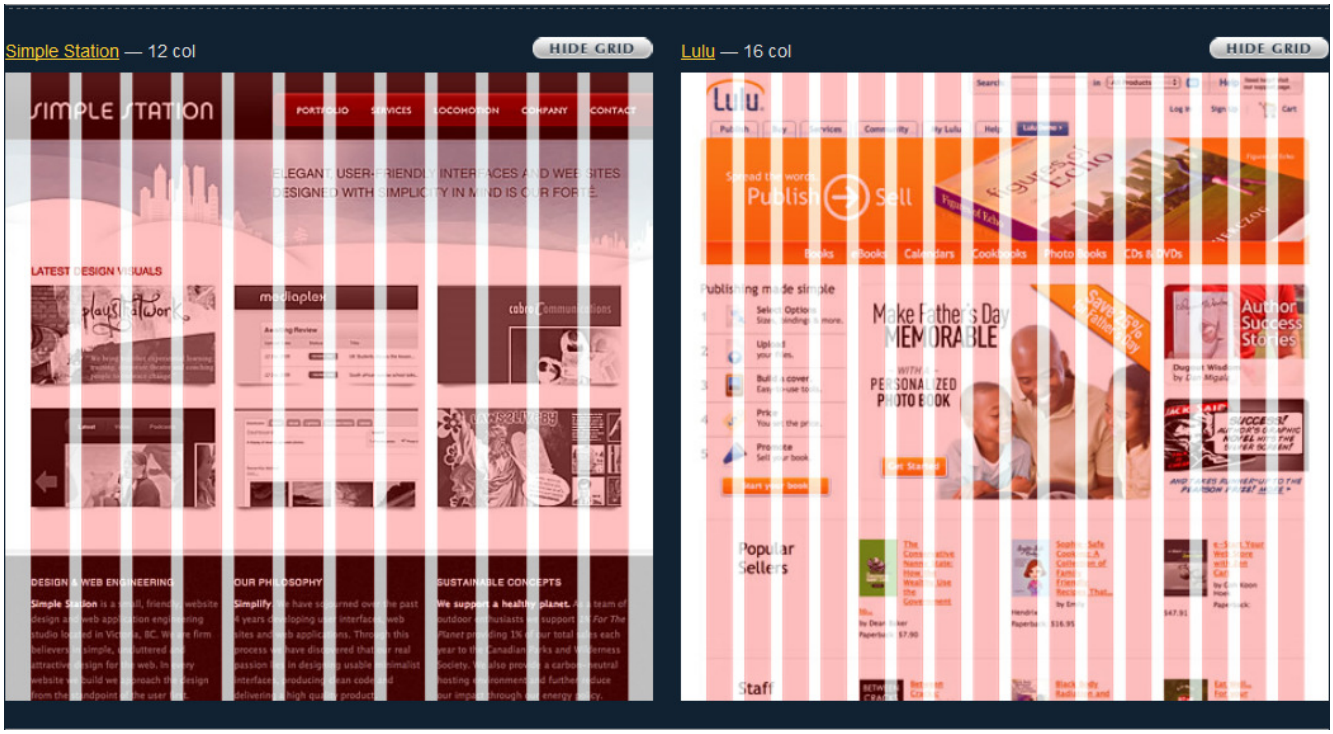
- Similarity

- Proximity

- Continuation

- Closure

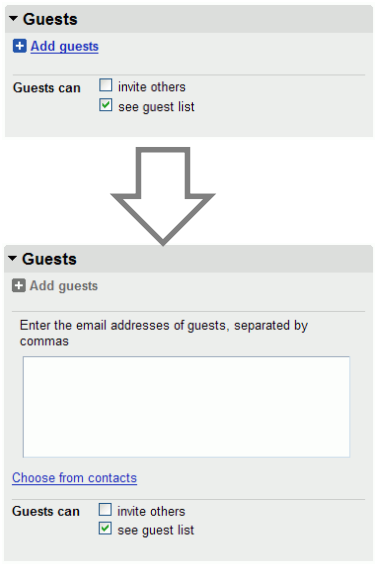
Grids

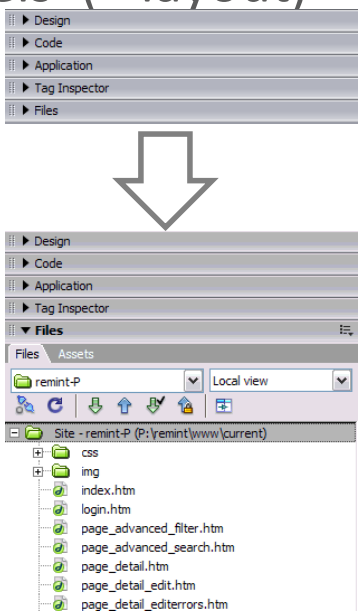


http://960.gs/

Detailed design patterns

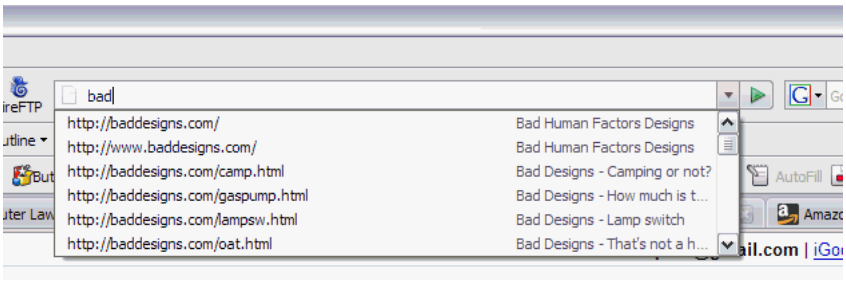
- Google Calendar: progressive disclosure
  Dreamweaver: closable panels (= layout)



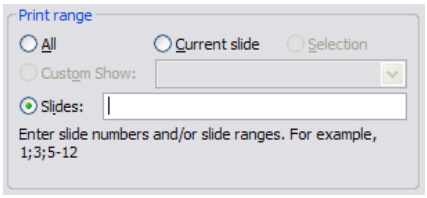


Auto completion, input hints (=forms)

- Firefox: auto completion for urls

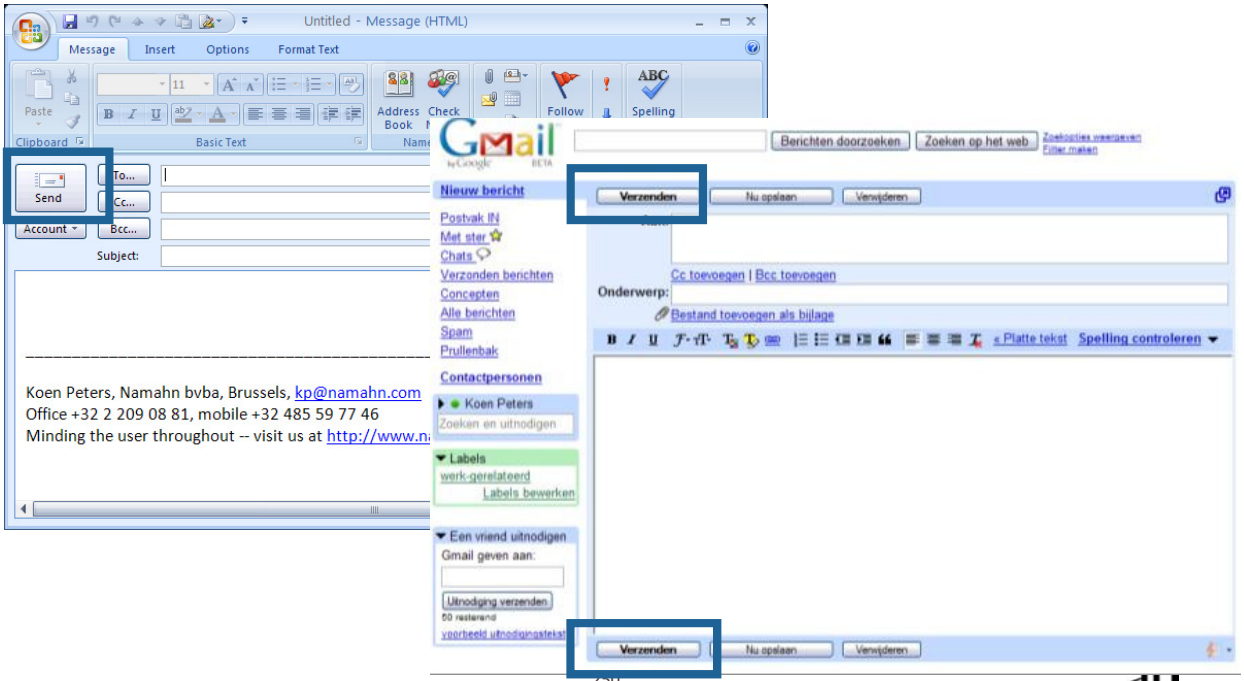


- Print dialog: input hint for defining custom print range

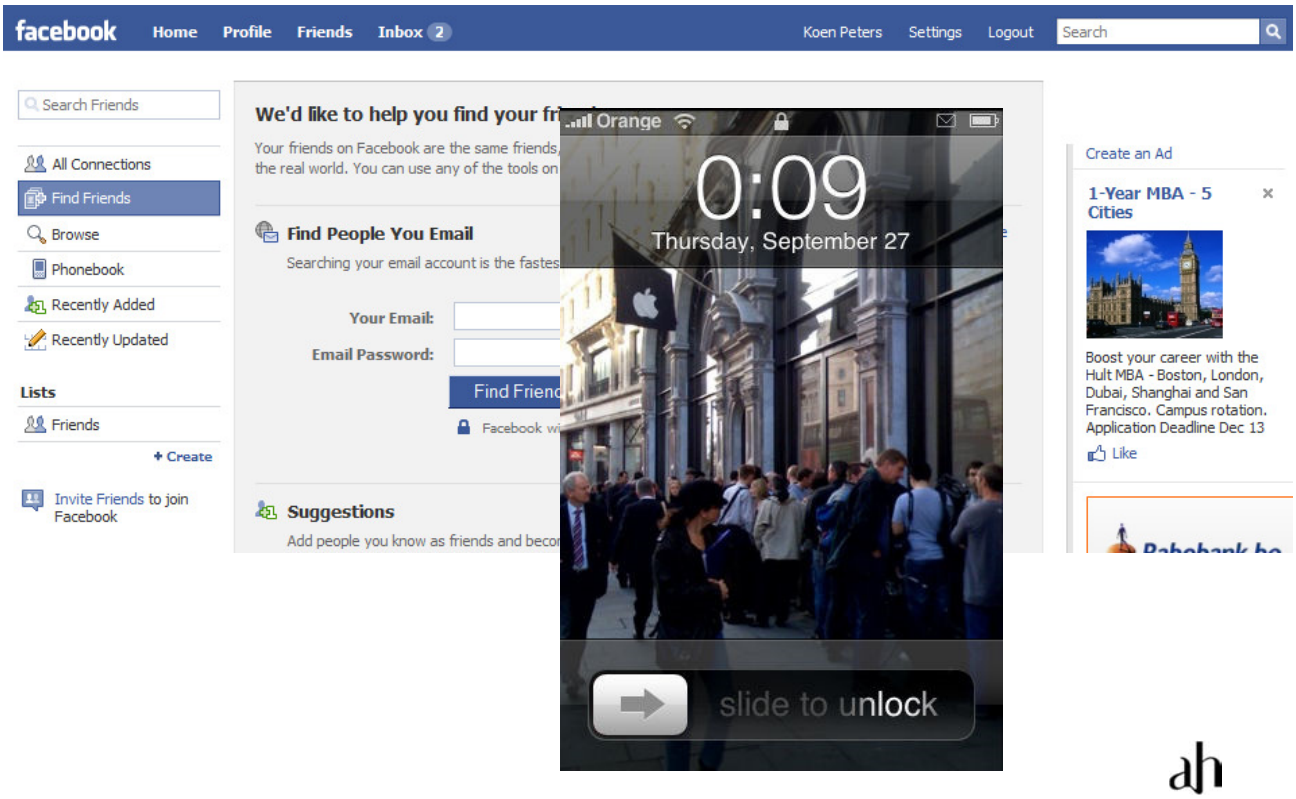


Prominent done button (=actions)

- "Send" e-mail: Outlook 2007, Gmail

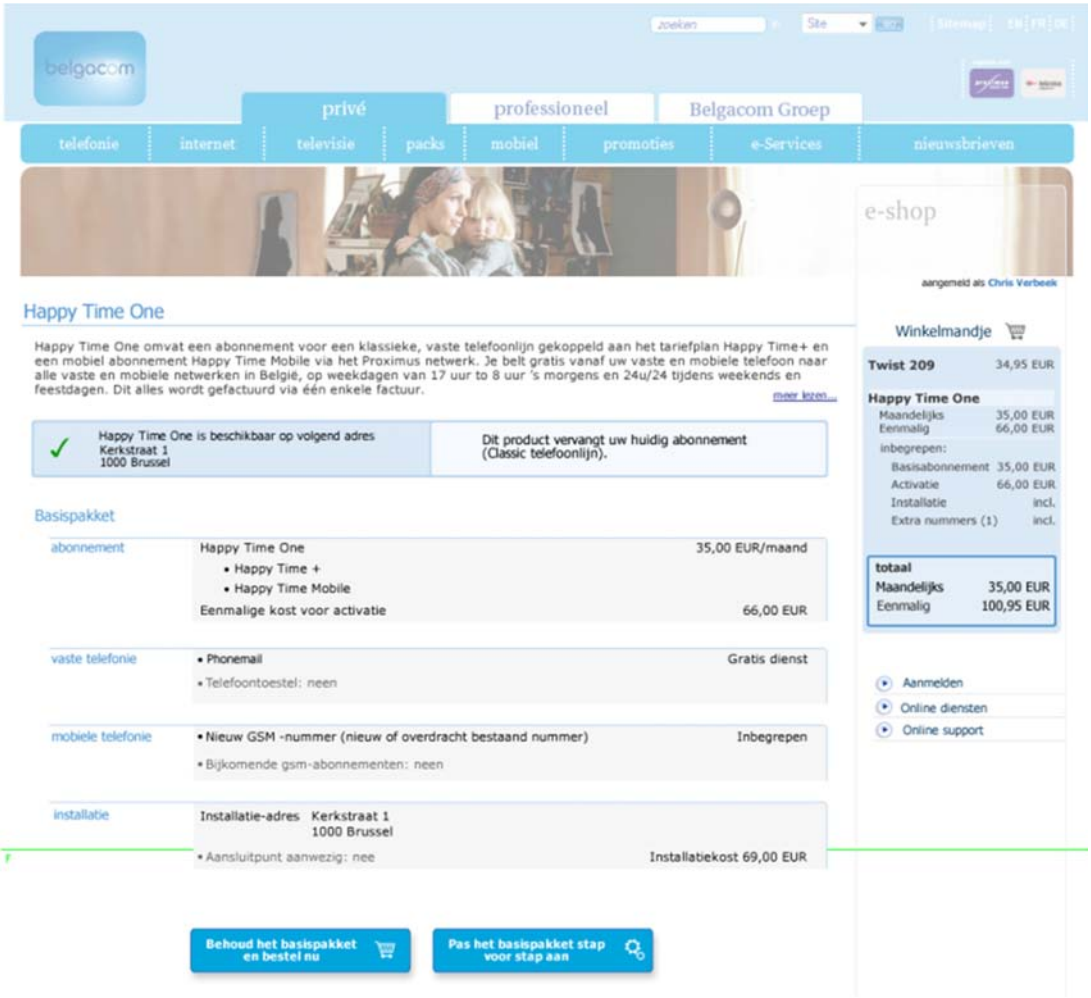


Designing for various platforms



Designing **web** interfaces

- What is specific about this platform?
- What are the limitations of this platform
- What are the opportunities?


belgacom
privé
professioneel
Belgacom Groep
telefonie
internet
televisie
packs
mobiel
promoties
e-Services
nieuwsbrieven
e-shop
aangemeld als Chris Verbeek
Happy Time One
Happy Time One omvat een abonnement voor een klassieke, vaste telefoonlijn gekoppeld aan het tariefplan Happy Time+ en een mobiel abonnement Happy Time Mobile via het Proximus netwerk. Je belt gratis vanaf uw vaste en mobiele telefoon naar alle vaste en mobiele netwerken in België, op weekdagen van 17 uur tot 8 uur 's morgens en 24u/24 tijdens weekends en feestdagen. Dit alles wordt gefactuurd via één enkele factuur.
meer lezen...
Happy Time One is beschikbaar op volgend adres
Kerkstraat 1
1000 Brussel
Dit product vervangt uw huidig abonnement
(Classic telefoonlijn).
Basispakket
abonnement
Happy Time One 35,00 EUR/maand
• Happy Time +
• Happy Time Mobile
Eenmalige kost voor activatie 66,00 EUR
vaste telefonie
• Phonemail Gratis dienst
• Telefoontoestel: neen
mobiele telefonie
• Nieuw GSM -nummer (nieuw of overdracht bestaand nummer) Inbegrepen
• Bijkomende gsm-abonnementen: neen
installatie
Installatie-adres Kerkstraat 1
1000 Brussel
• Aansluitpunt aanwezig: nee Installatiekost 69,00 EUR
Behoud het basispakket en bestel nu
Pas het basispakket stap voor stap aan
Winkelmandje
Twist 209 34,95 EUR
Happy Time One
Maandelijks 35,00 EUR
Eenmalig 66,00 EUR
inbegrepen:
Basisabonnement 35,00 EUR
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Installatie incl.
Extra nummers (1) incl.
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Aanmelden
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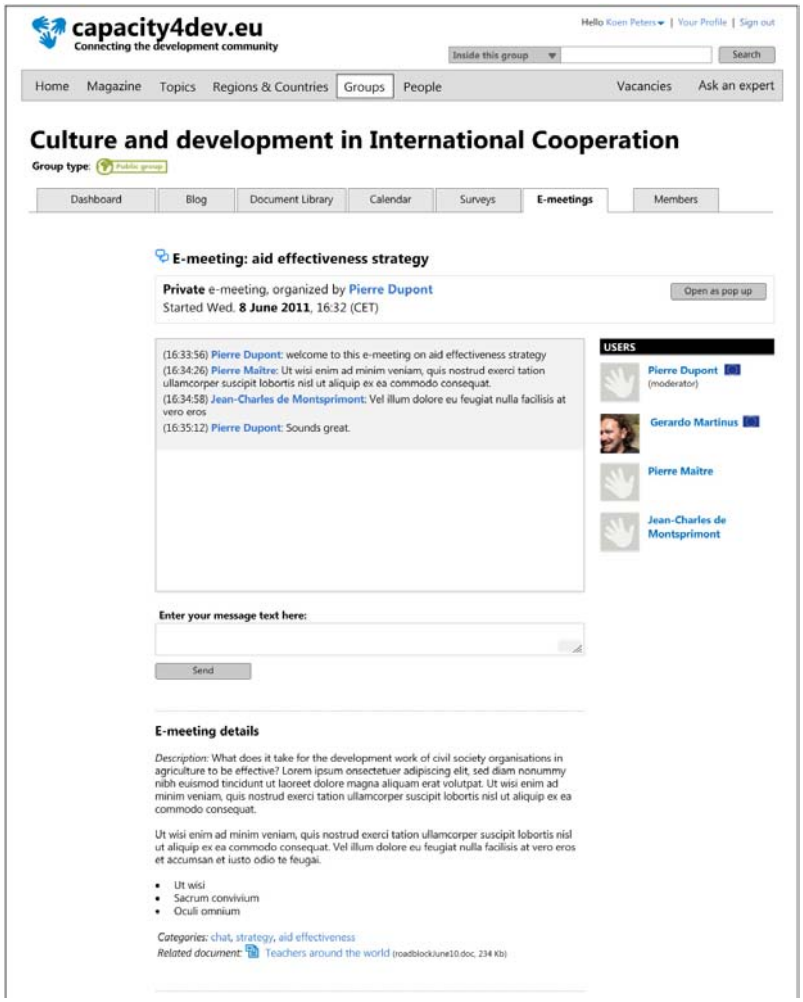
Online support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Connecting the development community
Hello Koen Peters | Your Profile | Sign out
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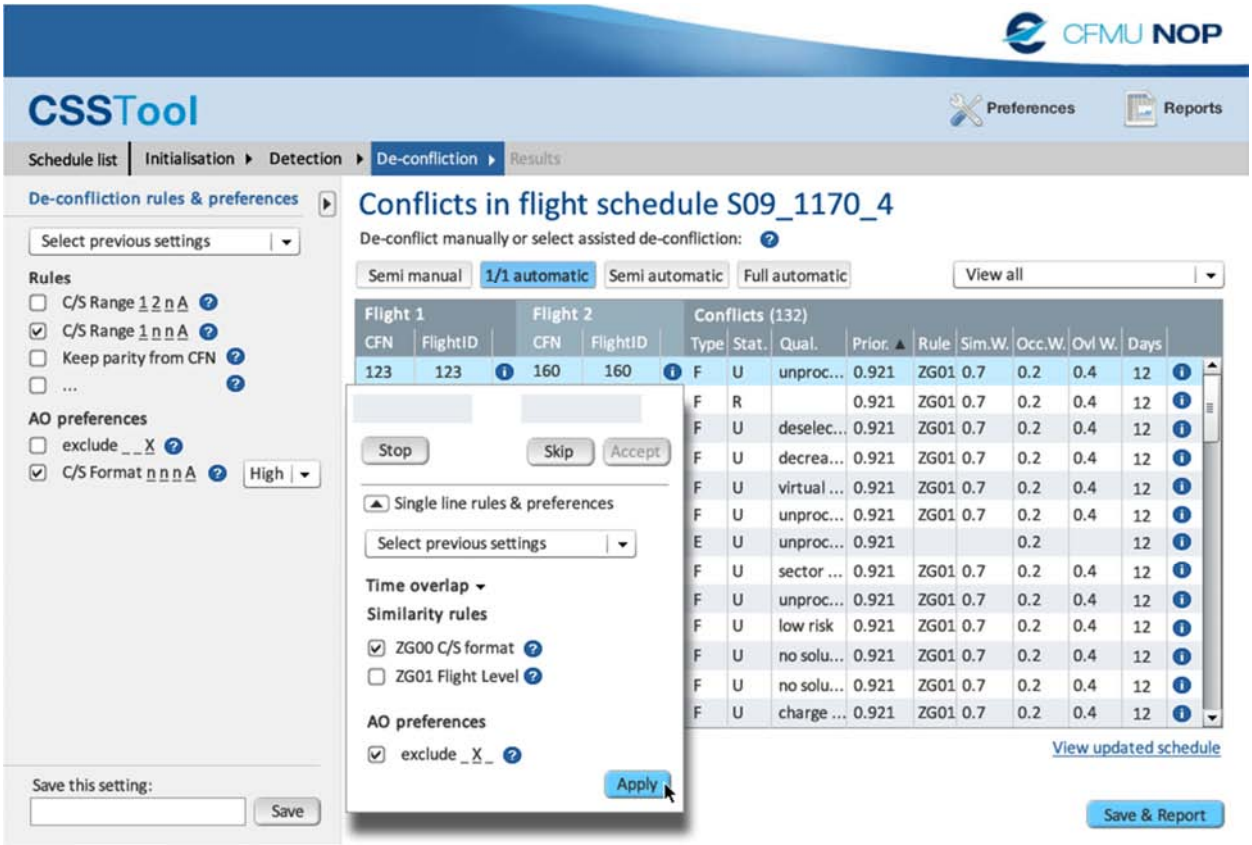
People
Vacancies
Ask an expert
Culture and development in International Cooperation
Group type: Public group
Dashboard
Blog
Document Library
Calendar
Surveys
E-meetings
Members
E-meeting: aid effectiveness strategy
Private e-meeting, organized by Pierre Dupont
Started Wed. 8 June 2011, 16:32 (CET)
Open as pop up
(16:33:56) Pierre Dupont: welcome to this e-meeting on aid effectiveness strategy
(16:34:26) Pierre Maitre: Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.
(16:34:58) Jean-Charles de Montsprimont: Vel illum dolore eu feugiat nulla facilisis at vero eros
(16:35:12) Pierre Dupont: Sounds great.
USERS
Pierre Dupont (moderator)
Gerardo Martinus
Pierre Maitre
Jean-Charles de Montsprimont
Enter your message text here:
Send
E-meeting details
Description: What does it take for the development work of civil society organisations in agriculture to be effective? Lorem ipsum onsectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.
Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio te feugai.
Ut wisi
Sacrum convivium
Oculi omnium
Categories: chat, strategy, aid effectiveness
Related document: Teachers around the world (roadblockJune10.doc, 234 Kb)

