Prototyping in Interaction Design

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Designers think about products and these products are changing dramatically according to technology and the contexts they are used. Most products contain microchips. Therefore, user-centered design of modern intelligent products is no more a question of hardware only but of software as well. Both have to be designed at the same degree of thoroughness.
Prototyping Software

design process

prototyping techniques
design process

:understand the user’s experience
:imagine new opportunities
:developing user scenarios
:letter of understanding
:design solutions
:visual language
:prototyping
:user evaluation
:(implementation)
what
analysing real products on the market
users need, how users live

how
search the web
interviewing people
organize your results: maps

understand user’s exp.
Der Inhalt eines Telefons: Nokia 6020, 1-3 Ebene

Eingang
- „Hallo Anna, habe...“
- Optionen...

Ausgang
- „Hast Du heute 16...“
- Optionen...

Gesendete Obj.
- Kurzmitteilungen
- Multimedi-Mitteil.

Gespeicherte Obj.
- Kurzmitteilungen
- Multimedi-Mitteil.

Chat
- Einloggen
- Gespeich. Gespr.
- Verbindungseinst.

Mitteilungen
- Mitteilung verfassen
  - Kurzmitteilung
  - Multimedi-Mitteil.
  - Flash-Mitteilung

Anruflisten
- Anrufe in Abwesenheit
  - +493935874459#: Zeigen
  - Optionen
- Angenommene Anrufe
  - +491773459996#: Zeigen
  - Optionen...
- Gewählte Rufnummern
  - +491773459996#: Details
  - Optionen...

Anruflisten löschen
- Alle
- In Abwesenheit
- Angenommene
- Gewählte

Gesprächsdauer
- Dauer des letzten Gesprächs
- Dauer der angenommenen Anr.
- Dauer der abgegangenen Anr.

Adressbuch
- Suchen
- Neuer Eintrag
- Löschen
- Erreichbarkeit
- Abonnierte Namen
- Kopieren
analyzing user needs
new opportunities

- techniques
- brainstorming
- mind maps
- contradiction tables
- collages
inspiration
mix and combine metaphors
what transfers the spirit?
opportunities: collage
AUDI: shiftByWire
context of the service idea

classifying target groups

explain the process of using the upcoming product

can lead to separate designs for different types of users

: user scenarios
communication happens at the recipient's end
avoid typical communication problems

reformulating the task description
identified target group
wider context of the product
particular challenges

convincing the client

letter of understanding
design solutions

variations, variations, variations

all techniques available

develop the architecture, the metaphor, the handling process, the input and output devices
design variations
diploma thesis of Claudia Tietge

is about handling information with mobile devices. Saving, showing, transporting, organizing, finding... Managing image files shows how to navigate in different amounts of data on small screens.

information.mobile
2 same sized squares
3_defined width
4_same width in a square
5_same sized pictures
defining the background
set of icons
just-enough

models to reveal the quality of the experience (it is not enough to see that the technology works)

craft the interactive experience
what people will see, hear and feel

prototyping
user evaluation

- techniques
- focus groups
- think aloud user testing
- reviews
- heuristic evaluation
- questionnaire
- paper prototyping
example in Symbian OS for cellphones, Nokia

```cpp
const TInt fMaxSpeed = 10500;

CChrPlayer* CChrPlayer::NewL ( CSprite* sprite, MSYSTEM* aSystem, CTileMap* aMap )
{
    CChrPlayer* self = new L new2 CChrPlayer( sprite, aSystem, aMap );
    fMaxSpeed = 2 * 10500;
    return self;
}

CChrPlayer::CChrPlayer()
{
}

CChrPlayer::CChrPlayer( CSprite* sprite, MSYSTEM* aSystem, CTileMap* aMap )
    : CSprite( sprite ),
    iSystem( aSystem ),
    iTitleMap( aMap )
{
}

void CChrPlayer::ConstructL()
{
}
```
prototyping techniques

- paper prototyping
- computer animation
- interactive simulation
new dashboard widget

: start screen
“find the cheapest gas station”
german gas prices: 9$/gallon

: application occurs
: search results appear
map occurs
interaction elements
Paper prototyping:

- Cheap and fast technique
- Rapid interface prototypes
- Early design stages
- Up and running, no pre-requisites
- Interdisciplinary groups
- User evaluation
- Early usability data, enables testing with real users
hand-drawn

encourage discussion

un-finished

room for discussion

: early design paper prototyping
elaborated paper prot.
elaborated paper prot.
even 3D works
nothing has to be perfect..
...except the illusion
hardware prototypes
“Paper prototyping is a variation of usability testing where representative users...
“Paper prototyping is a variation of usability testing where representative users perform realistic tasks by interacting with a paper version of the interface.”
“Paper prototyping is a variation of usability testing where representative users perform realistic tasks by interacting with a paper version of the interface that is manipulated by a person ‘playing computer,’ who doesn’t explain how the interface is intended to work.”
User evaluation

http://www.paperprototyping.com/

you cannot not communicate
Computer animation

- techniques for low-level animations

- representing the dimension of time when programming gets too hard or when the narrative continuum is linear

- no interaction, user as passive consumer like watching TV
Calvin and Hobbes by Bill Watterson

PSSST! WHAT'S 7 * 6?
THREE HUNDRED BILLION GAZILLION.

OH, THANKS FOR THE BIG HELP!

THAT'S A THREE, FOLLOWED BY 85 ZEROES.

AH! I KNEW THAT.

: hand-drawn: comics
: story board
: computer animation
how to use a cellphone?
no MTV clip
appropriate quality
who is the audience?

computer animation
: produce single pictures/frames
paint
snapshots from screen
photos
: composite them
animated gif files (e.g. Adobe ImageReady)
digital video, MPEG, Quicktime (e.g. iMovie)

: computer animation
hand-drawn frames
hand-drawn frames
hand-drawn frames
hand-drawn frames
hand-drawn frames
hand-drawn frames
produce an animated GIF
the animated GIF
produce single pictures/frames
paint
snapshots from screen
photos
composite them
animated gif files (e.g. Adobe ImageReady)
digital video, MPEG, Quicktime (e.g. iMovie)

computer animation
2006
Donnerstag, 16. März

14:15
New Event
14:15 meeting
14:15 meeting
15:15 New Event
Donnerstag, 16. März 2006

13:45 - 14:00
meeting

15:15 - 16:00
kids pick-up
meeting

Location

all-day
from 16/03/2006 at 13:30
to 16/03/2006 at 15:15
repeat None
attendees None
calendar Privat
alarm None
url None

Notes

13:30 meeting

15:15 kids pick-up
13:30 meeting
15:15 kids pick-up
22:00 BrainShare Salt
composite in iMovie
Interactive Simulation

:Merriam-Webster

:interactive
being a two-way electronic communication system (as a telephone, cable television, or a computer) that involves a user's orders or responses

:simulation
the imitative representation of the functioning of one system or process by means of the functioning of another
Interactive Simulation

:simulating software
:user becomes an active participant
:feels almost like real

:non-linear structure
:how does the computer react to the user’s input?
designer has to start programming Macromedia Director, Macromedia Flash, ...

complex interaction structures

combination with animation helps

Interactive Simulation