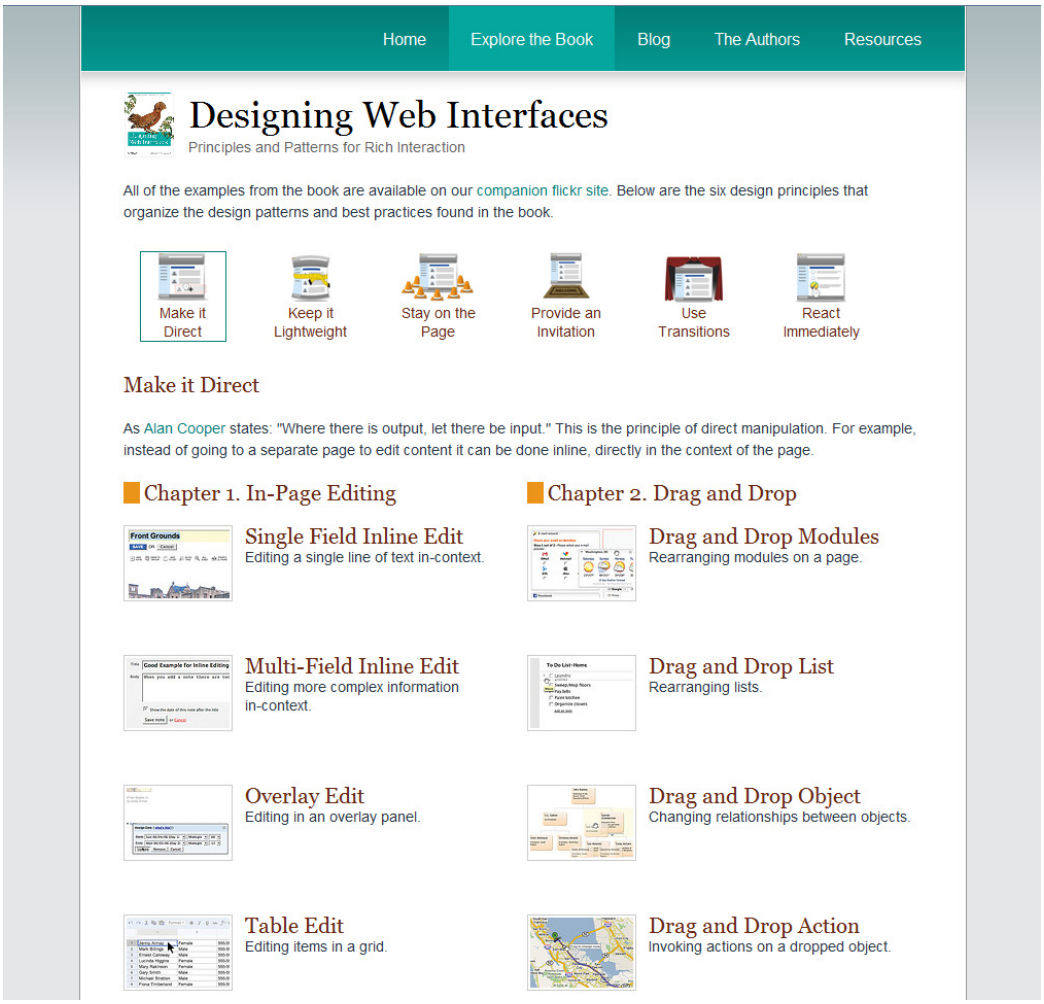


Rich Internet Applications

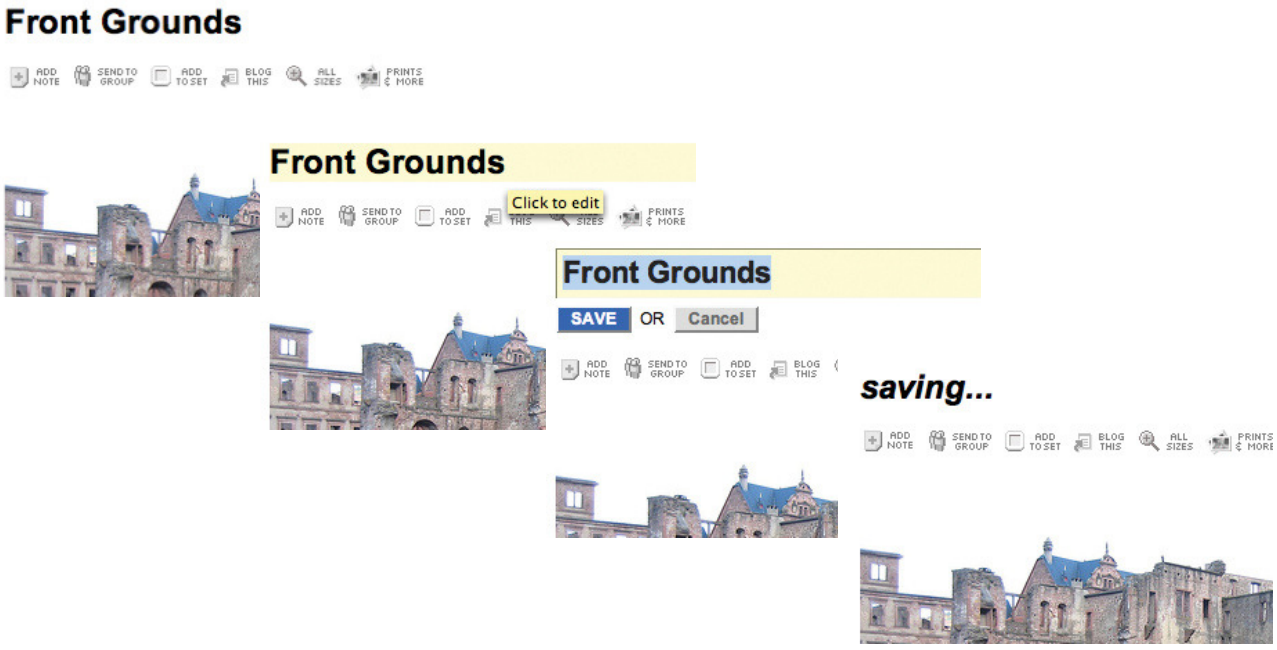
- 6 design principles & best practices for RIA's
  - Make it Direct
  - Keep It Lightweight
  - Stay on the Page
  - Provide an Invitation
  - Use Transitions
  - React Immediately

75 design patterns for web UI

- In page editing
  - Single field inline edit; table edit…
- Drag and drop
  - Drag & drop modules; drag & drop list
- Direct selection
  - Toggle selection, object selection
- Contextual tools
  - Hover-reveal tools; secondary menu…
- Etc.



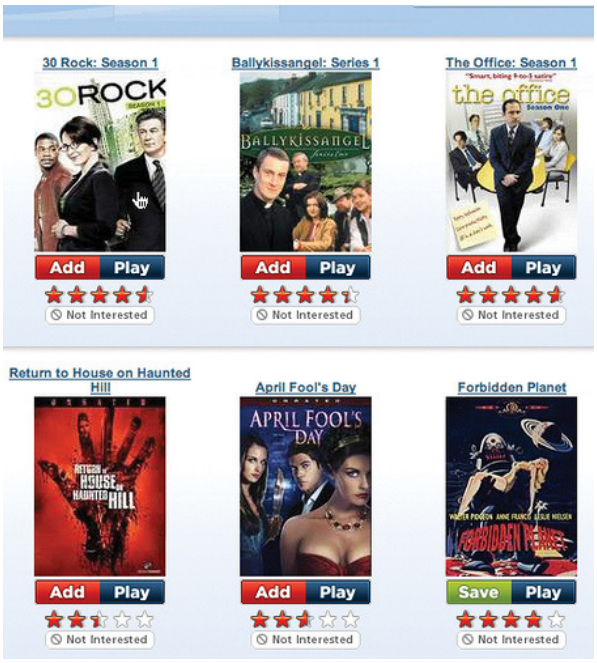
Single Field inline edit



Best practices for inline edit

- Use inline when editing one of many in a set. This keeps the context in view.
- Keep the display and editing modes the same size when possible (stability).
- Make the transition between both modes as smooth as possible.
- Use mouse hover invitations to indicate editing when readability is primary.

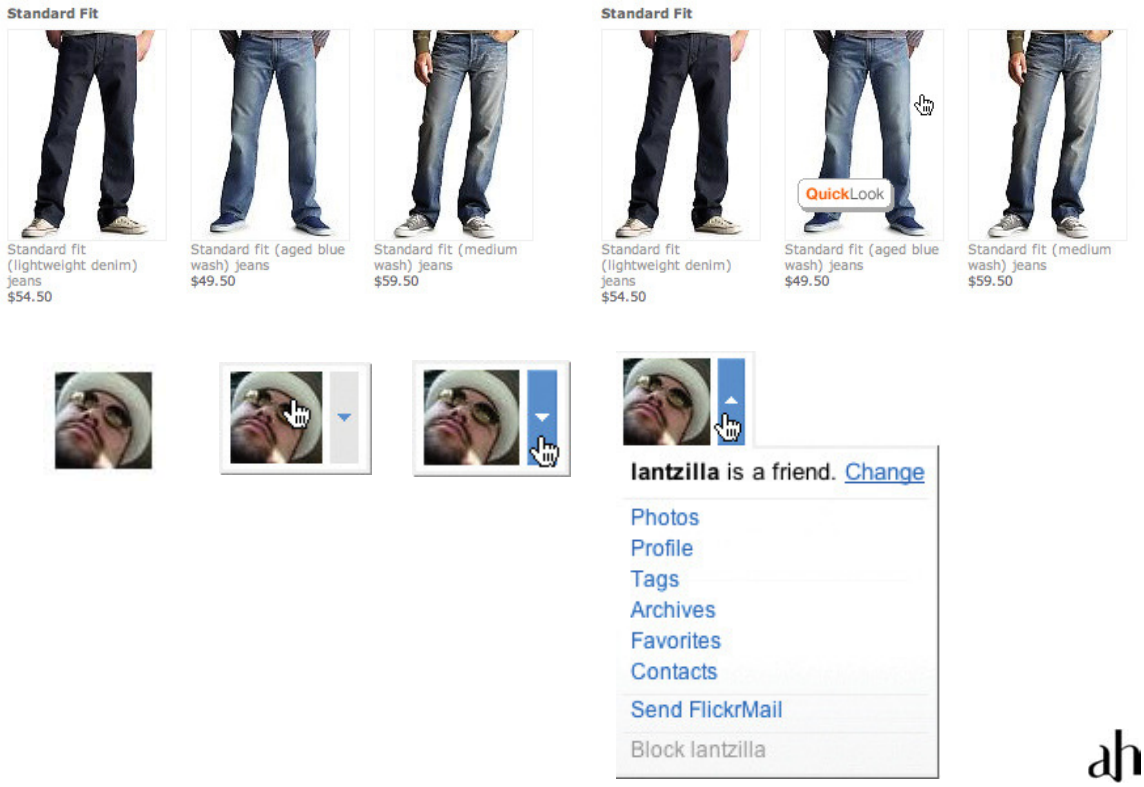
Detail overlay



Best practices for overlay

- Use detail overlays to give a sneak peek at detailed information (avoid page transitions)
- For hover-activated detail overlays:
  - Provide a slight delay for activation (0,5 sec.)
  - Provide a simple deactivation
- For detail overlays, make activation and deactivation symmetrical

Hover / affordance invitation



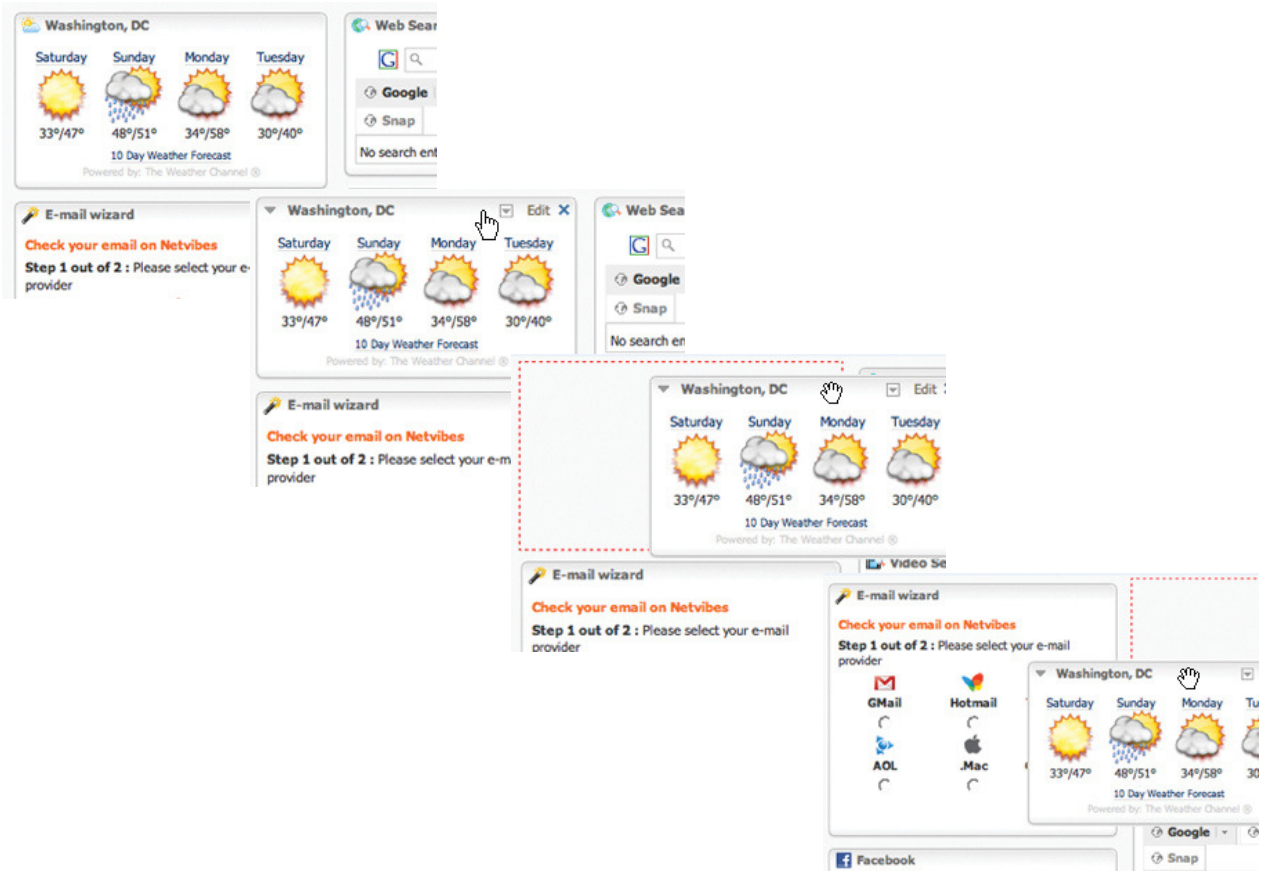
Best practices for invitation

- Use hover invitations when the actions are secondary to content and you want to keep the visual style uncluttered
- For hover invitations, use cursor change, background change, and tool tips to clearly indicate the invited action
- Affordance invitation: bridge new, unfamiliar interactions with classic, familiar idioms
- Place invitations in context, close to the interaction

Drag and drop

- Seems simple at first sight: “grap an object and drop it somewhere”

- But: a number of individual (micro)states at which interaction is possible: “interesting moments”
  - 15 interactive events: page Load, mouse hover, mouse down, drag initiated, drag leaves original location, drop accepted, etc.
  - 6 actors: page, cursor, tool tip, drag object, etc.



Interesting moments grid

	Mouse Hover	Mouse Down	Drag Initiated	Drag Hovers over Valid Target*	Drop Accepted
Cursor	Change to a hand with finger pointing.*	Change to a hand/move cursor.	No change.*		Cursor returns to normal style.
Dragged Module			Module is dragged with full opacity.		Dragged version is removed.
Dragged Modules Original Location			Hole is shown as a red dashed outline.		Hole is removed.
Drop Target				Hole (red dashed outline) is moved to the new drop spot. Other modules shift to close prior hole.	Module is placed in the new location.
Notes	** A better approach might be to signal draggability with the hand/move cursor.*		** On drag initiated, it would be better to switch to a hand that looks like a grab.*	** Triggers when the dragged module's title bar has moved past the midpoint of the dragged over module's header.*	

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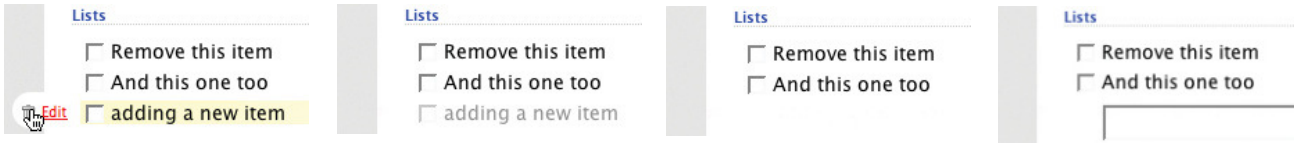
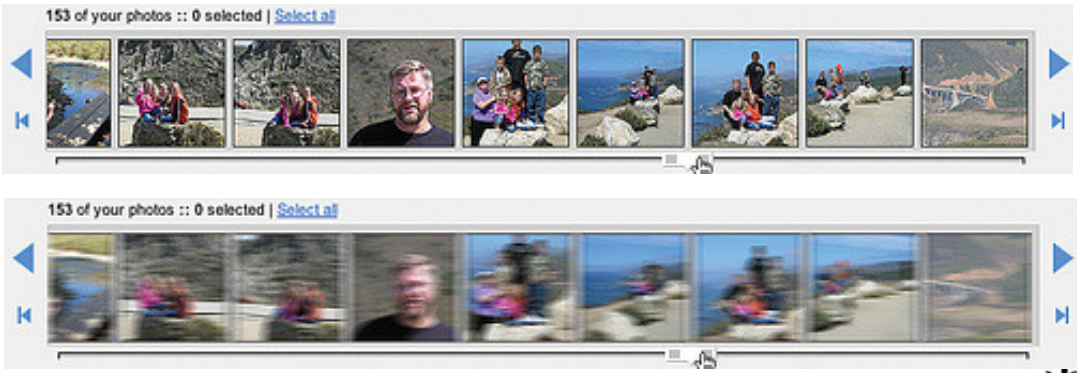
Transitions

- Brighten/dim, expand/collapse, zoom, flip, **self-healing fade**, accordion, **carousel**, …





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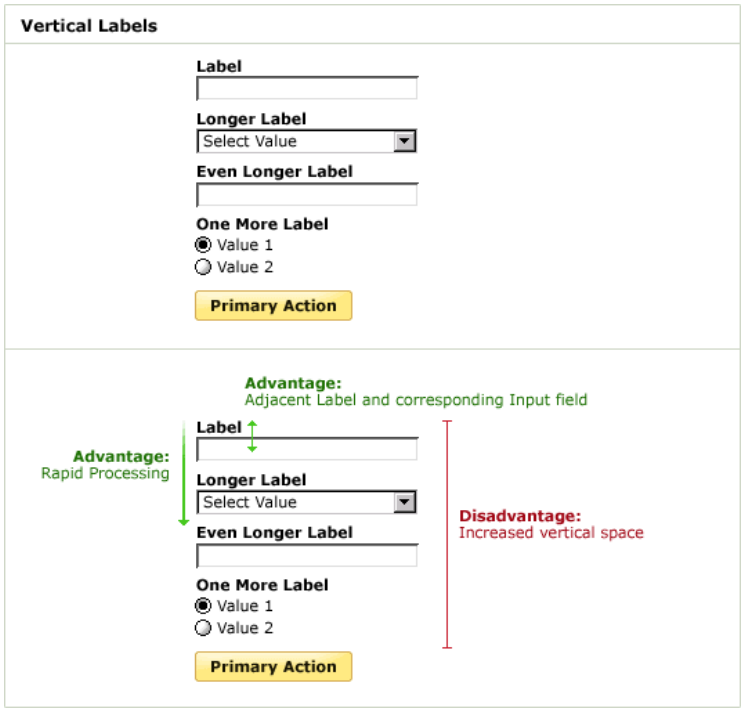
Best practices for transitions

- The more rapid the change, the more important the event
- Try not to rely solely on transitions for communicating change in the interface
- Keep the transitions near the user's area of focus. This will make the transitions more discoverable and feel less like advertising
- Gimmicky effects annoy and distract rather than communicate



LUKEW IDEATION + DESIGN

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Mobile First

by Luke Wroblewski — November 3, 2009

More often than not, the mobile experience for a Web application or site is designed and built after the PC version is complete. Here's three reasons why Web applications should be designed for **mobile first** instead.

1. Mobile is exploding

Though the Web has been accessible on mobile devices for years, today's smart phones are driving huge use of networked applications and Web content. Consider that AT&T, the exclusive carrier for Apple's iPhone, has seen a 4,932% increase in mobile traffic data in the past three years. And that's just the start.

- Heavy mobile data users are projected to triple to one billion by 2013. (source)
- Mobile internet adoption has outpaced desktop internet adoption by eight times. (source)
- Smartphone sales will surpass worldwide PC sales by the end of 2011 . (source)
- Over half of Android and iPhone users spend more than 30 minutes per day using mobile applications. (source)

Building mobile first ensures companies have an experience available to this extremely fast growing user base widely considered to be the next big computing platform.

2. Mobile forces you to focus

Mobile devices require software development teams to focus on only the most important data and actions in an application. There simply isn't room in a 320 by 480 pixel screen for extraneous, unnecessary elements. You have to prioritize.

So when a team designs mobile first, the end result is an experience focused on the key tasks users want to accomplish without the extraneous detours and general interface debris that litter today's desktop-accessed Web sites. That's good user experience and good for business.

3. Mobile extends your capabilities

The World Wide Web has been built on a foundation of rather simple capabilities (page markup, styling, and scripting) determined by what Web browsers can support. Web application developers -desperate to add innovative capabilities to this environment- have pushed the limits of JavaScript, browser plug-ins, and even Web browsers themselves to enable rich activities and interactions online.

But new mobile application platforms are introducing exciting capabilities that leave many PC-based Web browsers behind. Consider some of the capabilities offered to

Related:

June 13, 2011
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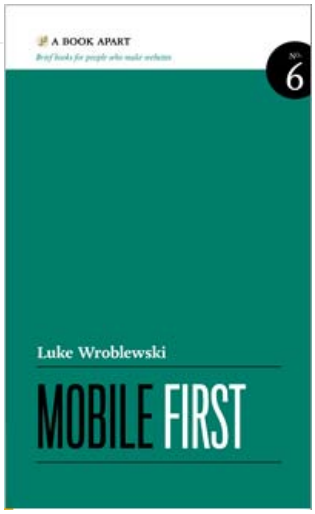

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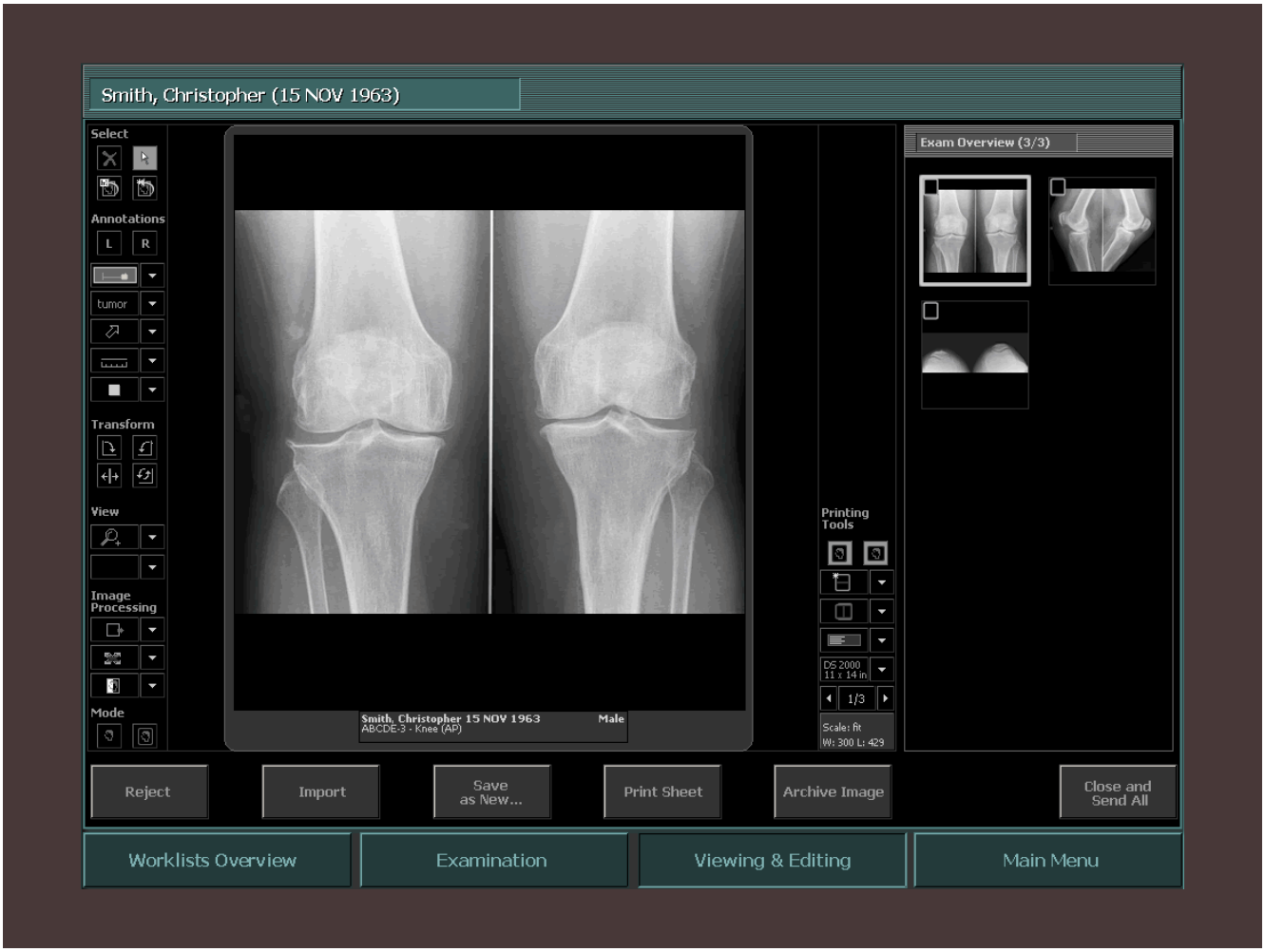
Designing **touch** interfaces

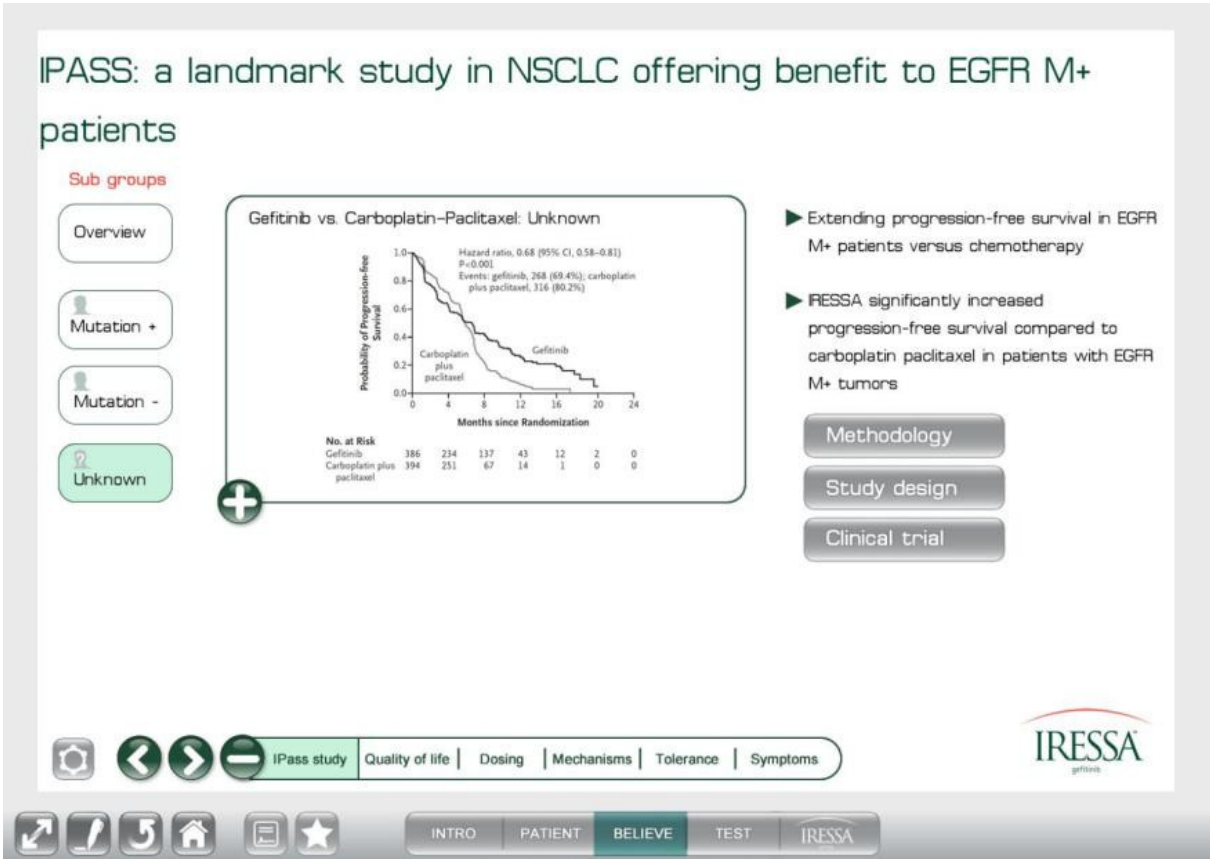
- What is specific about this platform?
- What are the limitations of this platform
- What are the opportunities?

ah

Where can you find touch screens?

- Smart phones
- iPad, Kindle Fire, …
- Desk top applications (e.g. healthcare)
- Tablet pc’s
- Kiosk





Some best practices

- Response speed
  - Speed and ease of interaction is higher (fingers versus mouse)
- More space
  - Design UI with fat fingers in mind
- Offer an intuitive interface
  - Limit choices, guide the user
- More suited to info retrieval than data entry

Best practices

- Ambidextrous design
  - Both lefties and righties will be using your interface
  - Solutions
    - Vertically symmetrical navigation
    - Option to flip
- Be aware of screen coverage
  - Roll-over menus
  - Navigation at the bottom of your screen

Best practices

- Always give your users feedback as soon as they touch the screen
- Kiosk
  - Run application full screen
  - Use a simple point-and-click interface with large buttons
- Turn the cursor off so your user will focus on the entire screen instead of the arrow

Interactions, button states

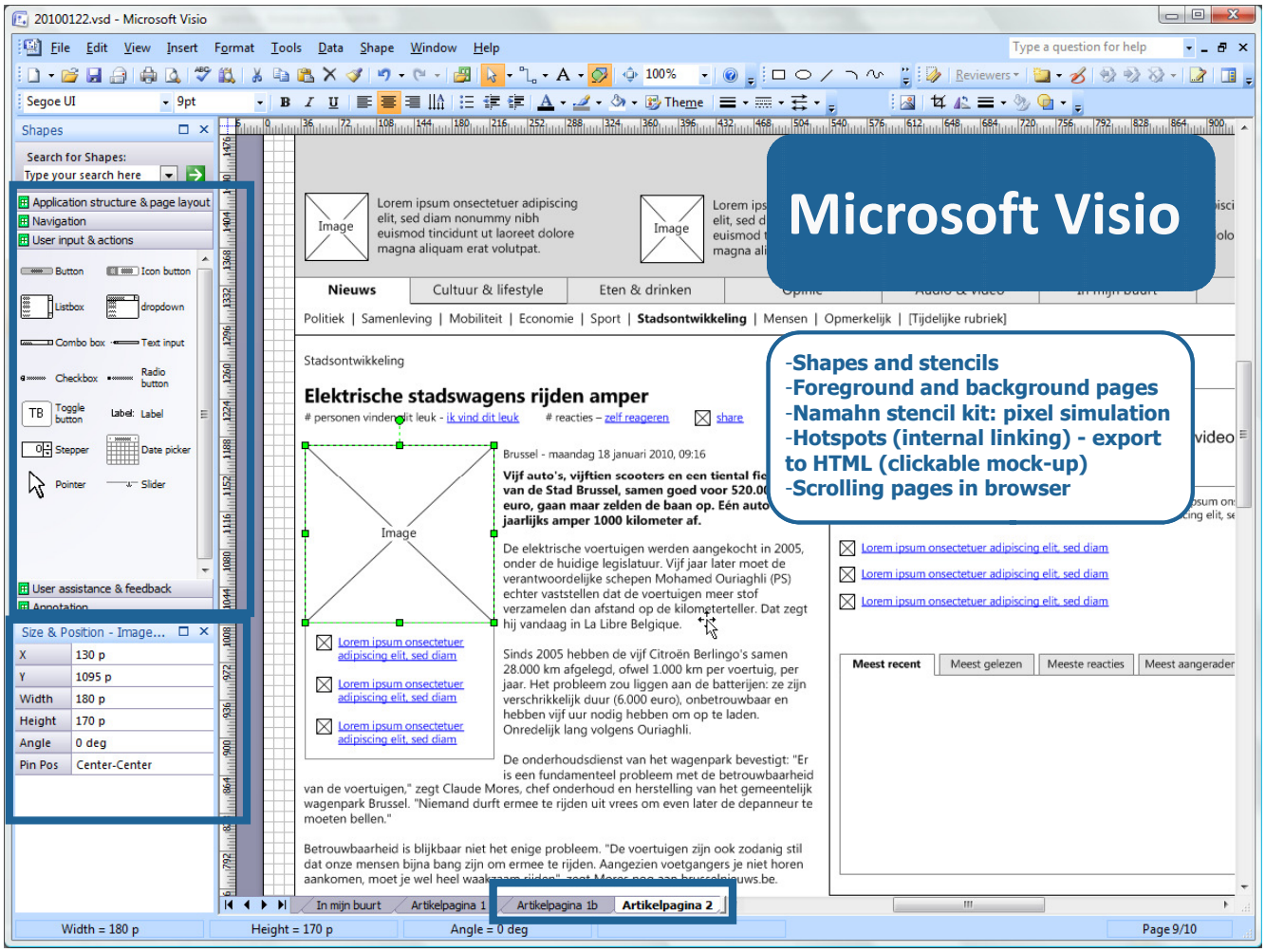
- Interactions (4)
  - Click (touch + release)
  - Double click
  - Duration (long-lasting touch)
  - Drag
  - (+ Multi touch)

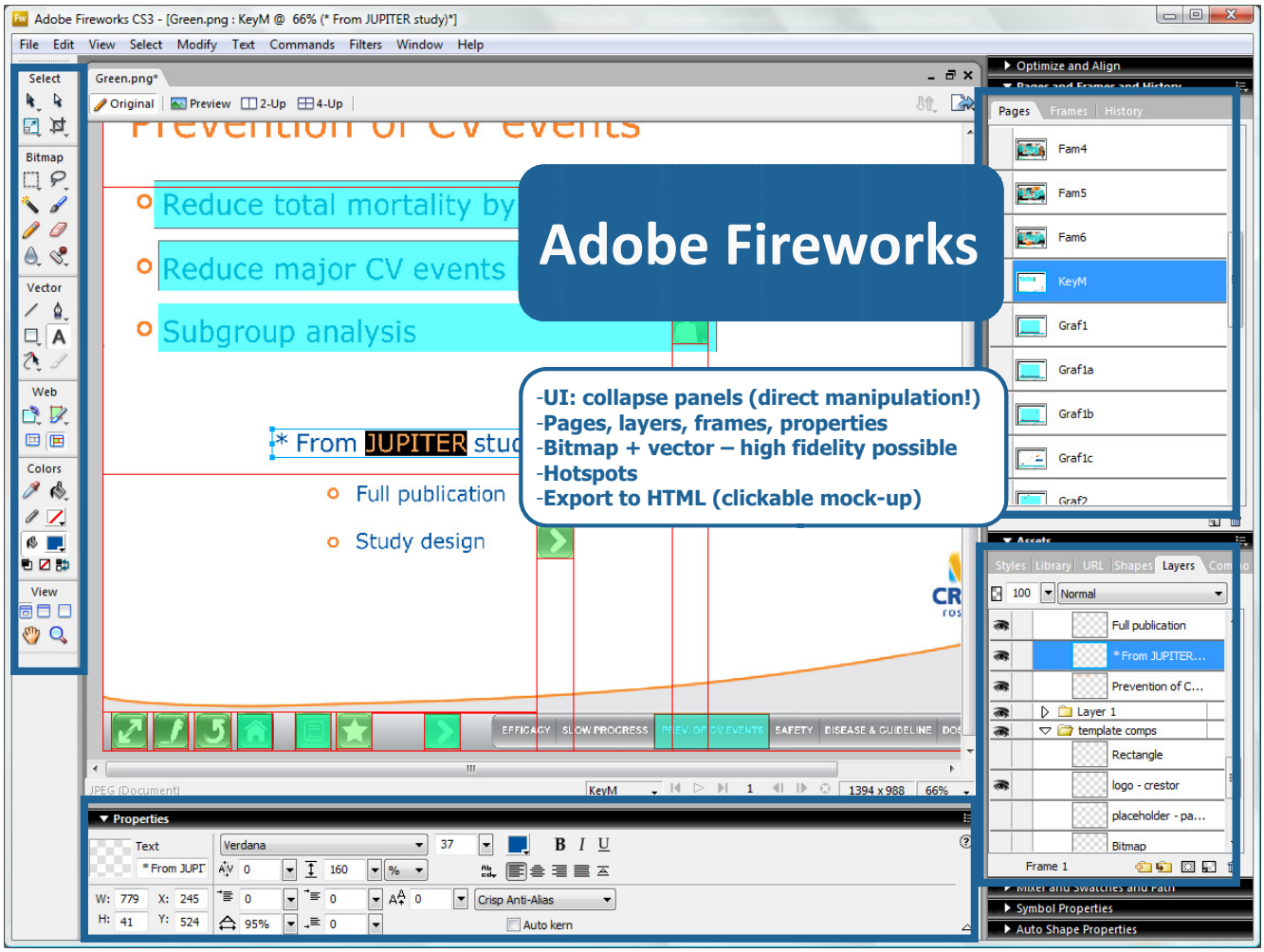
- Button states (3)
  - Default;
  - Will be activated (during touch);
  - Has been activated (after release);

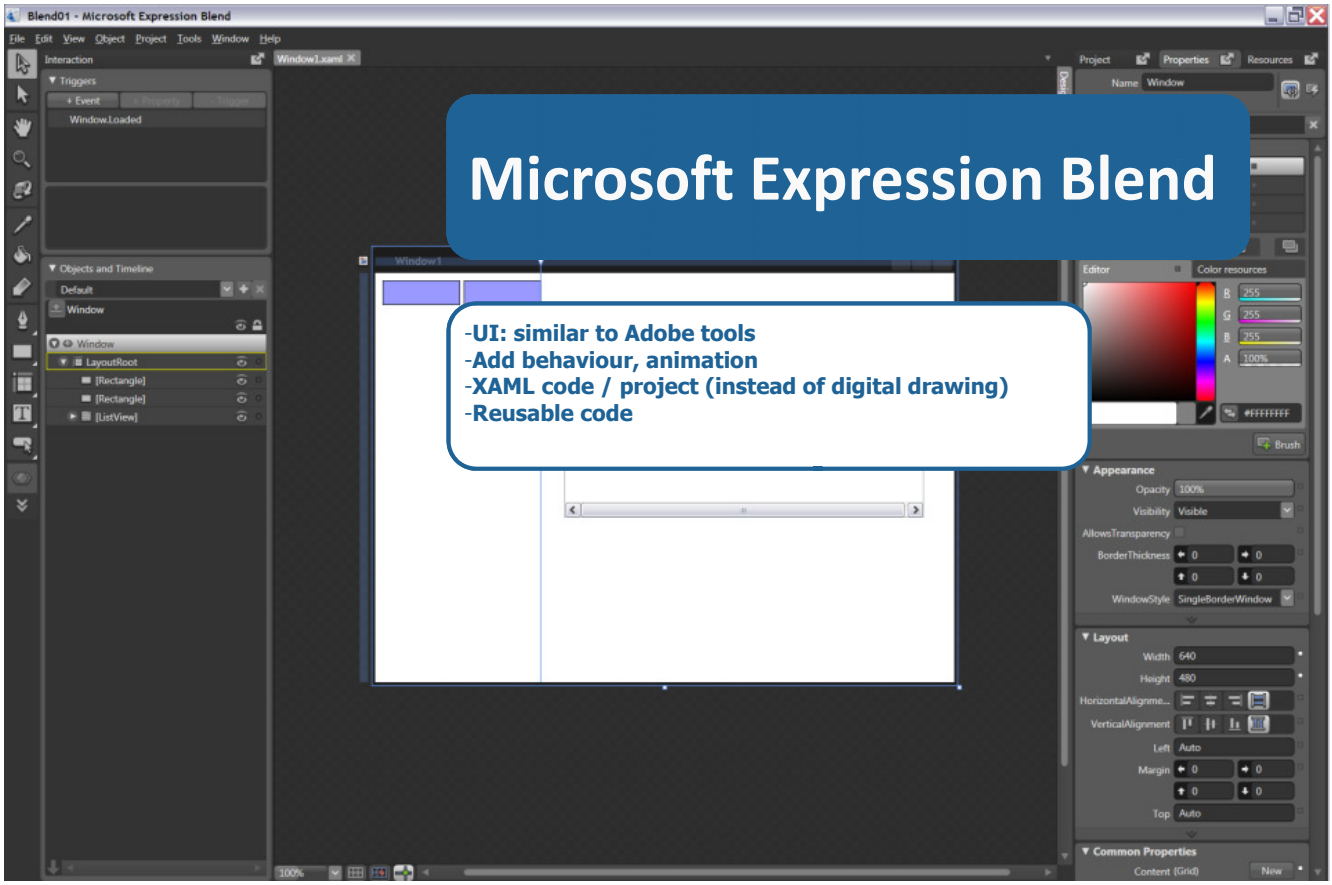
  => no mouse-move event or hover!

Tools for creating mock-ups

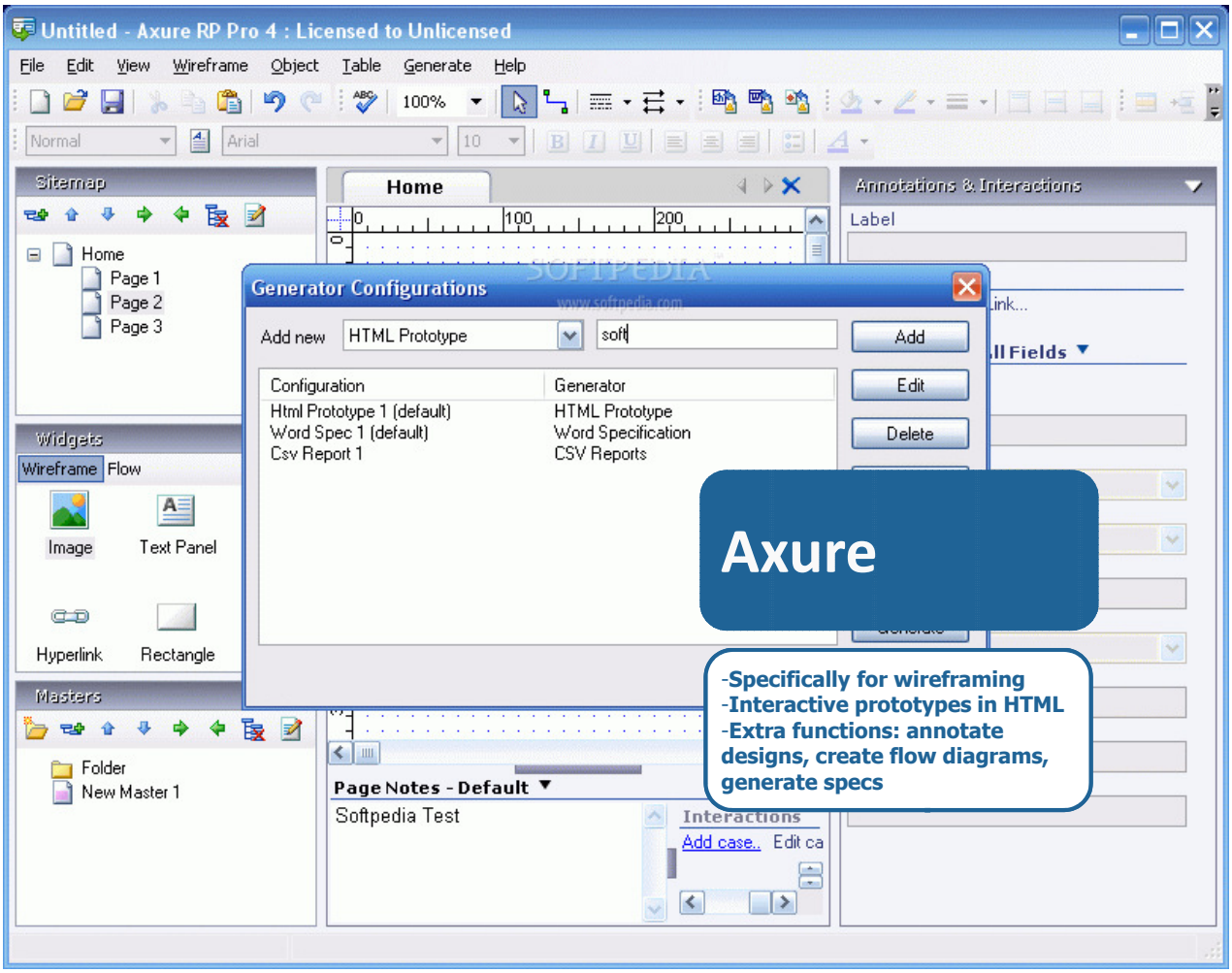
- Range of possibilities:
  - (Paper)
  - PowerPoint
  - Visio
  - Fireworks
  - Axure
  - (Photoshop, Illustrator …)
  - HTML, Flash
  - Microsoft Expression Toolset (Web, Blend, Design, Media); Sketchflow
  - Other: Balsamiq, Justinmind Prototyper, Mockingbird (online), Mockflow (online)

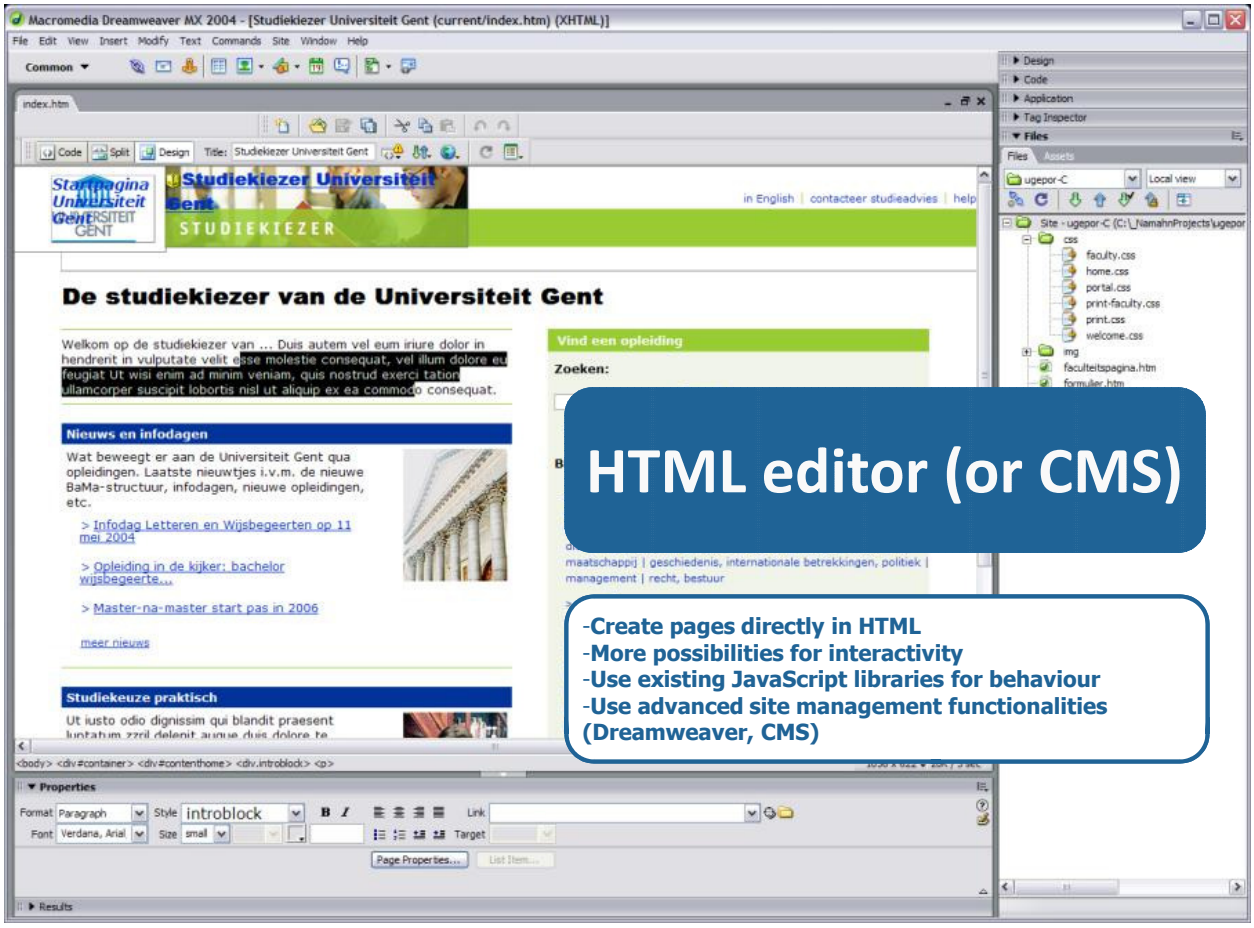

Microsoft Visio
-Shapes and stencils
-Foreground and background pages
-Namahn stencil kit: pixel simulation
-Hotspots (internal linking) - export to HTML (clickable mock-up)
-Scrolling pages in browser


Adobe Fireworks
-UI: collapse panels (direct manipulation!)
-Pages, layers, frames, properties
-Bitmap + vector – high fidelity possible
-Hotspots
-Export to HTML (clickable mock-up)



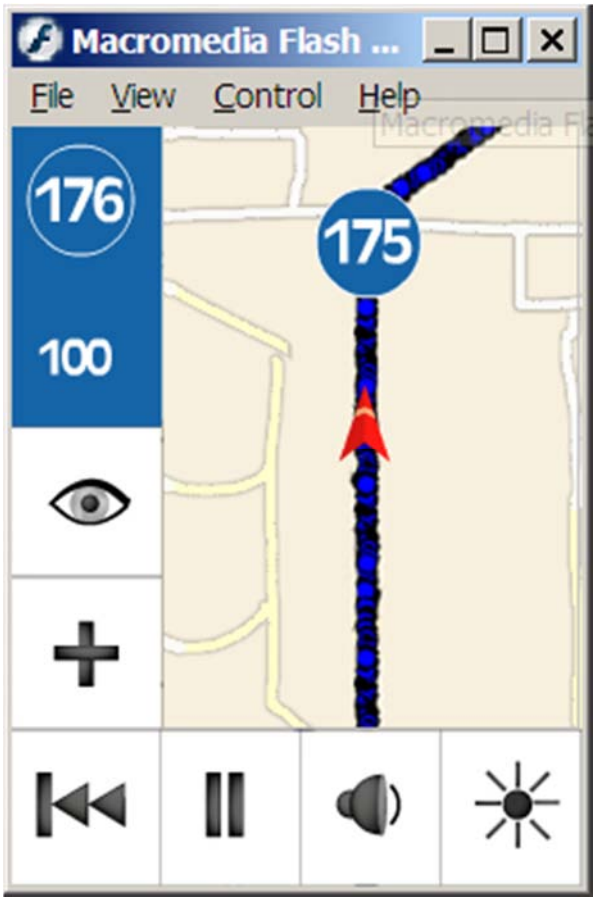
Source: Microsoft Expression Blend





HTML editor (or CMS)

-Create pages directly in HTML
-More possibilities for interactivity
-Use existing JavaScript libraries for behaviour
-Use advanced site management functionalities (Dreamweaver, CMS)



Adobe Flash

-Animations and complex behaviours
-But: time-consuming + requires Flash skills

What tool to choose?

- What is the purpose of the prototype?
  - (Brief the developers? Conduct usability tests?)
- How interactive does it need to be?
  - (Linking? Dropdowns that work? Transition animations?)
- How much visual refinement is necessary?
  - (Do I need to convince management?)

Available materials

- Stuff to read: style guides, books & articles about interface design…
- Design kits
  - Offer templates, and components that allow being dragged and dropped on to your design
  - E.g. Namahn Visio kit

koenpete@gmail.com | My favorites | Profile | Sign out

viscomlib

Namahn Visio Library

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A library of UI elements for prototyping websites and applications in Visio.

Makes it possible to draw Visio prototypes in pixels. Contains the following commonly used elementes with "intelligent" behaviour:

- **Application structure & page layout**:
  - Page title, Heading 1-2, Paragraph Text
  - Image placeholder
  - Panel (open/close)
  - Dialog
  - Group box
  - Scrollbar, separator, split bar (each vertical/horizontal)
- **Navigation**
  - Navigation tree
  - Accordion
  - Tab sheet, tab, tab+
  - Menu
  - Menu list
  - Hyperlink
  - Location breadcrumb
  - Next/Previous, Item pagination, Search pagination
  - Sequence map current, previous, next
- **User input & actions**
  - Button, Icon button, Toggle button
  - Listbox, Dropdown, Combo box
  - Text input, Label
  - Checkbox, Radio button
  - Stepper, Slider
  - Pointer
  - Date picker
- **User assistance & feedback**
  - Label tooltip, Helptip
  - Progress indicator, Activity indicator
- **Annotation**
  - Designer/Analyst remark
  - Designer/Analyst callout
  - Pixel unit

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Labels: Visio, UI, prototyping, interface, wireframes

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VersionHistory

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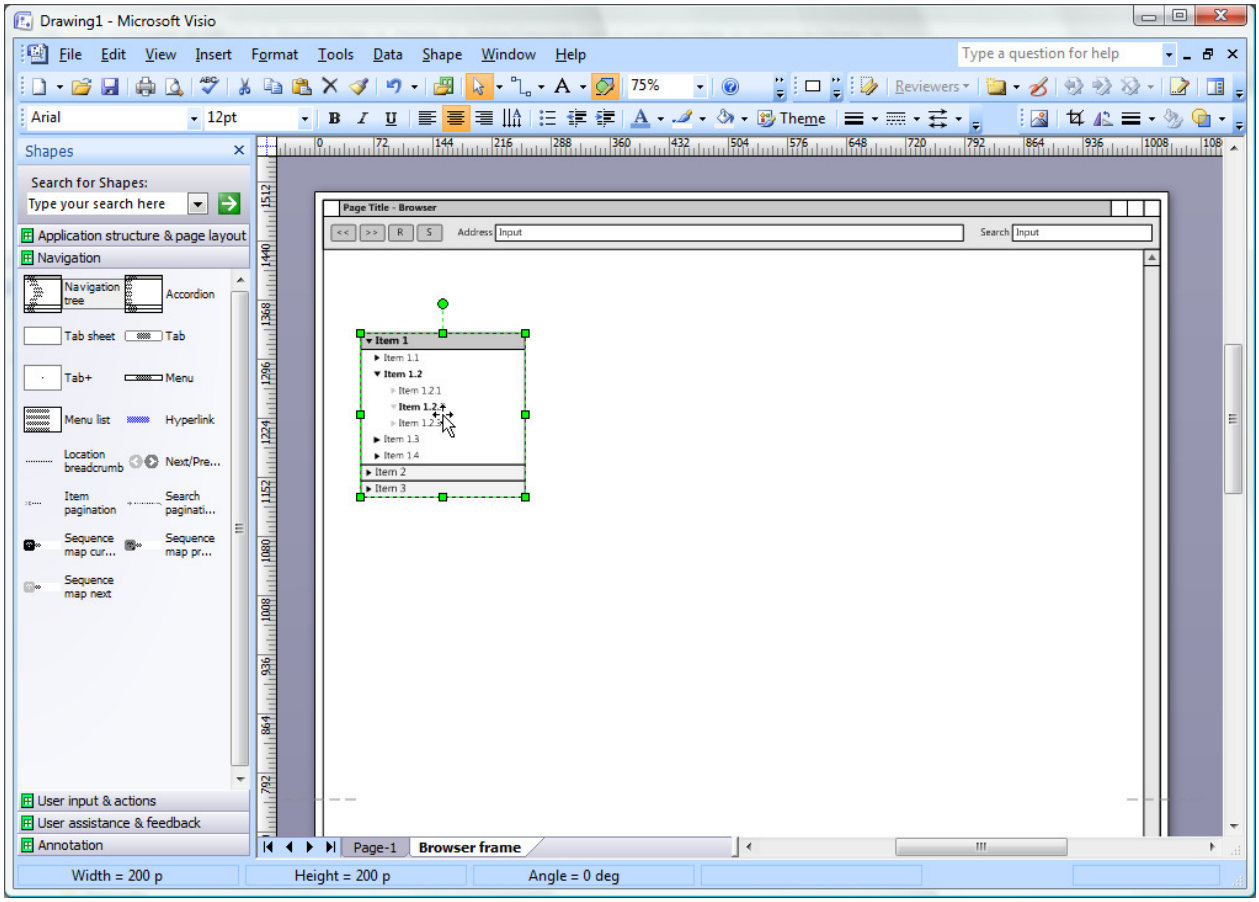
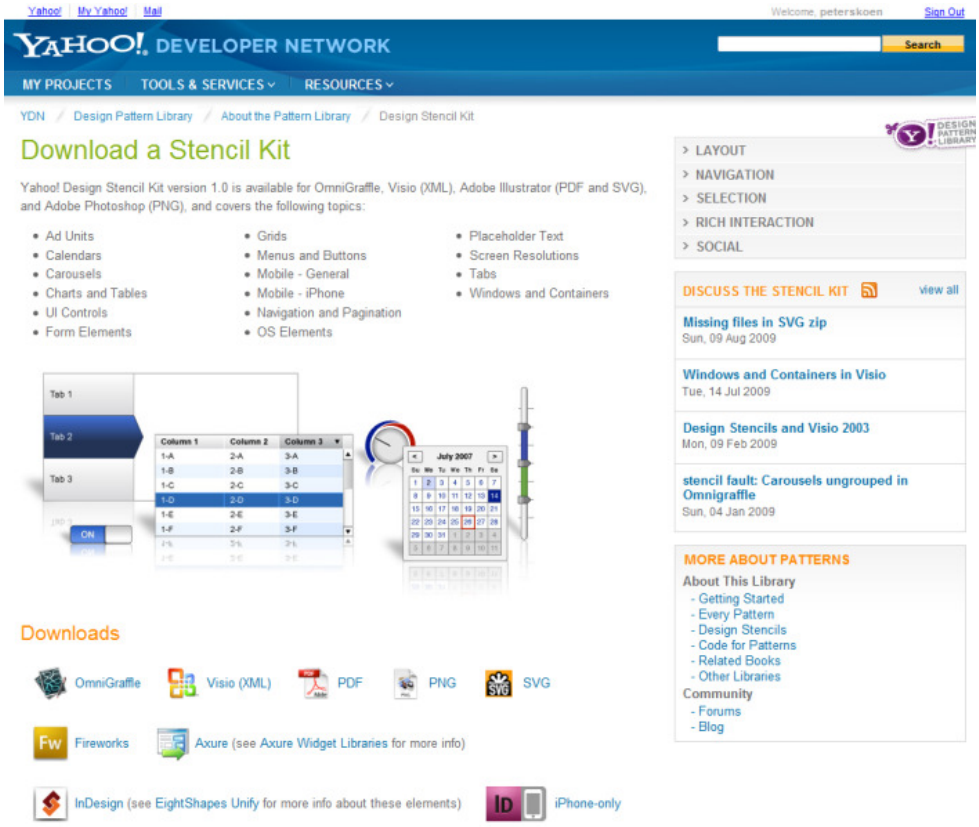
michel.vuijlsteke

http://code.google.com/p/viscomlib/





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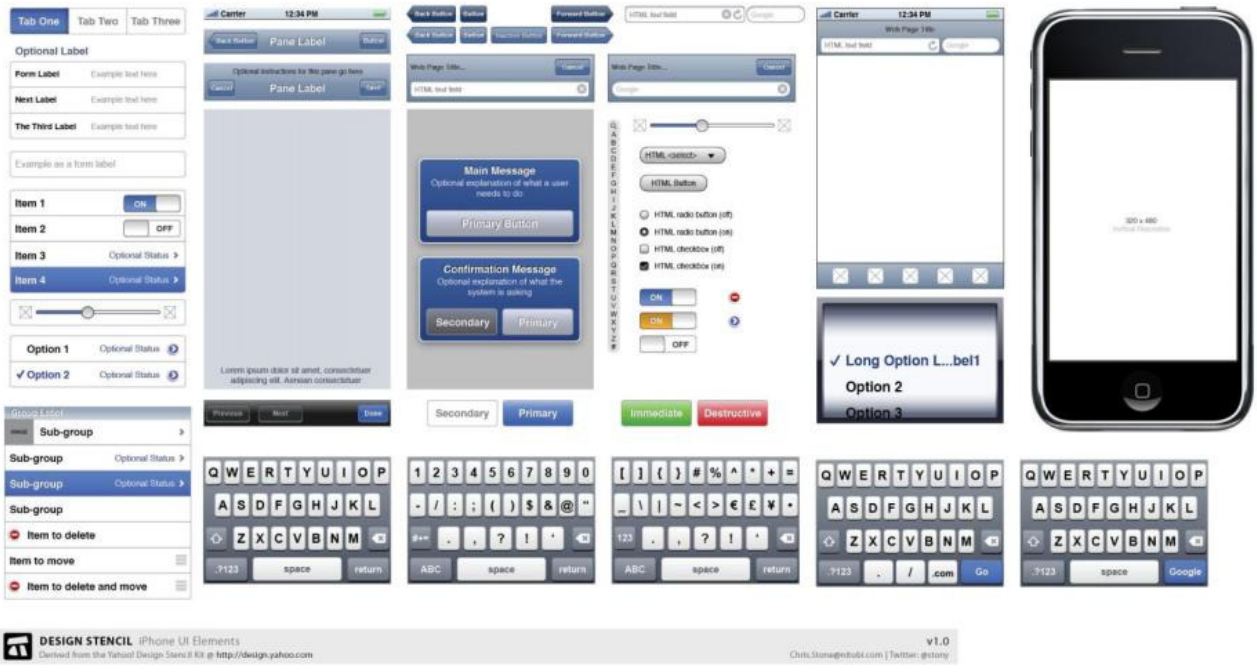
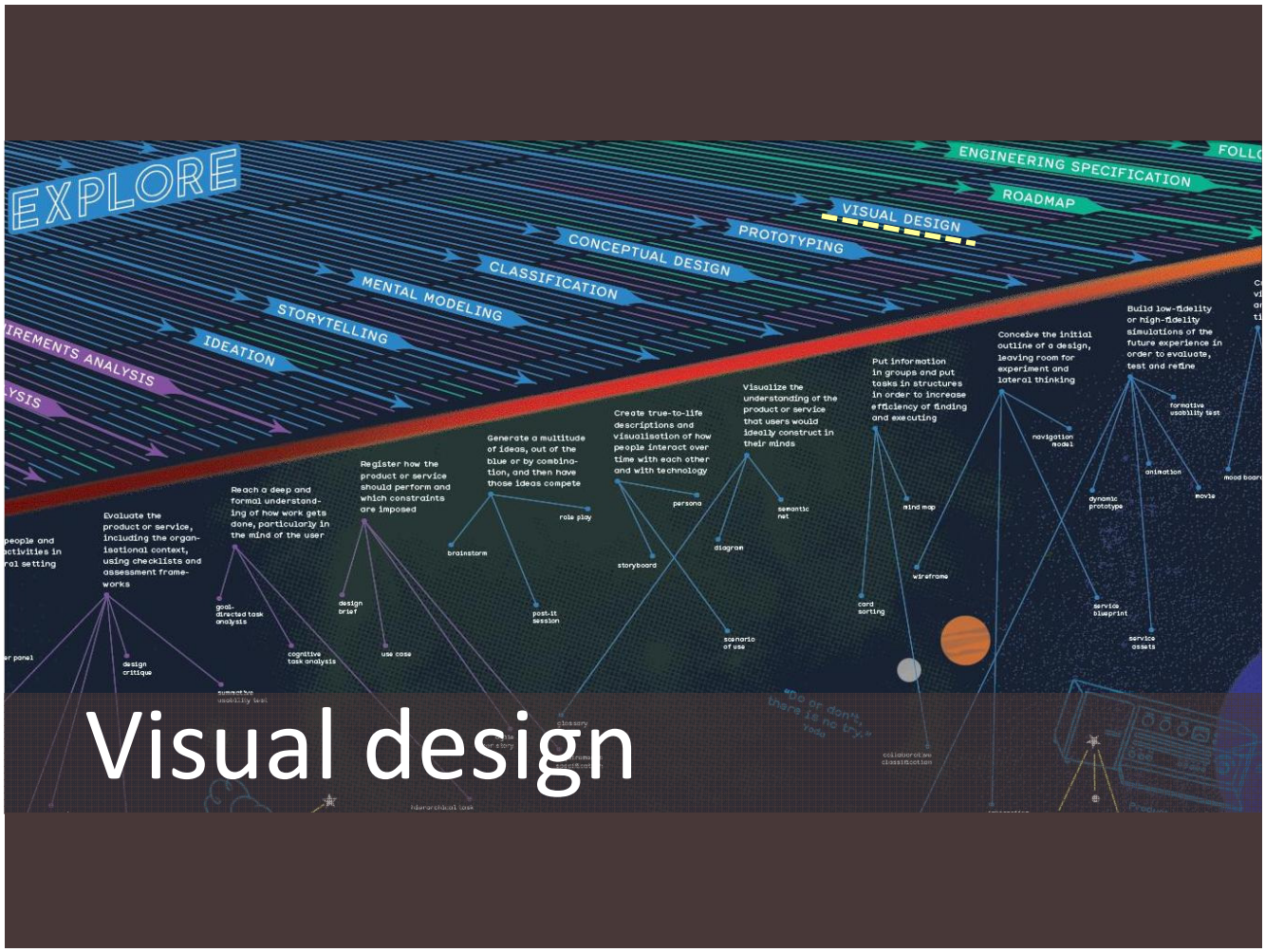




Visual design (graphic design)

- Visual style, look of the application
- Graphic detail of logos, icons, lines, text, buttons, …
- Decisions on:
  - Colour palette
  - Typography
  - Border styles
  - Backgrounds
  - Illustrations

Visual design – role

- Make product visually appealing
- Integrate branding, make product recognisable
- Support design choices
  - Colour codes for categories
  - Font style for titles
  - Icons

ah

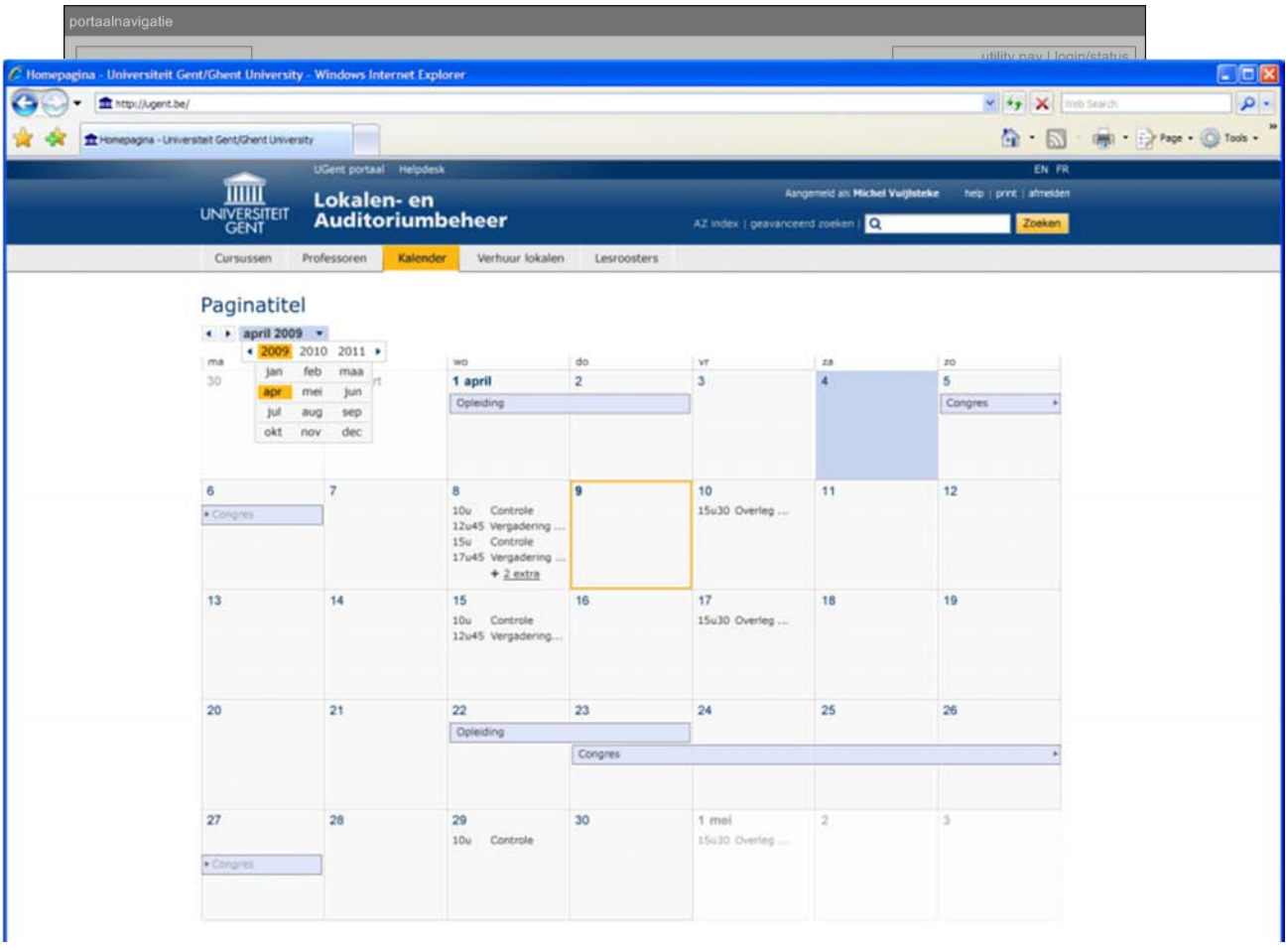
Misconceptions (cf. LukeW)

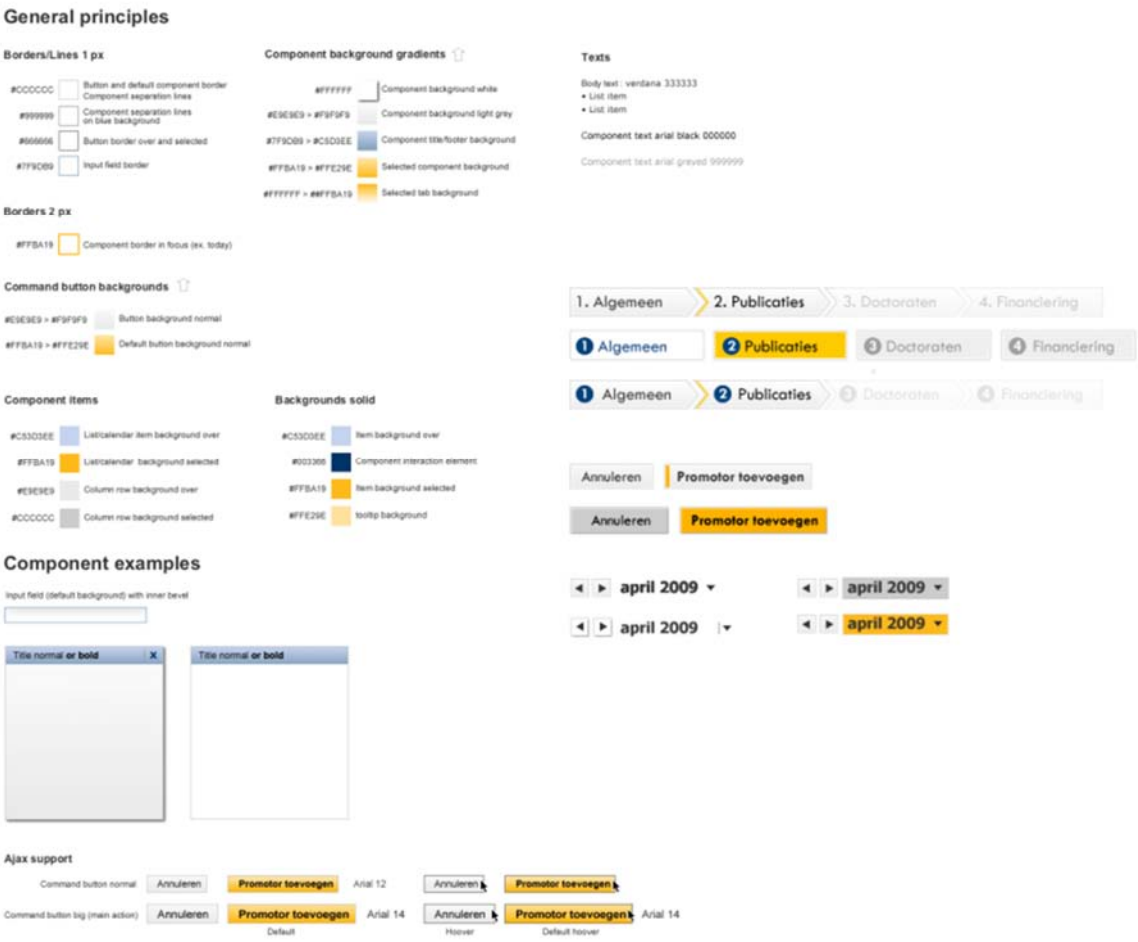
- Visual design is only about making things look *pretty*.
  - The visual organization of elements allow designers to communicate core messages to users (see earlier)
- Making things *pop* more can improve visual design.
  - The relative importance of *any* element in a layout ultimately depends on what surrounds it.
- It's possible to evaluate visual design in pieces.
  - You need a holistic approach to good design

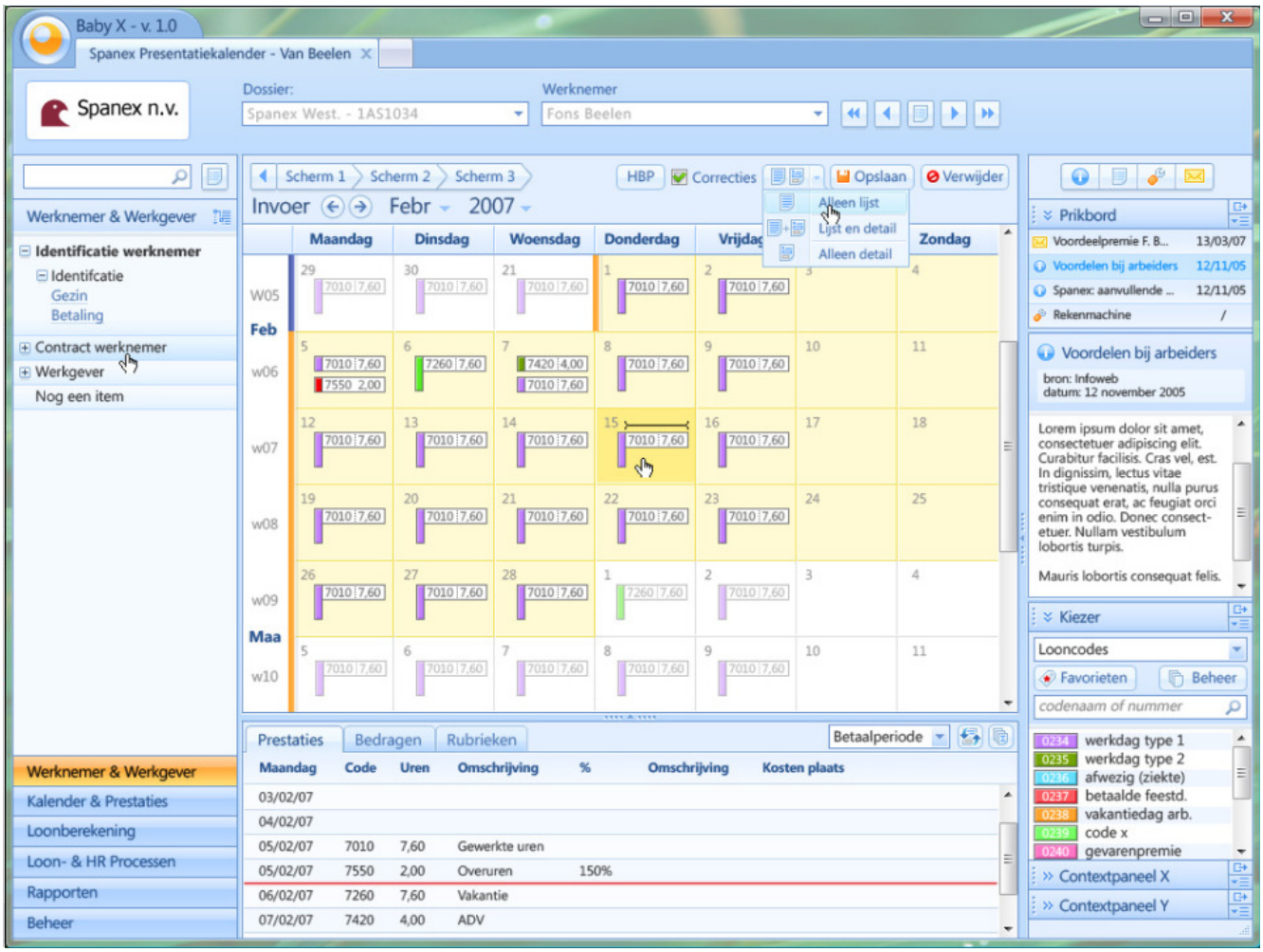
ah

Not our role…

- Visual design requires other skills, other talents…
- So, what do we have to know about visual design
  - How to brief a visual designer well…
    - Interaction design conventions
    - Current icons
    - Functional scope
    - Selection of symbols
  - How to recognize good/bad graphic designs




General principles
Borders/Lines 1 px
Component background gradients
Texts
Borders 2 px
Command button backgrounds
Component items
Backgrounds solid
Component examples
Ajax support
1. Algemeen
2. Publicaties
3. Doctoraten
4. Financiering
Annuleren
Promotor toevoegen
april 2009


Baby X - v. 1.0
Spanex Presentatiekalender - Van Beelen
Spanex n.v.
Dossier:
Spanex West. - 1AS1034
Werknemer
Fons Beelen
Scherm 1
Scherm 2
Scherm 3
HBP
Correcties
Opslaan
Verwijder
Alleen lijst
Lijst en detail
Alleen detail
Invoer
Febr
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Maandag
Dinsdag
Woensdag
Donderdag
Vrijdag
Zondag
Werknemer & Werkgever
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Betaling
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Nog een item
Prikbord
Voordeelpremie F. B...
13/03/07
Voordelen bij arbeiders
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Spanex: aanvullende ...
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Voordelen bij arbeiders
bron: Infoweb
datum: 12 november 2005
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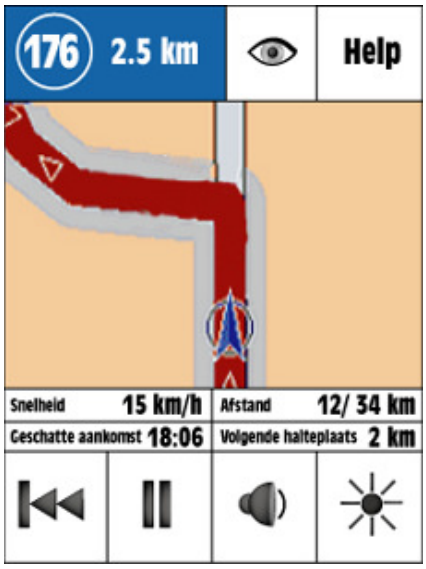
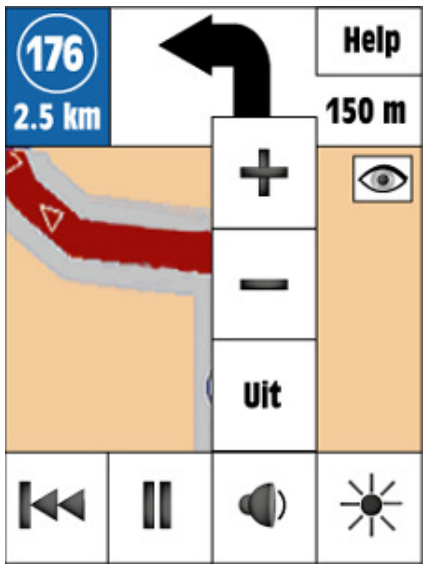
0239 code x
0240 gevarenpremie
Contextpaneel X
Contextpaneel Y
Prestaties
Bedragen
Rubrieken
Betaalperiode
Maandag
Code
Uren
Omschrijving
%
Omschrijving
Kosten plaats
03/02/07
04/02/07
05/02/07 7010 7,60 Gewerkte uren
05/02/07 7550 2,00 Overuren 150%
06/02/07 7260 7,60 Vakantie
07/02/07 7420 4,00 ADV
Werknemer & Werkgever
Kalender & Prestaties
Loonberekening
Loon- & HR Processen
Rapporten
Beheer

Story whisperer mock-up





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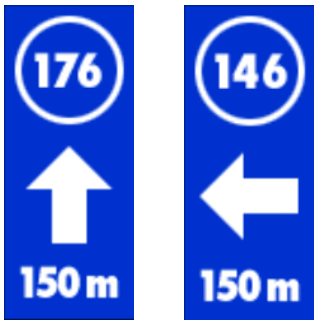
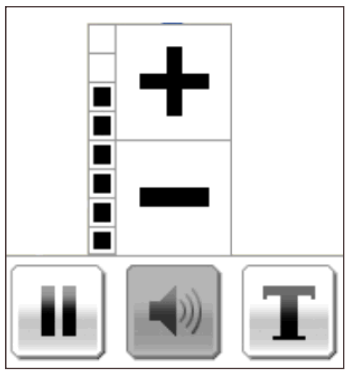
Story whisperer visual design

- buttons
- icons
- colors
- navigation zone





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Exercise on mock-up

- ***Design two main screens of the holiday management tool in detail***
- Fill the screens with representative data and correct controls
- Form an idea about the look
- Design the behaviour of the tool: navigation and other interaction mechanisms in detail

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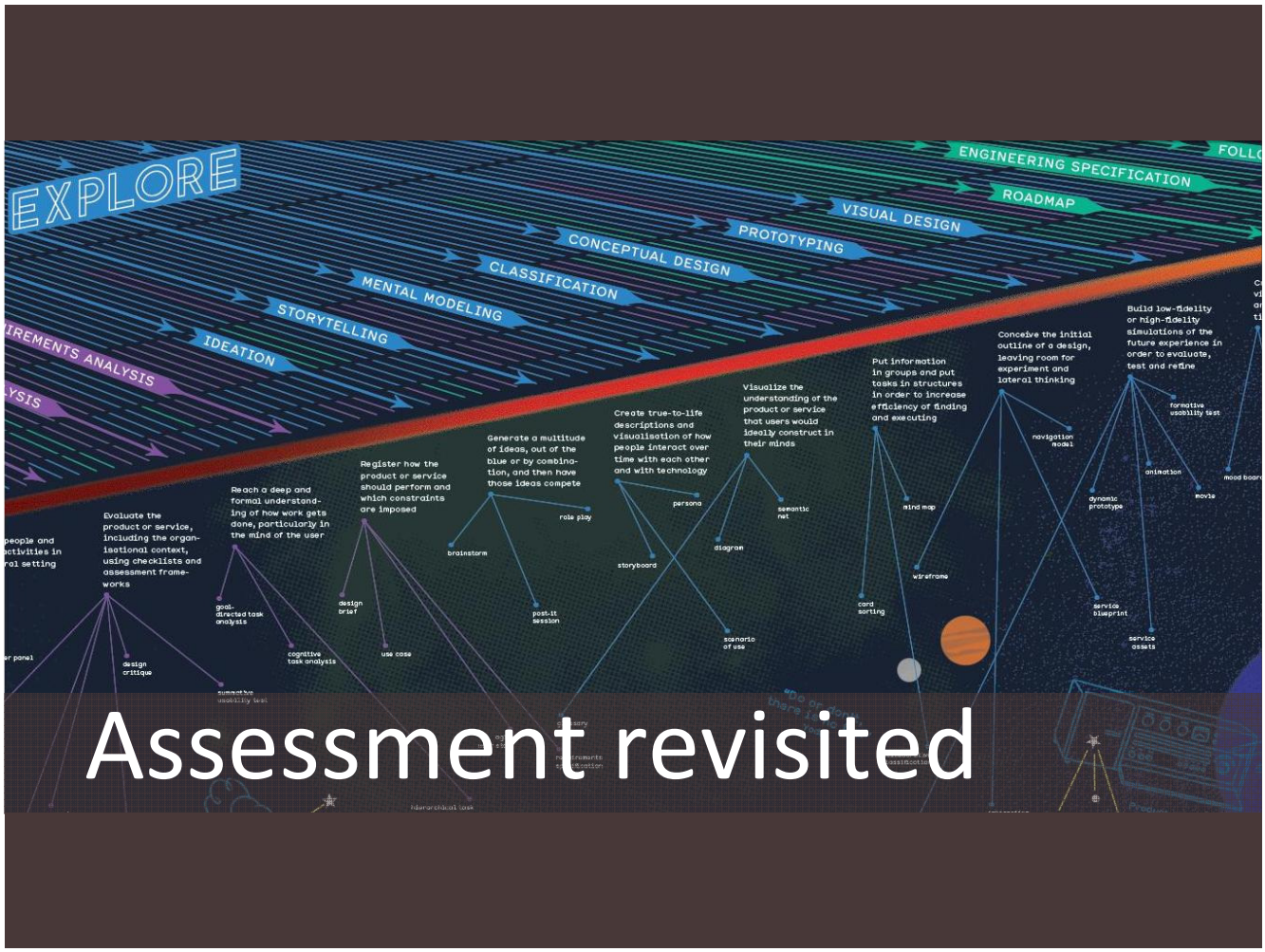
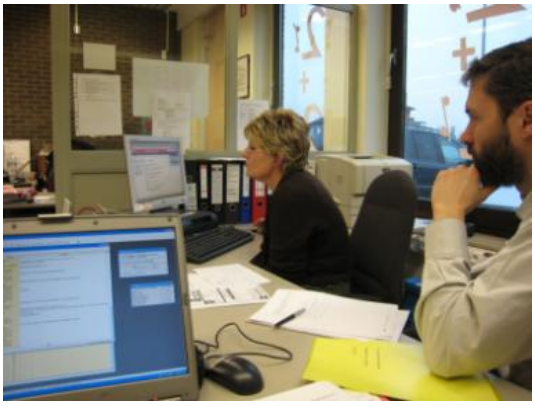


Assessment revisited

Defining usability testing (bis)

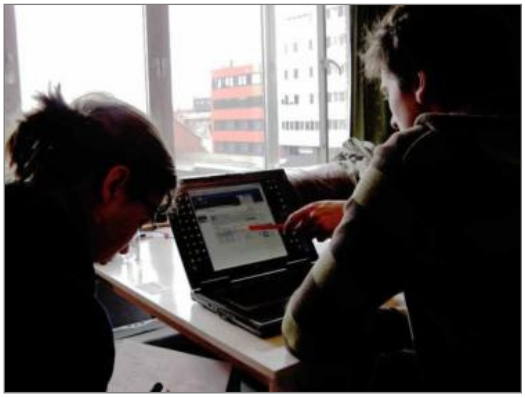
- Observation session
  - During which users interact with **a mock-up of the digital product**
  - while performing real-life tasks
- Following a protocol (test case)
- Managed and interpreted by a usability expert



Belgacom bill viewer validation of the design with a **usability test**

- 8 participants were visited
- Close observation during the execution of a number of prefined tasks with an interactive mockup
- Presentation of the test results and update of the design

... Look up the details of your last bill ... Change your billing address ... You notice that this detail is incorrect, inform Belgacom that you do not agree ... When did you order Spiderman for digital tv? ...



Testing a design concept...

- Typology?
  - **Formative**: results will help you shape/modify the design
  - **Qualitative**: at this stage, you want qualitative feedback to improve your design
- Style/scale?
  - More **informal**
  - Rather **small scale**
    - 5 to 10 participants is enough
    - Test usually doesn't take more than one hour (all tests in one day)

Preparing the test...

- Planning
  - Plan the tests well
  - Recruit participants in time
- Write a protocol
  - Instructions for the test leader + instructions for the test participants
  - Specify realistic tasks!
- Do the test yourself + run a pilot test

Conducting the test...

- Briefing
- Pre-test questionnaire
- Tasks
- Post-test questionnaire
- Debriefing

Testing material?

- Clickable mockup
  - Wireframes/drawings with some (minimal) interaction
  - Can be low or high fidelity
  - Can be an export from Visio/Fireworks/Axure… or built directly in HTML

- Clickable table of contents
  (for testing an information architecture)
  - Export your mindmap to HTML-mockup
  - Treejack: online tool that allows you to test a table of contents

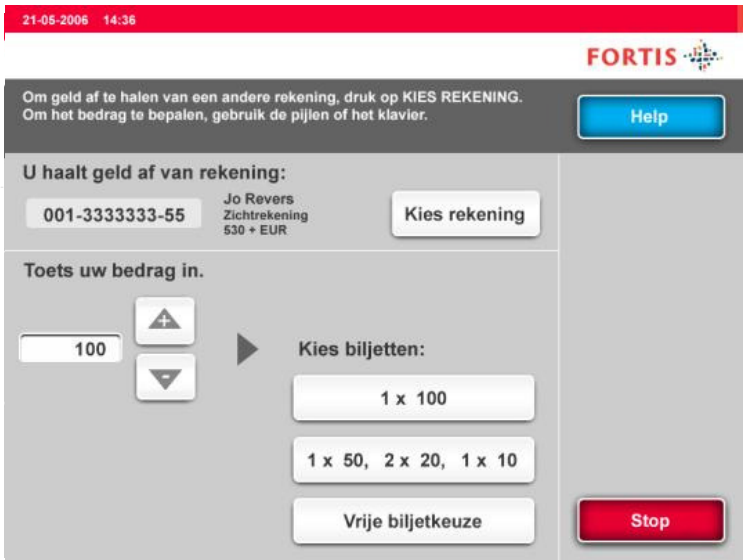
ah

Fortis bank

Validating a design concept for a self banking touch screen application

40 participants (20 in Belgium, 20 in the Netherlands)

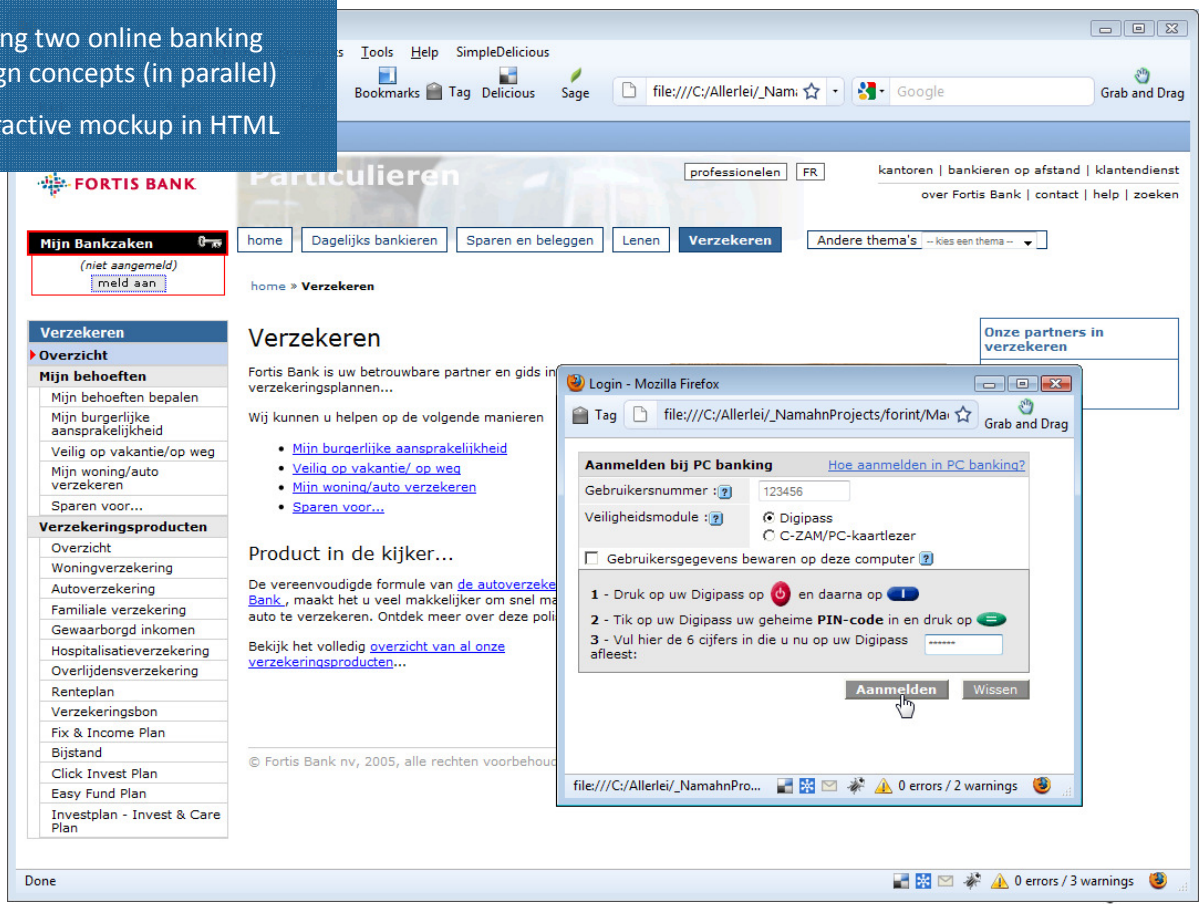
Interactive mockup: Fireworks drawings imported into a PowerPoint slide show, run on a touch-enabled pc



Fortis bank

Testing two online banking design concepts (in parallel)

Interactive mockup in HTML

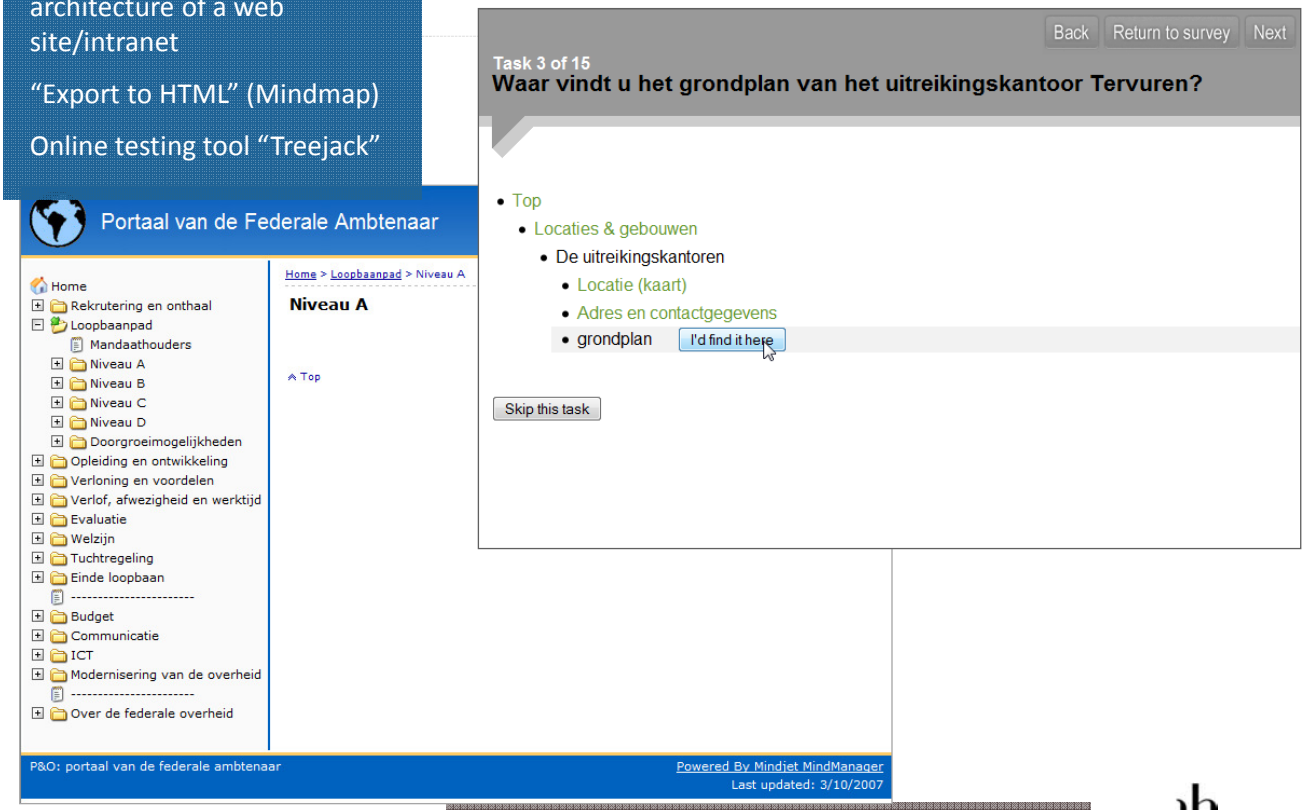


FOD P&0, De Post...

Testing the information architecture of a web site/intranet

“Export to HTML” (Mindmap)

Online testing tool “Treejack”



http://www.optimalworkshop.com/treejack.htm

©ahahn

Reporting

- **Informal** or semi-formal reporting suffices
  - Concise Word document or PowerPoint presentation
  - No time/need for elaboration
- Immediately implement findings
- Make screen recordings of the tests
  - E.g. Camtasia/Morae

Usability test - tips & tricks (1)

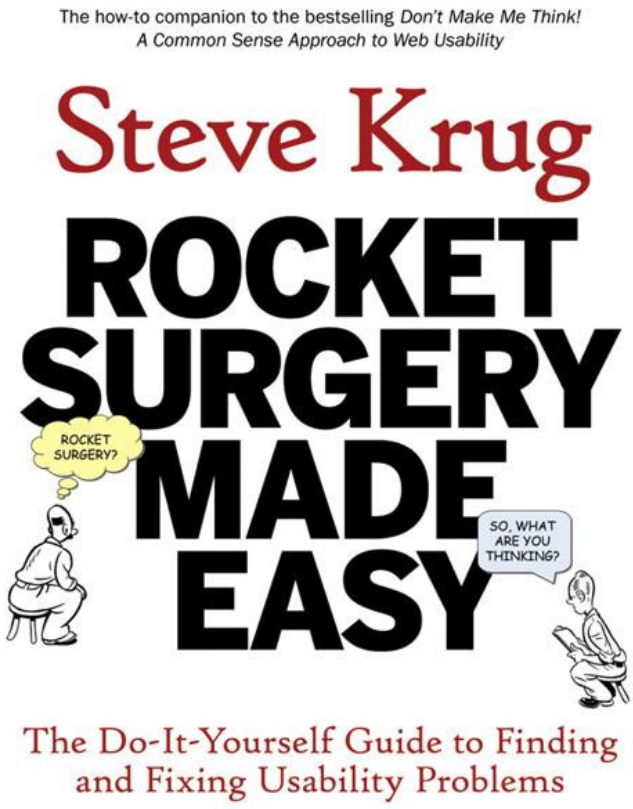
- Participants
  - Put them at ease
  - Do not prompt or interrupt participants
  - Treat participants with respect
  - Allow them to abandon

- Test leader
  - Use the right wording, ask open-ended questions
  - Stay neutral; avoid evaluating the answers
  - Encourage but don’t direct
  - Help only when appropriate
  - Listen and be attentive

Usability test - tips & tricks (2)

- Test leader and observer
  - Just collect spontaneous comments
  - Refrain from joking and laughing
  - Record in as much detail as possible, without names

- Be patient
  - Wait for the results
  - Don’t modify the design while testing



Testing the story whisperer

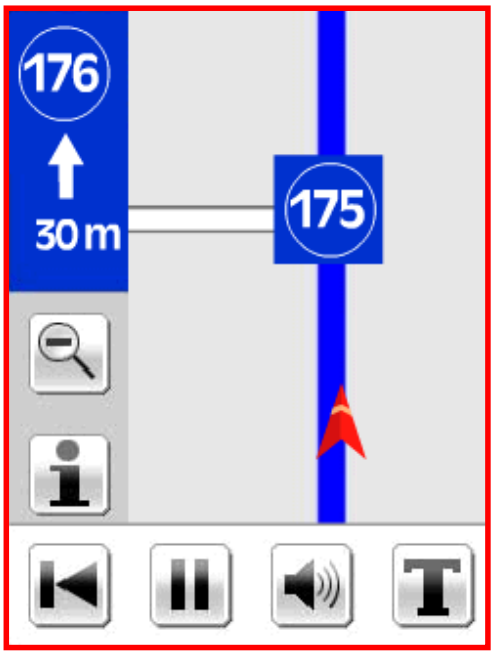
- Usability testing at two different stages of the design process!
  - 1. Formative testing: during the design process (with flash animations mock-up and first graphic designs)
  - 2. Summative testing: shortly before launch, with a beta version

Formative usability test

- Investigate whether
  - The user understands the design concept
  - The user understands the use of controls
  - The user is able to correctly use the controls
- Flash maquette + static screen designs
- Not considered
  - Hardware solution
  - Environmental conditions

176
50 m
EXT

66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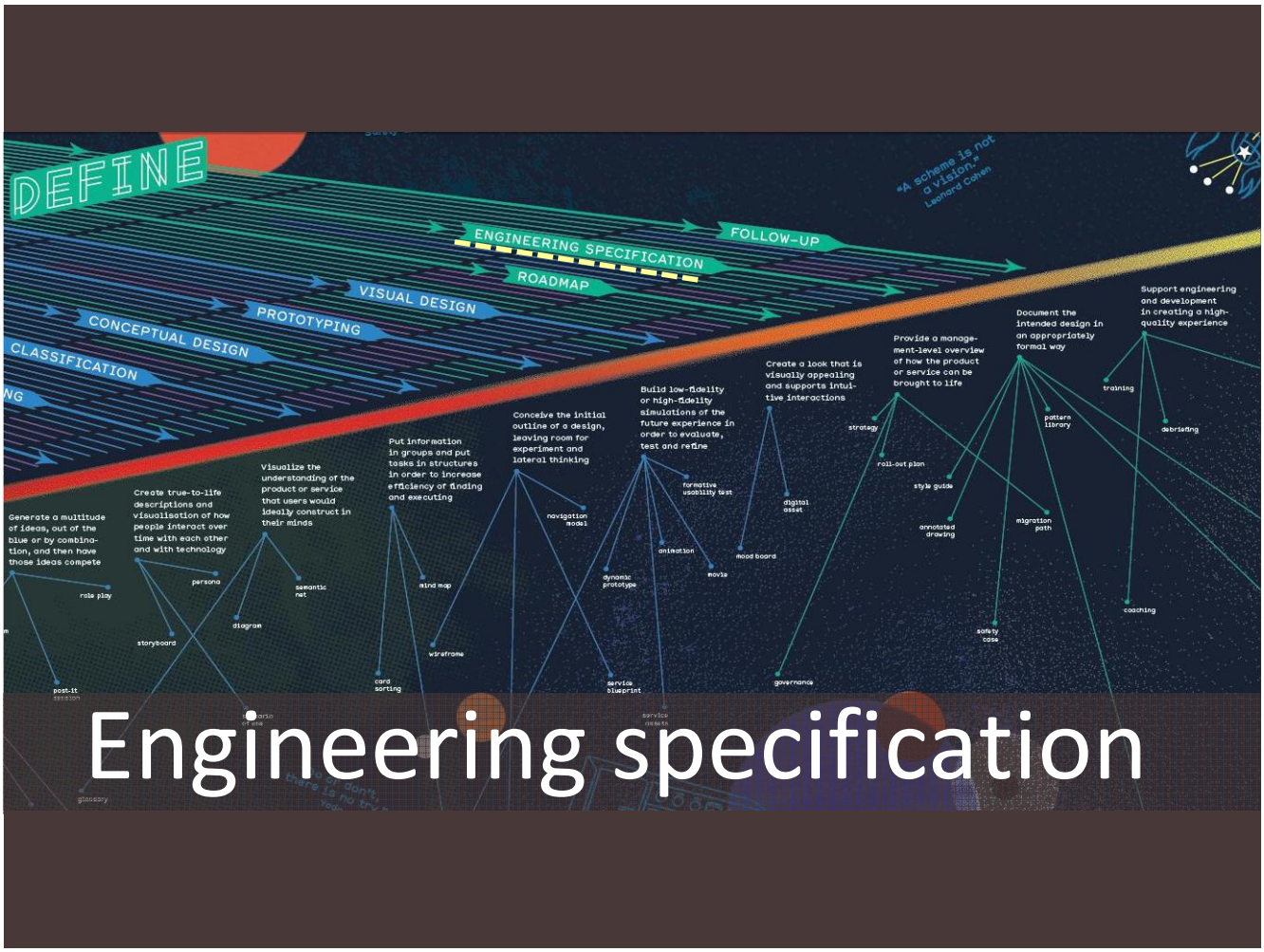

Engineering specification

Your thoughts…

- What is a specification?

image from flickr.com, by Qin.H
a design specification using balloons

Topics

- What?
- Why?
- When?
- How?
  - Challenges
  - Solutions in components
  - Solutions in formats

Specification - What?

- NOT
  - a set of abstract requirements
  - a set of non-committal guidelines
  - a style guide in the graphic sense

- But the description and illustration of HOW the user interface should look and behave

Specification - Why?

- Communication
- Quality insurance
- Management

Speed, coordination and teamwork in baton-passing

Specification - When?

- Before you design
- As you design
- After design
- After build

Specification - challenges

- Targeted & motivated
- Complete
  - Product or portfolio
  - From generic to specific
  - From spec to code, with behaviour
  - With link to other layers (data, operations, services etc.)
- Unambiguous (illustrated, formal)
- Structured (tasks vs objects)
- Compliant

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An object-oriented approach for specifying

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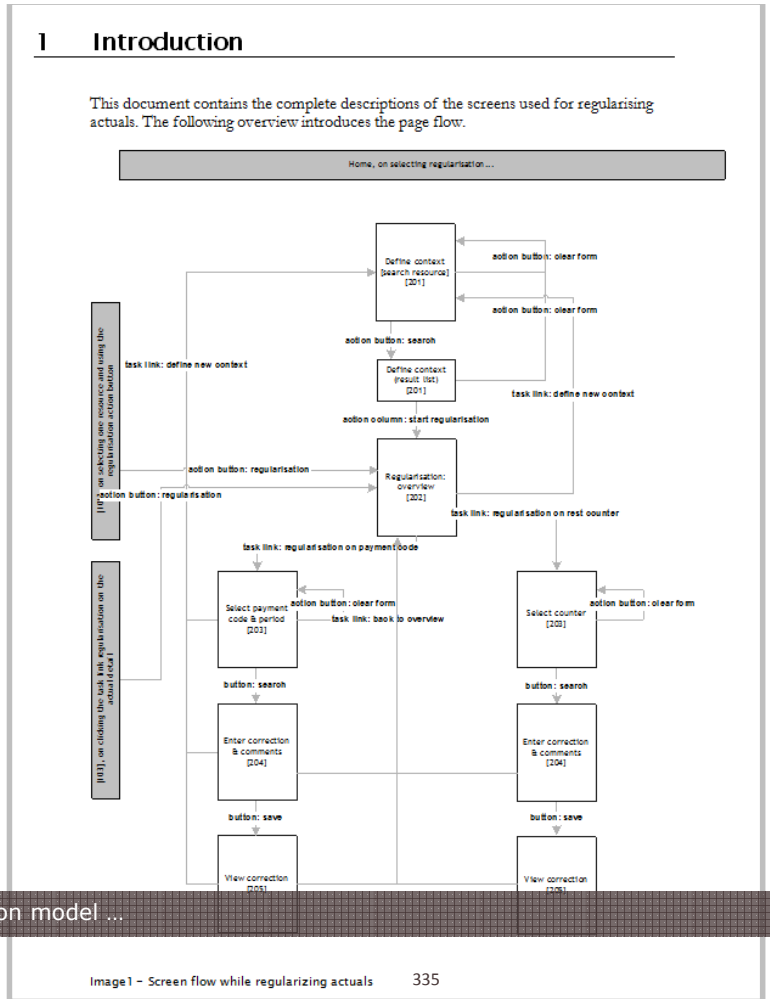
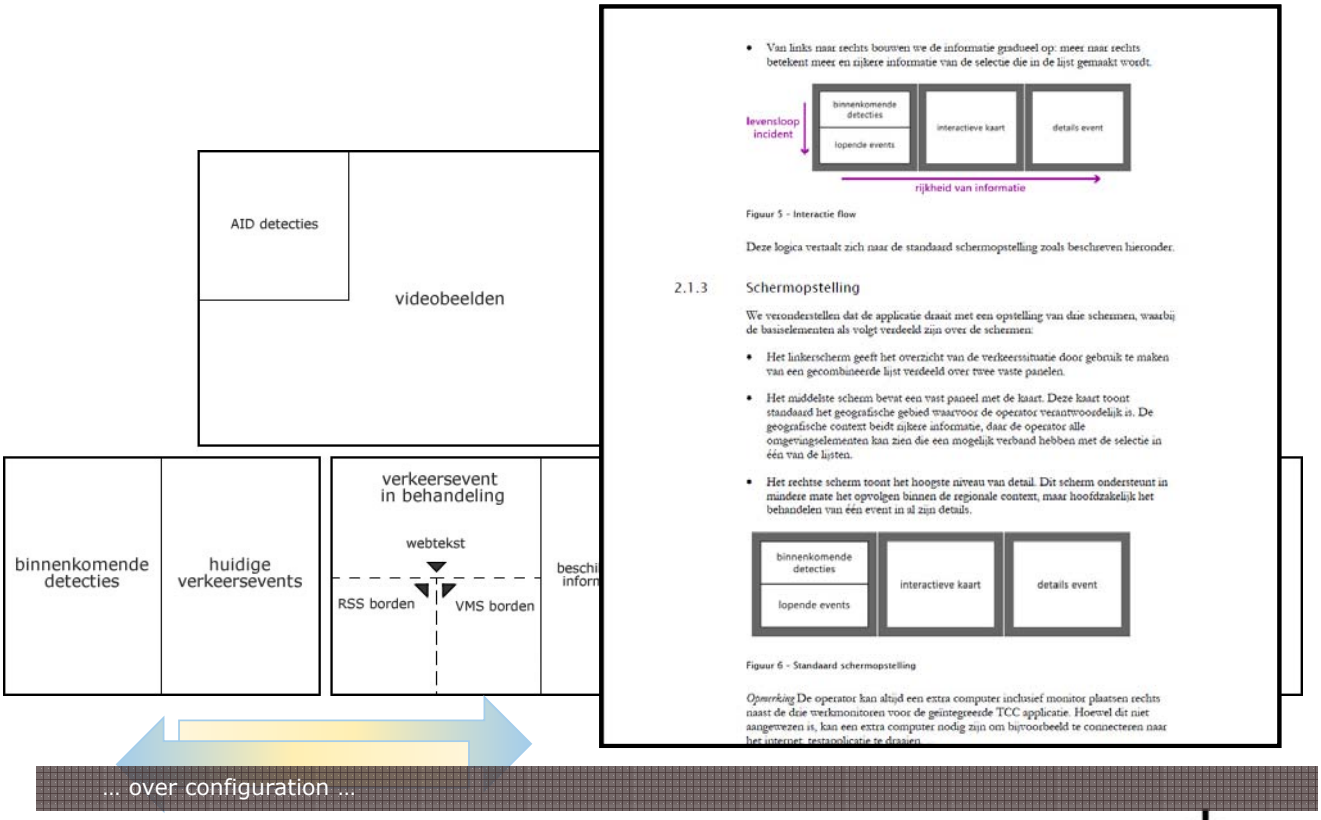
A task-oriented approach for specifying

Specification - components

- Platform (technology, device...)
- Context
- Navigation model
- Configuration (wall, multi-monitor, screen...)
- Generic architecture
- Screen (type) structure & behaviour
- Patterns & components (widgets)
- Visual styleguide



From navigation model ...



- Van links naar rechts bouwen we de informatie gradueel op: meer naar rechts betekent meer en rijkere informatie van de selectie die in de lijst gemaakt wordt.

Figuur 5 - Interactie flow

Deze logica vertaalt zich naar de standaard schermopstelling zoals beschreven hieronder.

2.1.3 Schermopstelling

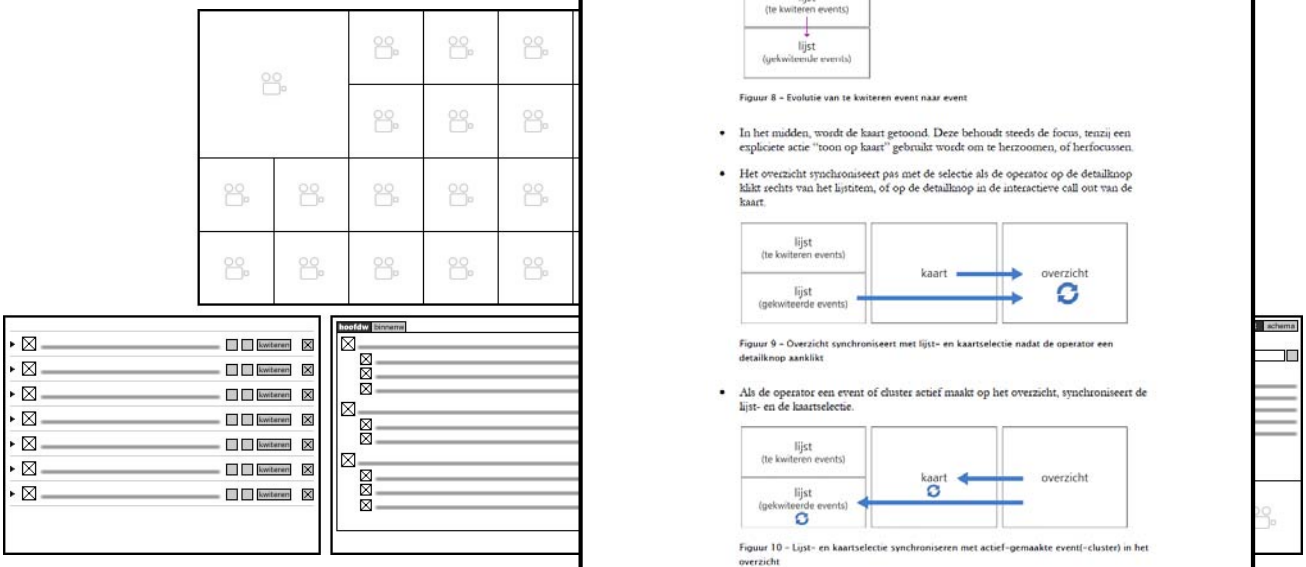
We veronderstellen dat de applicatie draait met een opstelling van drie schermen, waarbij de basiselementen als volgt verdeeld zijn over de schermen:

- Het linkerscherm geeft het overzicht van de verkeerssituatie door gebruik te maken van een gecombineerde lijst verdeeld over twee vaste panelen.
- Het middelste scherm bevat een vast paneel met de kaart. Deze kaart toont standaard het geografische gebied waarvoor de operator verantwoordelijk is. De geografische context beidt rijkere informatie, daar de operator alle omgevingselementen kan zien die een mogelijk verband hebben met de selectie in één van de lijsten.
- Het rechtse scherm toont het hoogste niveau van detail. Dit scherm ondersteunt in mindere mate het opvolgen binnen de regionale context, maar hoofdzakelijk het behandelen van één event in al zijn details.

Figuur 6 - Standaard schermopstelling

Opmerking De operator kan altijd een extra computer inclusief monitor plaatsen rechts naast de drie werkmonitoren voor de geïntegreerde TCC applicatie. Hoewel dit niet aangewezen is, kan een extra computer nodig zijn om bijvoorbeeld te connecteren naar het internet, testapplicatie te draaien.

... over configuration ...



- Links, in twee lijsten worden te kwiteren events en gekwiteerde events getoond. Te kwiteren events evolueren van boven naar beneden (in het geval van een gecombineerde lijst), of van links naar rechts (in het geval van individuele lijsten verdeeld over twee schermen) tot een event.

Figuur 8 – Evolutie van te kwiteren event naar event

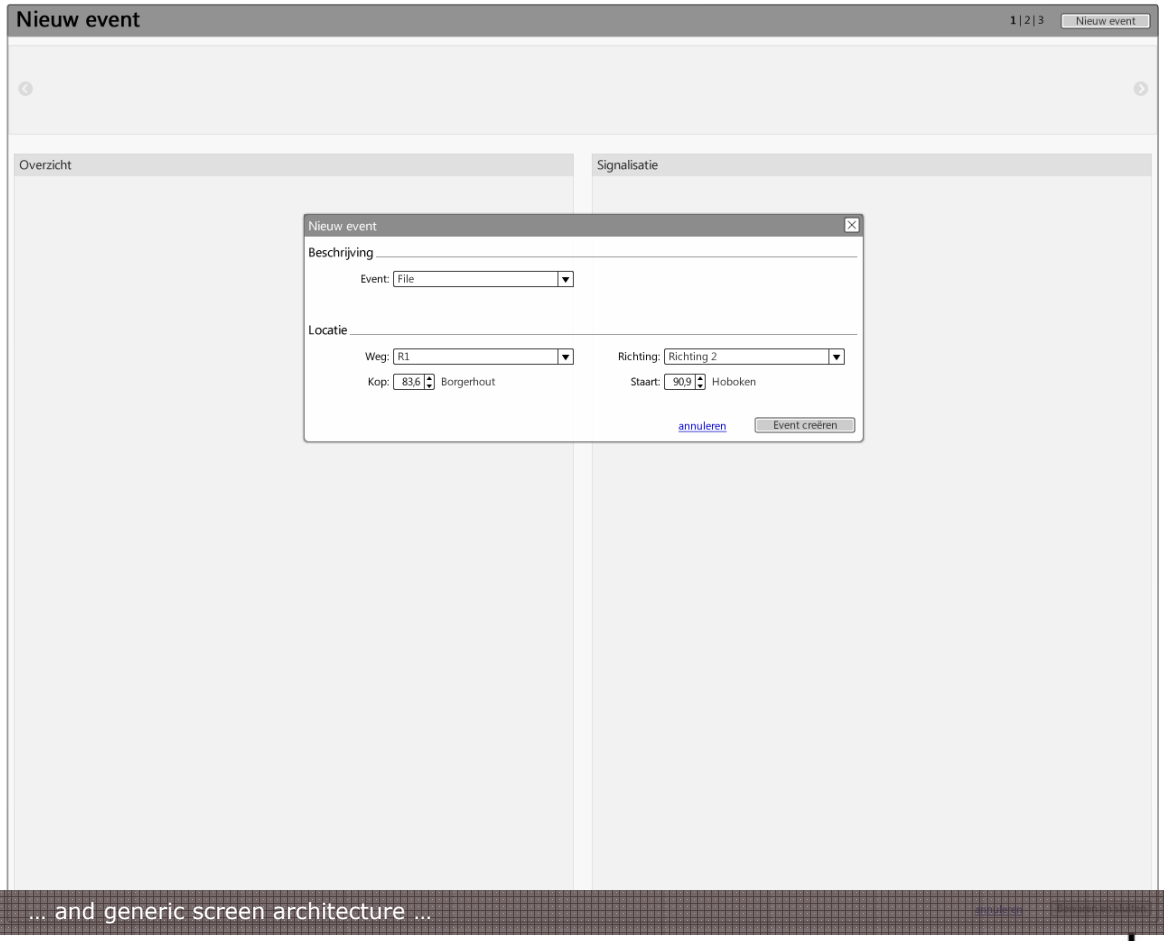
- In het midden, wordt de kaart getoond. Deze behoudt steeds de focus, tenzij een expliciete actie "toon op kaart" gebruikt wordt om te herzoomen, of herfocussen.
- Het overzicht synchroniseert pas met de selectie als de operator op de detailknop klikt rechts van het lijstitem, of op de detailknop in de interactieve call out van de kaart.

Figuur 9 – Overzicht synchroniseert met lijst- en kaartselectie nadat de operator een detailknop aanklikt

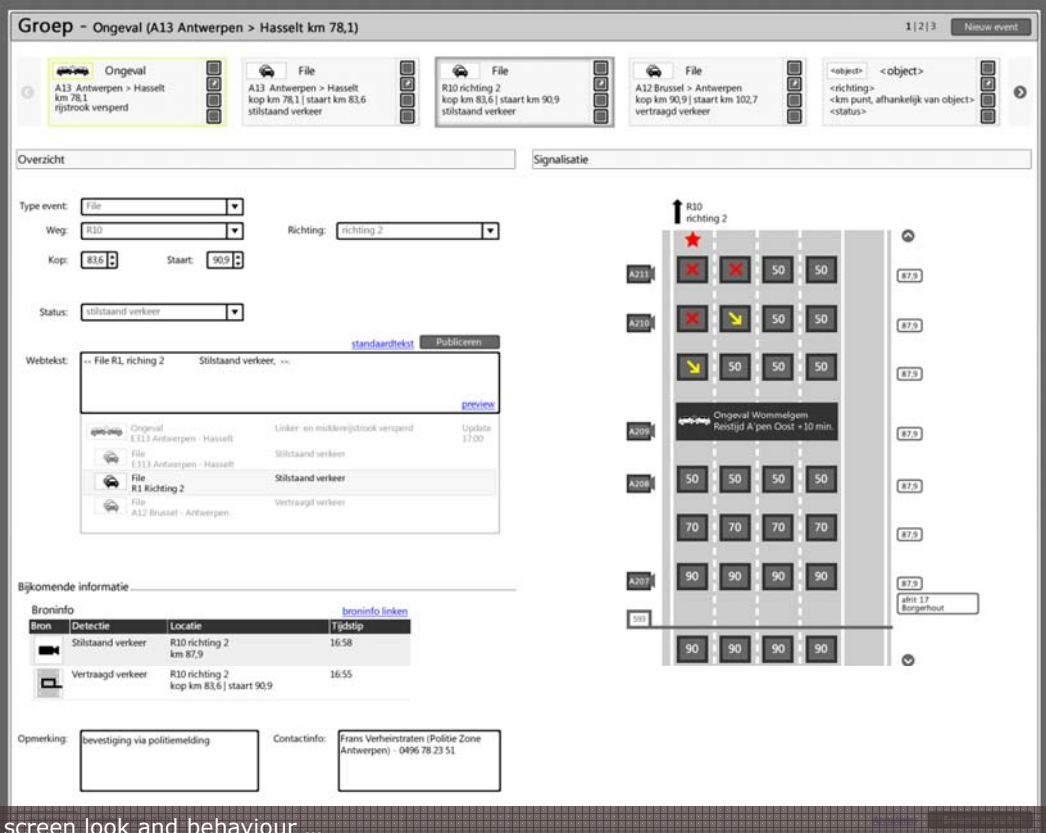
- Als de operator een event of cluster actief maakt op het overzicht, synchroniseert de lijst- en de kaartselectie.

Figuur 10 – Lijst- en kaartselectie synchroniseren met actief-gemaakte event(-cluster) in het overzicht

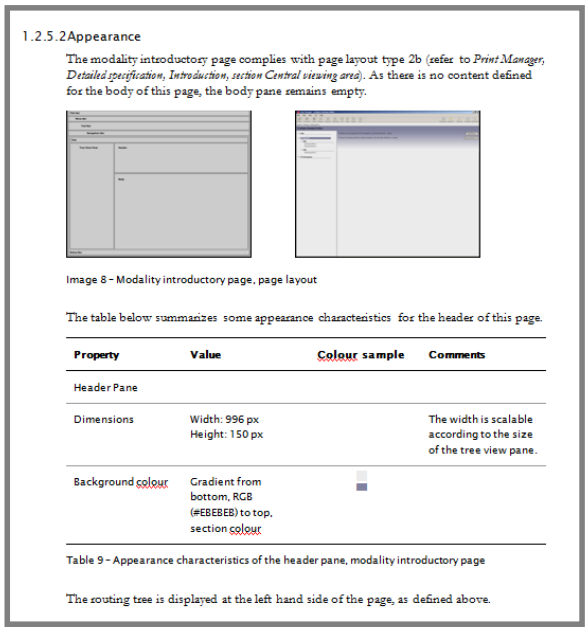
... and high-level behaviour ...



... and generic screen architecture ...



... screen look and behaviour ...



1.2.5.2Appearance

The modality introductory page complies with page layout type 2b (sefer to *Print Manager, Detailed specification, Introduction, section Central viewing area*). As there is no content defined for the body of this page, the body pane remains empty.

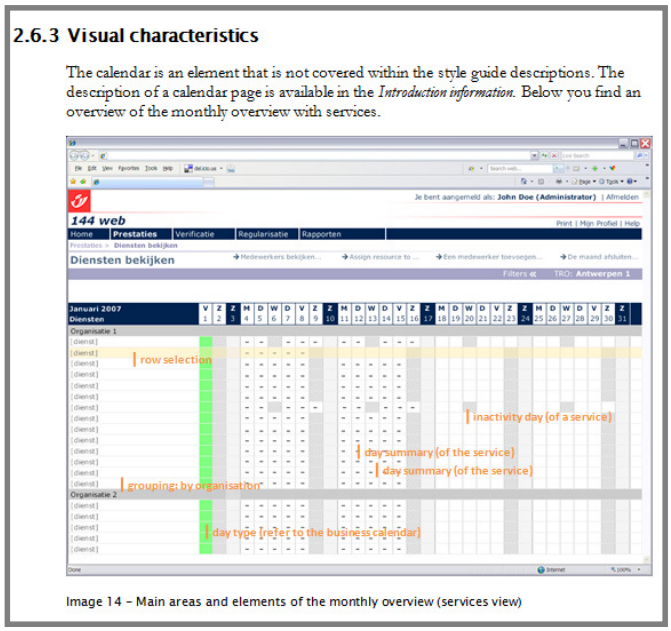
Image 8 – Modality introductory page, page layout

The table below summarizes some appearance characteristics for the header of this page.

Property	Value	Colour sample	Comments
Header Pane			
Dimensions	Width: 996 px Height: 150 px		The width is scalable according to the size of the tree view pane.
Background colour	Gradient from bottom, RGB (#EBEBEB) to top, section colour		

Table 9 – Appearance characteristics of the header pane, modality introductory page

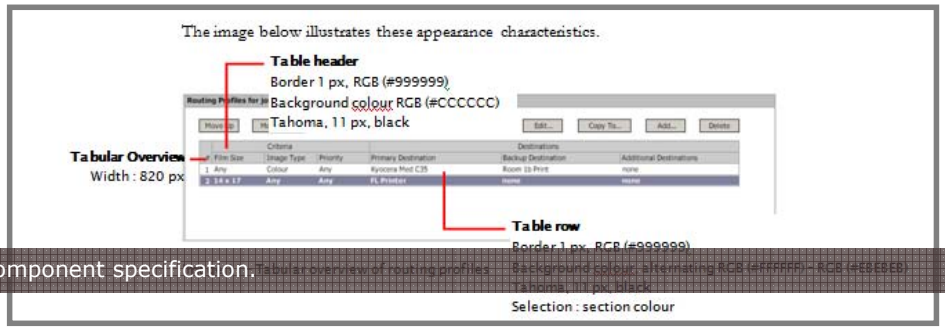
The routing tree is displayed at the left hand side of the page, as defined above.



2.6.3 Visual characteristics

The calendar is an element that is not covered within the style guide descriptions. The description of a calendar page is available in the *Introduction information*. Below you find an overview of the monthly overview with services.

Image 14 – Main areas and elements of the monthly overview (services view)



The image below illustrates these appearance characteristics.

Tabular overview of routing profiles

... to component specification.

Specification - formats

- Detailed & formal specification
- Informal specification
  - As brief document, per screen
  - As annotated drawings
- Library of patterns, components
- Styleguide with rules & principles
- Rationale

2.5.1 Interactions

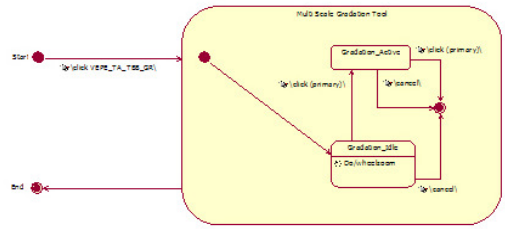
Default behaviour of the monthly overview is compliant with the descriptions as given for a calendar page; refer to the introductory documentation on the u.i. specification.

In brief, you can:

- Browse through time (previous / next month).
- Select a period (calendar icon).
- Select a resource (row selection).
- Select a particular day for a specific resource (cell selection).

Within the monthly overview itself, you can only select a day and one or more resource. Entering actuals is performed using screen 102.

A number of filters and selection can be made to determine the actuals view. These are



7.6.2 Behaviour

By default, the system loads the flow planning data for today ('within-day' flow planning). Since all Polaris interfaces contain a subtitle bar, a heavy-colored subtitle bar would impede readability. Therefore the subtitle background is colored with a neutral grey (R 208, G 212, B 185).

The date selection control is a classic Windows calendar control which should enable a quick selection of 'today':

The user can compose his preferred view by combining maximum four parameters. The selection of the preferred parameters is enabled by drop-down list boxes. In this way, the interface clearly reflects the active mode:

When the flow planner selects 'Hourly values' the date selection control is disabled (but remains visible) and an hour navigation control appears next to the date selection control. The date selection control is disabled in order to avoid unwanted clicks (when the user is working in hourly mode, he probably wants to keep on working within the same day).

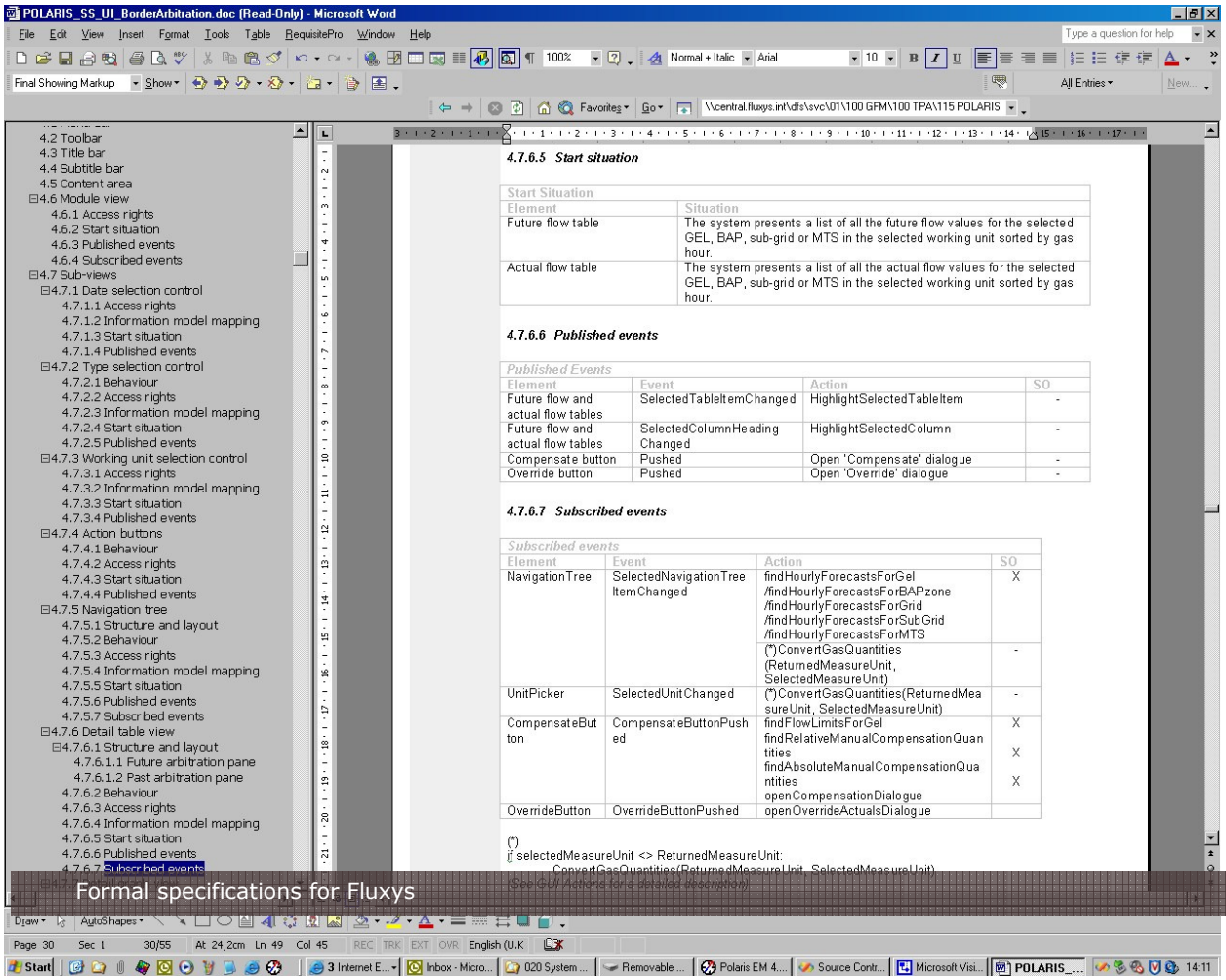
As can be seen above, the selected hour is displayed as a 'full hour' interval. The flow planner

The table below gives an overview of the interactions within this dialog.

Component	Action	U.C. Reference	User Interface Result
Modality drop-down list box	Select a modality	*Print Manager, Use case description, Routing configuration, section: Add routing profile.*	The current modality / printer selection corresponds with the currently selected modality - printer pair (if one is selected).
Printer drop-down list box	Select a printer		
Copy (check box)	Select / Deselect	*Print Manager, Use case description, Routing configuration, section: Copy routing profile.*	If not selected, the drop-down list box to select the routing profile is not available (unavailable appearance). The currently selected routing profile is selected (if one is selected).
Routing profile (drop-down list box)	Select a routing profile		If the copy check box is selected, the user defined a routing profile to use as source to copy from.
Command button: OK	Single click with primary mouse button.	*Print Manager, Use case description, Routing configuration, section: Add routing profile.*	The routing profile is created. It is inserted in the tree; the appropriate routing profile page is displayed.
Command button: Cancel	Single click with primary mouse button.		The action is cancelled; no routing profile is created.

Table 18 - Interaction when adding a routing profile

Formal specifications for Fluxys and AGFA



Formal specifications for Fluxys

5.3 Validity pane

[ATFCM.NOP.REGULEDITOR.XX]

(1) Ticking the Xcd option enables the following fields and options:

a)	**RVR** SpinBox
b)	**Fcm** CheckBox
c)	**Shift** CheckBox

(2) *Rationale:* Reflects the best practice of not presenting the user with information that is not necessary in a certain state.

[ATFCM.NOP.REGULEDITOR.XX]

(3) Pushing the Add button adds a new collapsed validity record with a start time that automatically follows the previous end time.

(4) *Rationale:* The mental model behind this design decision, together with the "Delete" ...sers ...oxes at

3 Screen structure

(1) The Regulation editor can be opened from the NOP portal and appears as a separate portlet, which looks as follows:

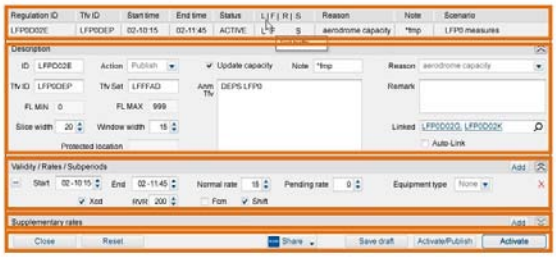


Image 1 – Five parts of the Regulation editor

[ATFCM.NOP.REGULEDITOR.001]

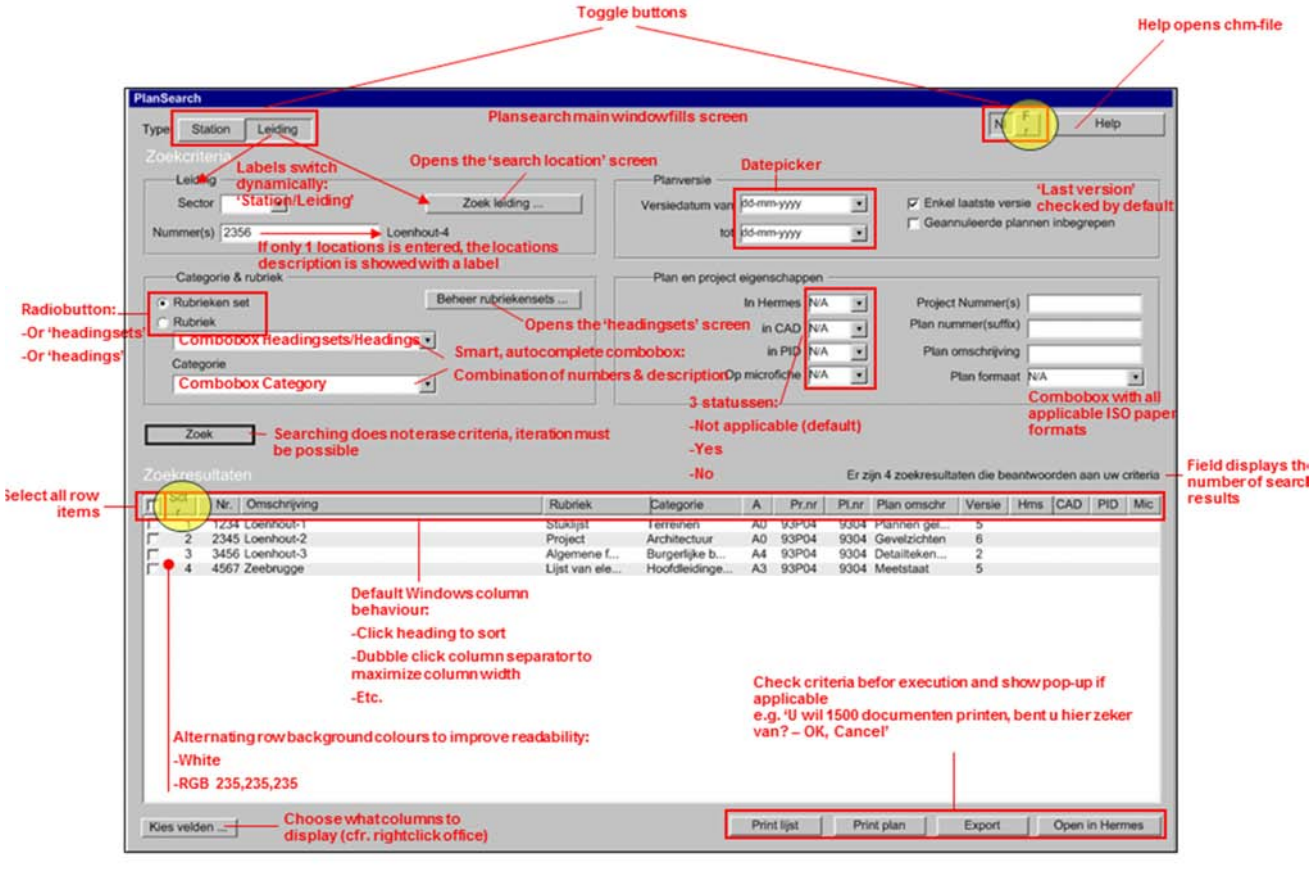
(2) The Regulation Editor is designed for an optimal screen resolution of 1280x1024px.

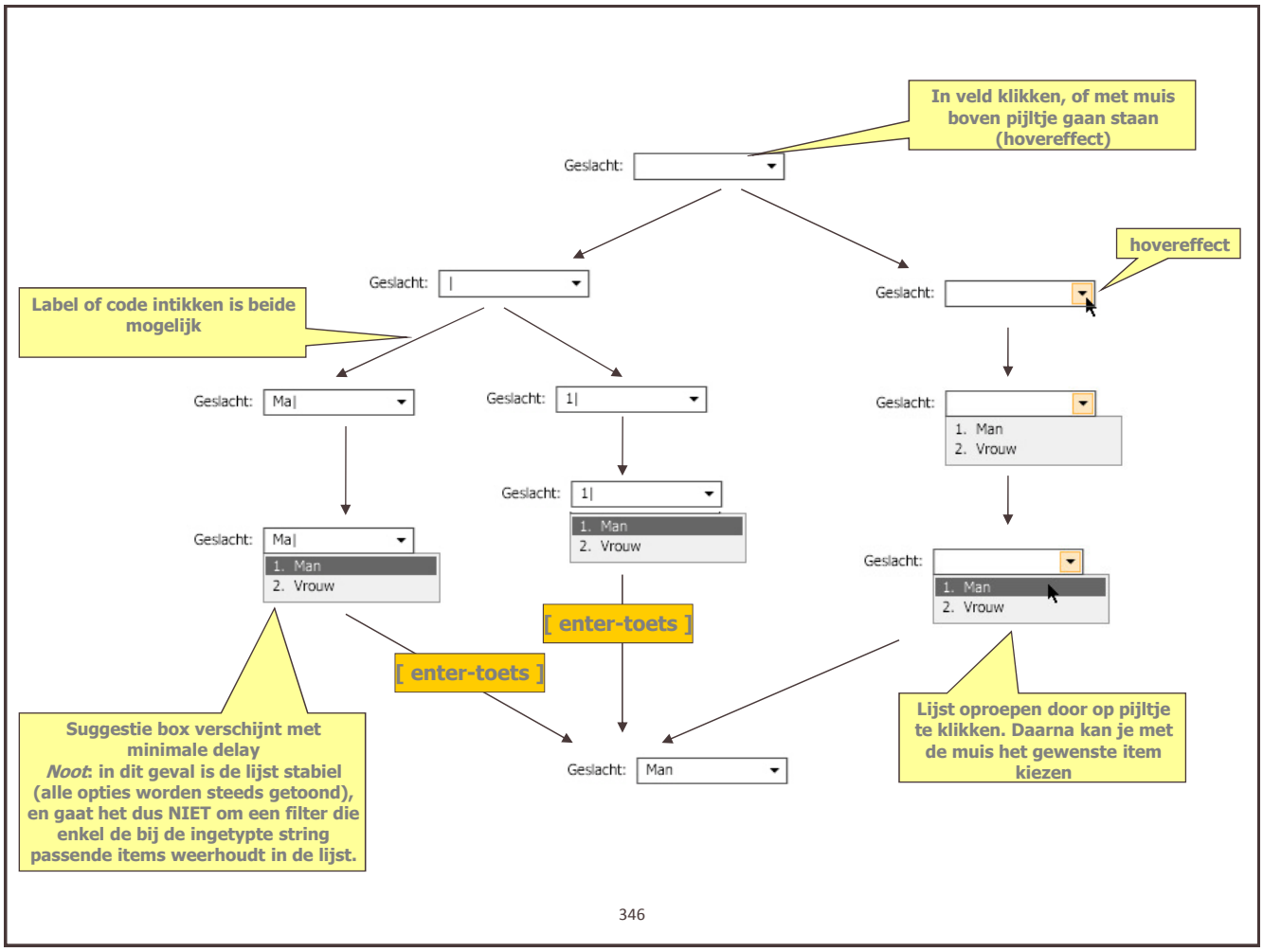
(3) As illustrated in Image X, the Regulation Editor is divided into five parts:

1. Overview table
2. Description pane
3. Validity pane

[ATFCM.NOP.REGULEDITOR.XX]

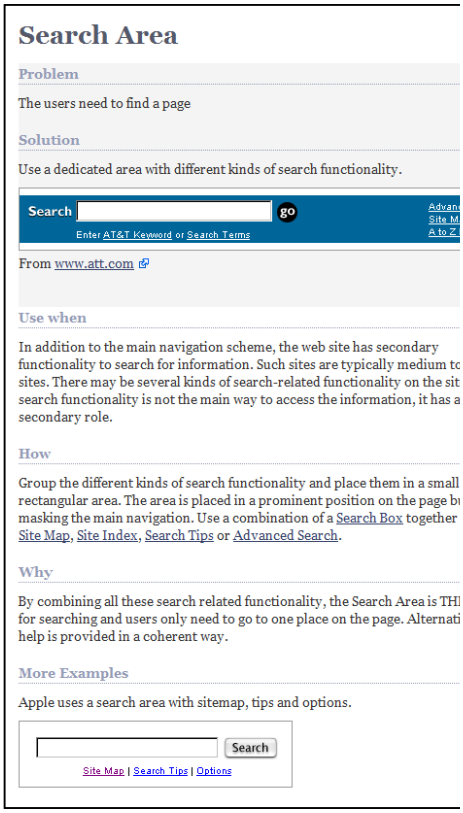
(4) The Description pane and Validity pane are expanded by default. Only the





Pattern specification

- What?
  - Name
  - Primary example
- When?
  - Problem
  - Context of use
- Why?
  - Rationale
- How?
  - Solution
- Other examples, status, …



YAHOO! DEVELOPER NETWORK

Design Pattern Library

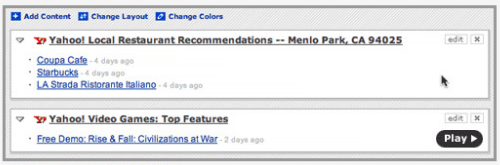
Yahoo! Developer Network > Design Pattern Library > Transition > Fade Out Transition

Fade Out Transition

Problem Summary

The designer needs to communicate that an object is going away.

EXAMPLE:



Fading out a deleted module on My Yahoo!

Use When

- Removing a content module from a page.
- Removing objects from a container.
- Creating a strong association of where an object is removed from.
- Need to signal something got removed that is not part of the user's main focus.
- The removal of content is done by the system.
- In conjunction with Self-Healing Transition.
- In conjunction with Cross Fade Transition.

Solution

- Diminish the opacity of an object from its normal value down to transparent (0% opacity.) This communicates:
  - The object is no longer available (common for delete).
  - A stronger impression (due to the transition) that the object went away (the user saw it leaving).
  - Where the object was removed from.

Fade Speed

Because fades do not catch the eye as strongly as move transitions, a fade can last a little longer.
The general rule is that fades should not take longer than a second, with the normal time being between 0.25 - 0.5 seconds. If the fade is associated with new information coming in that is not normally in the user's focus, you might want the fade to be a little faster in order to catch their eye. However if, the fades are happening in the main area of focus, the transitions can be slower.
A slow fade does not catch the user's attention as much as a fast fade. Therefore use a slow fade for items being added or shown to the user that are not centrally important.
A fast fade should be used when it might be more important to catch the user's attention.
Depending on the underlying animation library and the individual machine's performance the fade effect may not be a smooth as anticipated.

Rationale

- In addition, since fades are less noticeable than a move animation, they are good for indicating less important changes.

For more information, see the rationale for Transition patterns.

QUICK JUMP
- Solution
- Rationale
- Accessibility

RELATED PATTERNS
- Transition
- Animate Transition
- Brighten Transition
- Collapse Transition
- Cross Fade Transition
- Dim Transition
- Expand Transition
- Fade In Transition
- Self Healing Transition
- Slide Transition
- Spotlight Transition
- Drag and Drop Modules

AS USED ON YAHOO!
- My Yahoo!

BLOG
- Blog Article

Y! UI CODE EXAMPLES
- Animation Utility
- Fade

Show with revisions

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Extract from the YAHOO pattern library

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2.1.2 Paging mechanism

The paging mechanism supplements the navigation structure if multiple pages of a singular content type are available.

Context and usage

The paging mechanism is most commonly used on the pages containing lists of items. As the lists are limited to a maximum number of items to be displayed on page, an additional mechanism is required to access each page. We refer to this as a paging mechanism for lists.

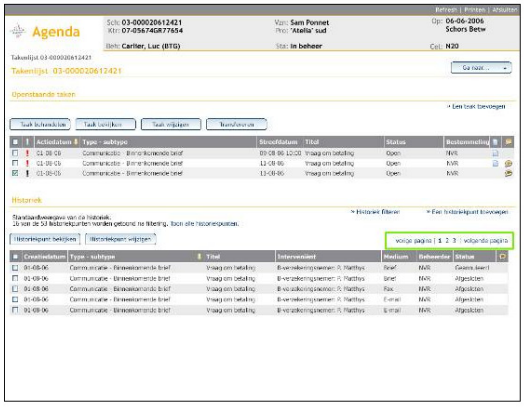
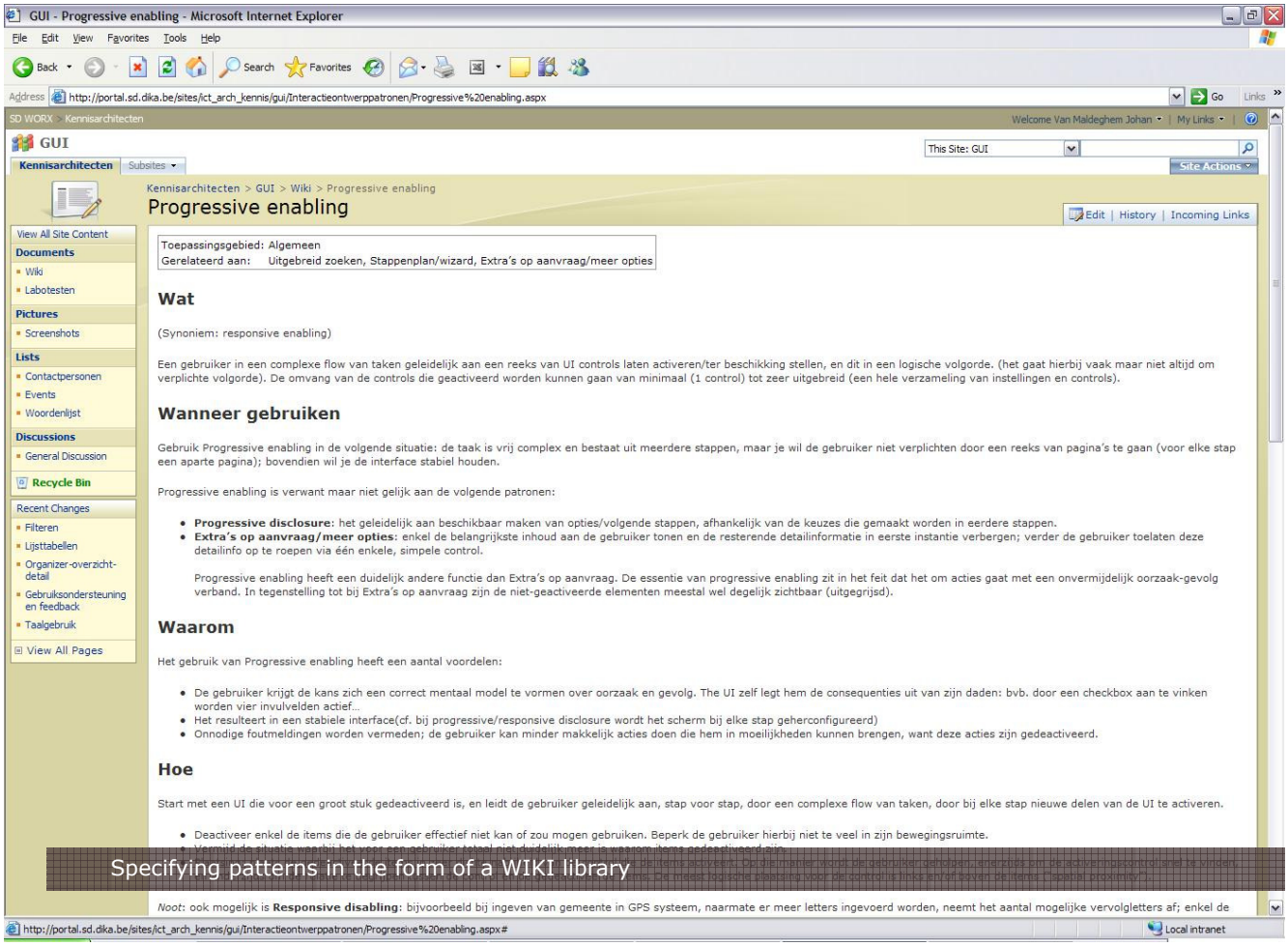


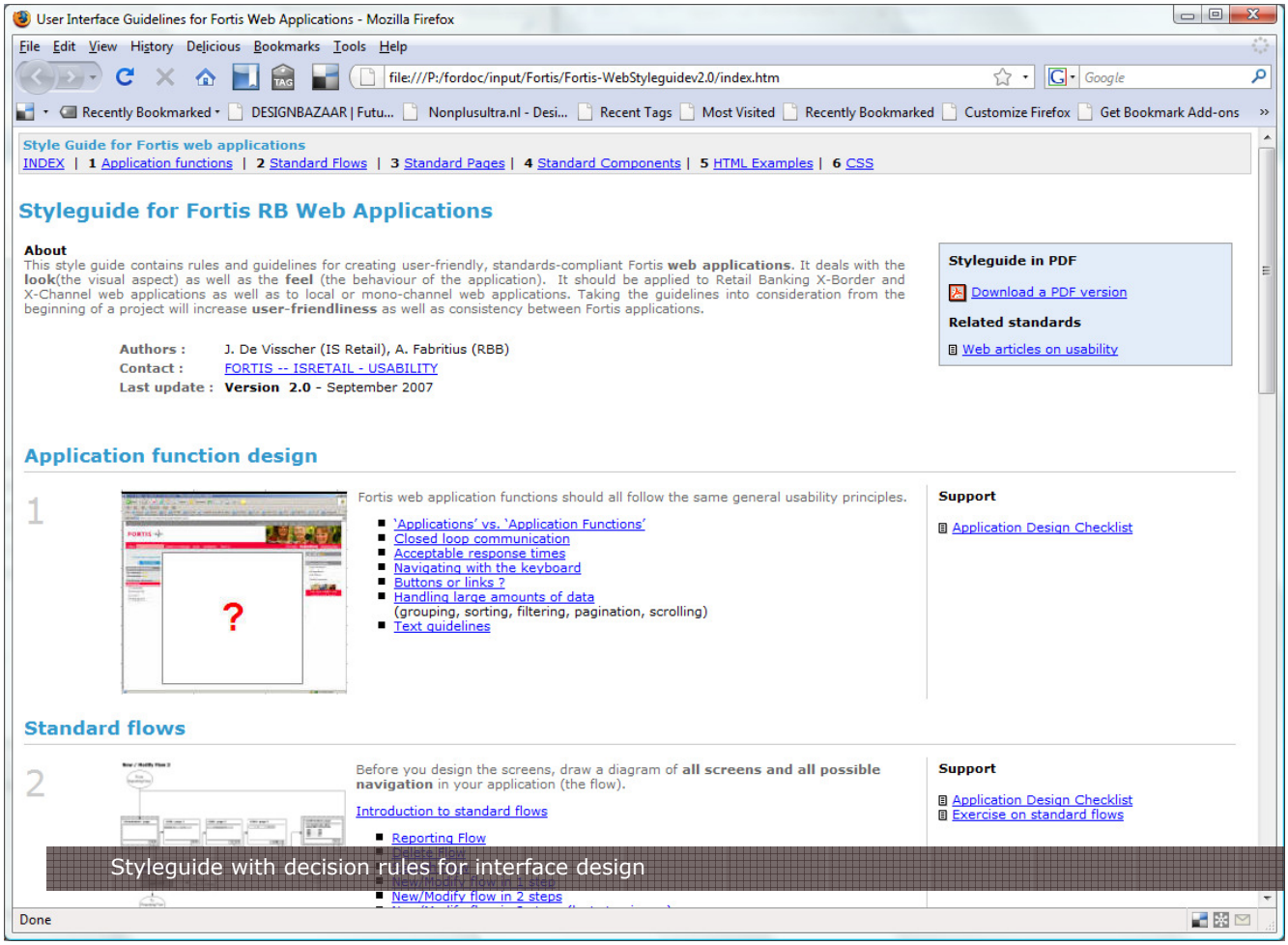
Image 1.3 – Paging mechanism for lists

An alternative paging mechanism is provided when the user has created a multiple selection of objects that he / she wants to review. In this case, we refer to a master list, and the user is able to navigate through the individual records, and to return to the master list. We refer to this mechanism as a paging mechanism for records.

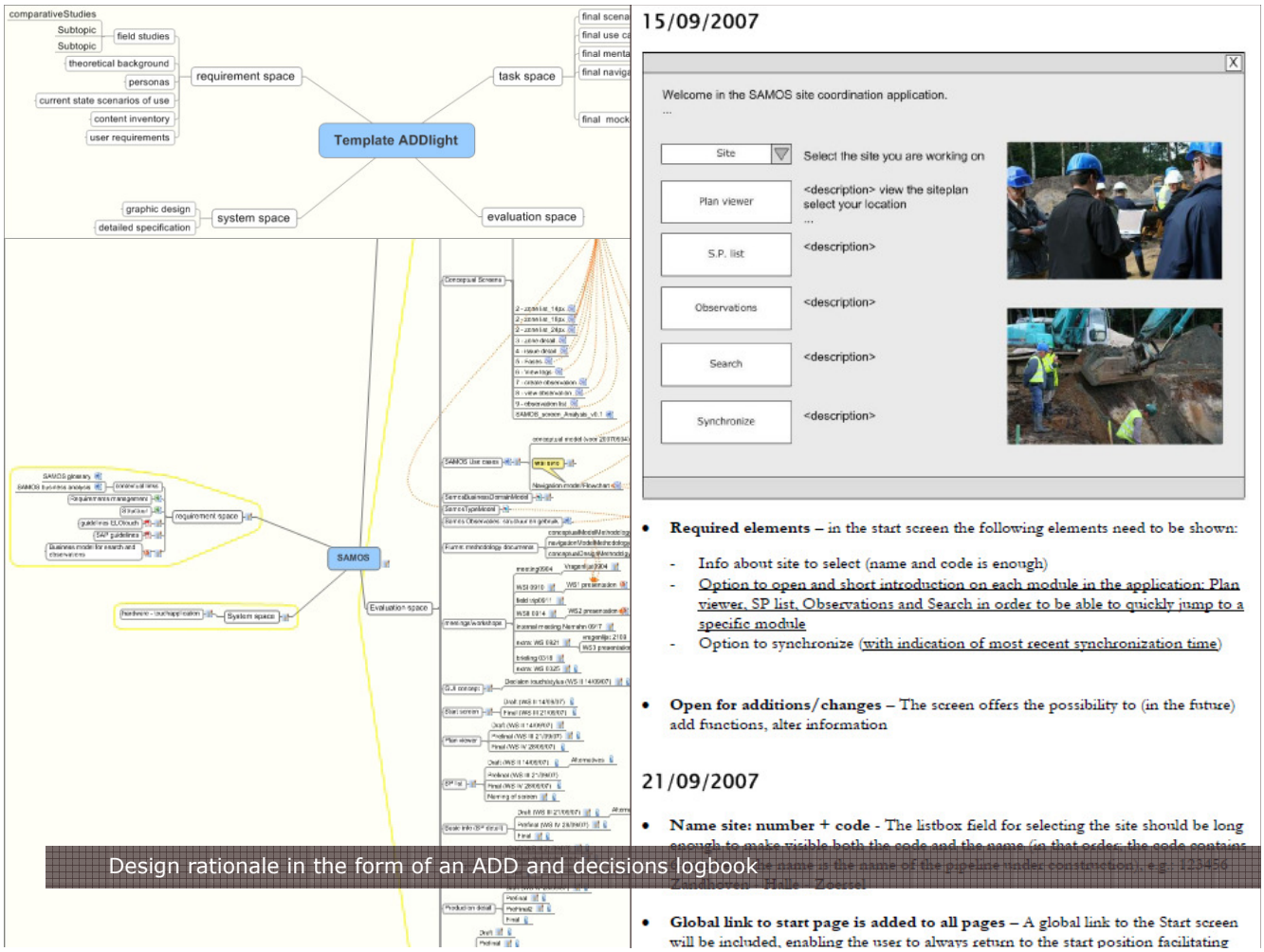
Using a pattern-oriented approach



Specifying patterns in the form of a WIKI library



Styleguide with decision rules for interface design

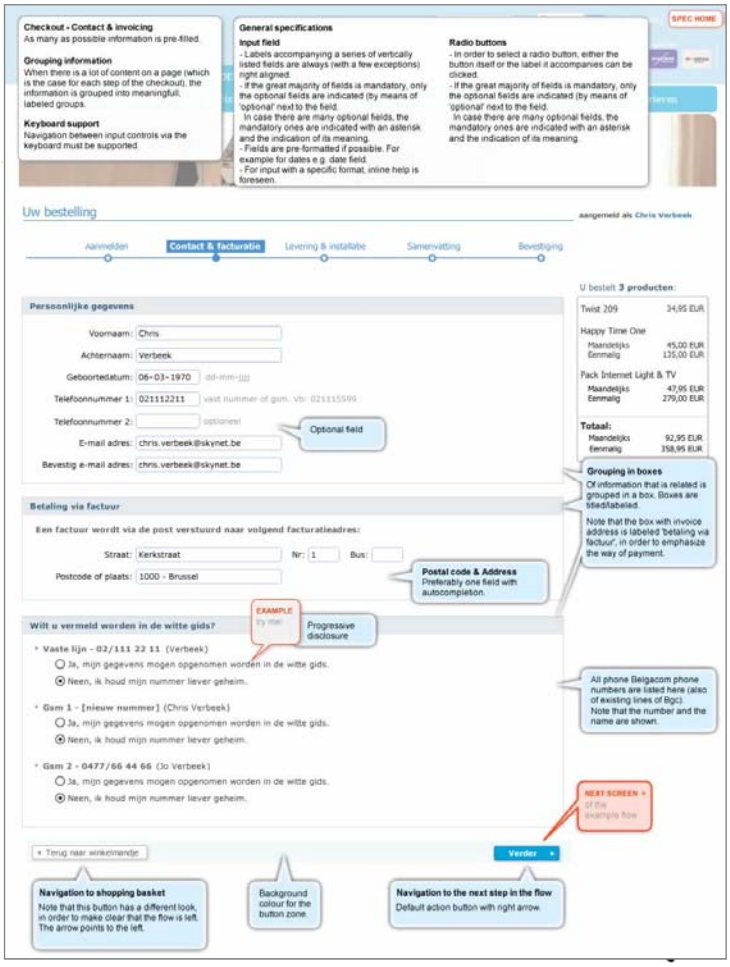


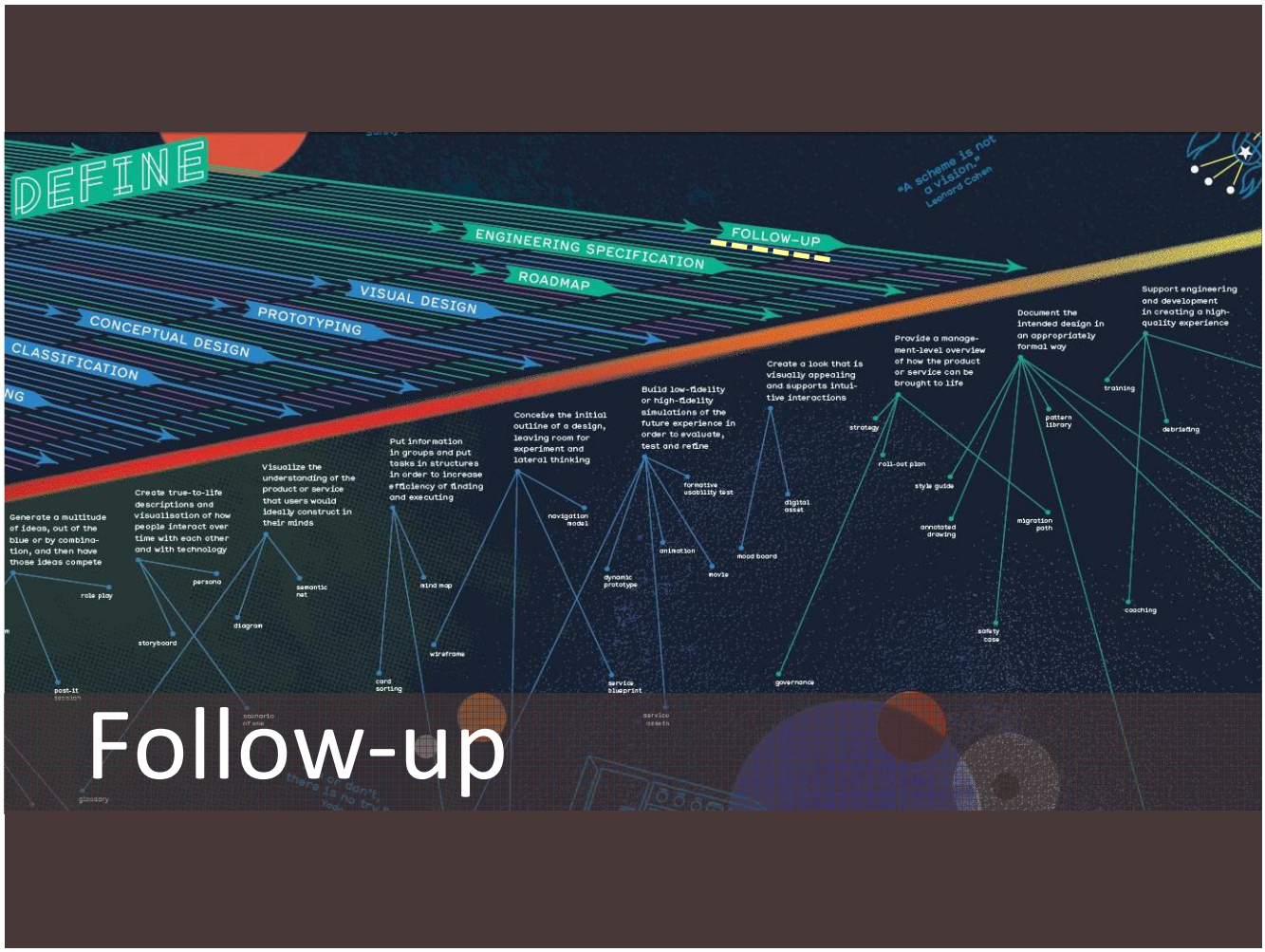
Design rationale in the form of an ADD and decisions logbook

Belgacom e-shop

ready for development with a **click-through design specification**

- final, detailed design
- with annotations
- describing interaction & behaviour
- aimed at developers





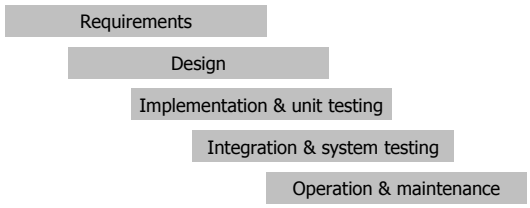
Follow-up

ISO standards

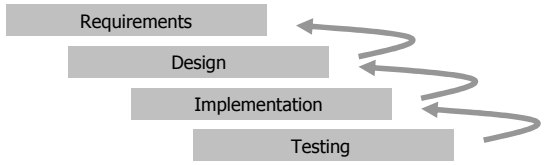
- ***ISO 13407****: Human-centered design processes for interactive systems - explains the* ***activities*** *required for user-centered design*
- **ISO 9241 – 210**: Key **principles** for HCD and UX
- **ISO 16982**: Usability methods supporting human-centred design: outlines the types of **methods** that can be used
- **ISO/TR 18529**: Human-centred lifecycle **process** descriptions: structured set of processes (< ISO 13407) and a survey of good practice
- **ISO PAS 18152**: process assessment of human-system issues

Engineering approaches

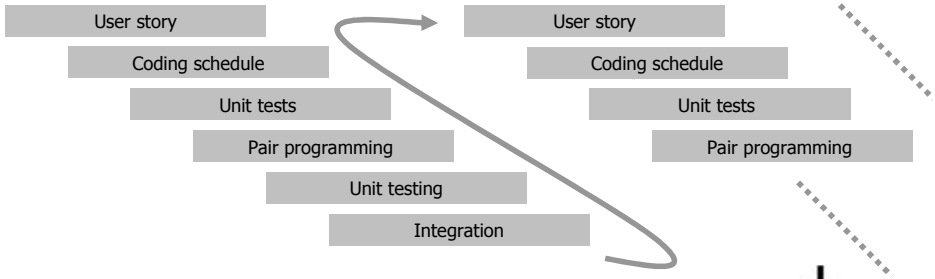
- Waterfall



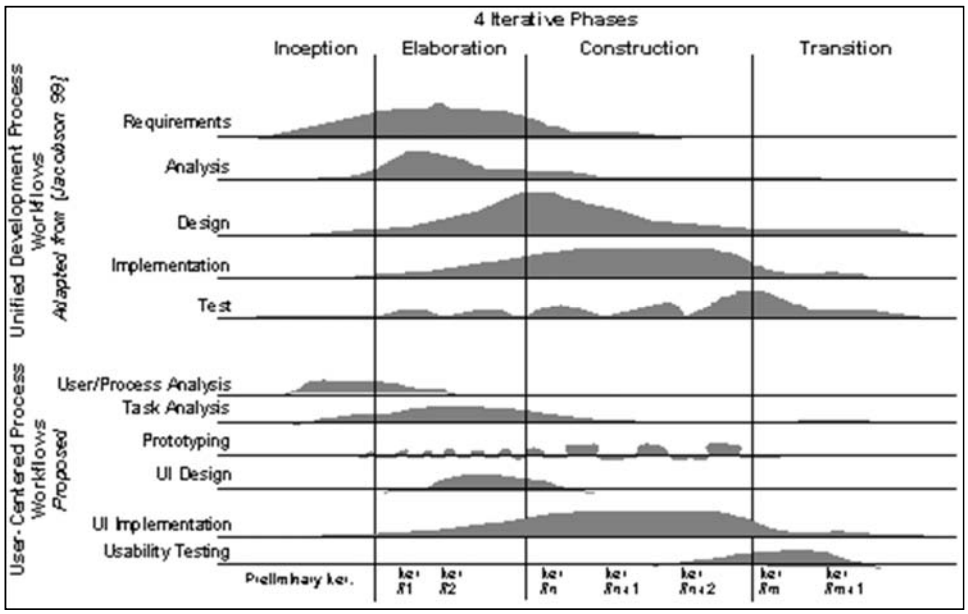
- Iterative



- Agile

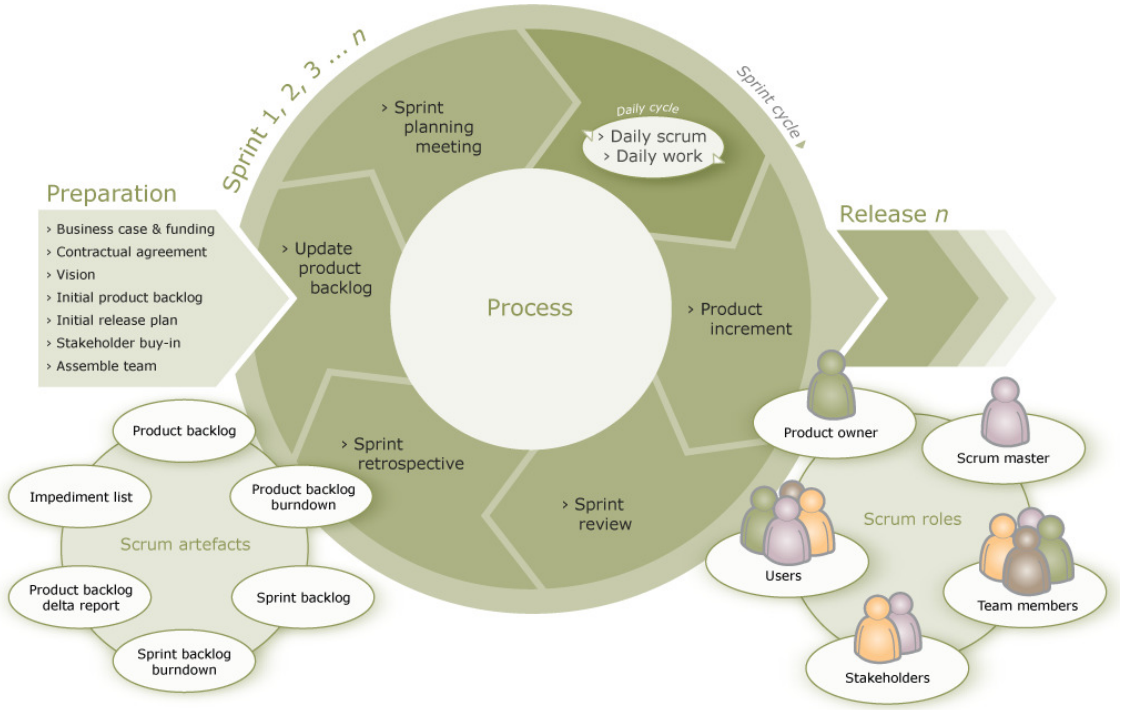


WISDOM



Source: Nunes (2001)

Agile - SCRUM



Source: agilescrum.biz

Agile interaction design

- Think and design upfront
- Visualize, prototype & try out
- Share design ownership
- Chunk your design
- Apply design patterns
- Go light on deliverables

Sources: Ambler & Hodgetts (2007), Constantine, Patton, Waters

Follow-up tips

- Confront design with build
- Plan
  - evaluation
  - de(briefing)
  - walkthrough
  - new iterations
  - coaching
  - creation of support material
  - training
- Budget