User centered design

User centered design has been defined as an activity in which the actual user participates in the design process right from the beginning. (93)

Users activities are examined in the physical and social environments for which the product is intended. (93)

Design drivers by user information must participate in an iterative process in which the goals are adjusted on the basis of user feedback. (p.93)

User information is

- personal
- multidimensional
- context-dependent

It can never be completely explained or engineered
It is the “raw material”

User information includes the following factors:

- Ergonomics and usability
- Aesthetics and semantics
- Lifestyles and trends
- Domestication

User centered design

Users Motivation Factor
What motivates users actions?
How to identify users motivational actions?
What are the users goals and objectives?

Different type of user information - different weightings

For example with an interactive product:
Understanding the situations and phases of use

Several perspectives: ergonomics, usability, aesthetics, semantics, social factors

Aesthetics: pleasure of use, personality, pleasure of social status, usability of IST-product, ergonomics of furniture…
intelligent clothes, functional textiles??
User centered design

User studies – observing
“Sometimes the process of observing users may reveal product improvement ideas that can be applied directly to subsequent product versions, even though the original focus was to develop concepts for the more distant future.” (p. 98)


User centered design

Phases in User-information-based concepting:
1. Collecting user information
2. Interpreting user information
3. Description of user behavior
4. Description of a new concept
These phases run in parallel with generic problem solving approaches. (p.99)

**User centered design**

Sources of user-related information about consumer behavior, decision-making, lifestyle, fashion trends:

- Commercial and academic sources
- Trade journals
- Internet

Rarely reliable

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**User centered design**

Qualitative user studies (p.100)

- co-design studies
- aim to get close to the user
- tap in to the way they think, their values, physical environment and their actions

Even a few user can give the designer extensive new sight
**User centered design**

Spectrum of methods available, combination of few basic:

- Interview (narrations, projective tasks etc.)
- Observation (shadowing, following in different situations)
- Self-documentation (probes, diaries etc)

**Terminology**

- Design-for-all, accessibility, usability
- Information accessible for all,
- Different modalities: the sense of touch haptic, tangible
- Designing tactile objects
Terminology

• Design for All
  Inclusive Design
  Universal Design
  Barrier-free Design
Terminology

• Accessibility - in Finnish: fyysinen saavutettavuus, esteettömyys
• Cultural accessibility, technological accessibility, economical accessibility etc.
• Design for All vs. designing to the average man
• Universal Design - Inclusive Design

Design for All

• Means tools for designers and architects to understand
  – that diverse user groups might have diverse needs and wishes
  – how diverse needs and wishes of various users could be defined
  – inclusion as well as exclusion
Accessibility

• For example: Equal access to cultural heritage means that everyone should be able to obtain information on, and take part in, cultural activities in a variety of settings.

Design-for-All

Means strategies and means that are connected to design. Tools that wish to increase accessibility and usability of physical environment, products and services for all kind of users.
Design-for-All

Tools for Design for All help designers to understand the needs of diverse users. Tools help the designers and architects understand the needs and wishes of diverse users, citizens, visitors. Tools help designers to understand the inclusion and exclusion.

- As design guideline DfA is connected to usability, accessibility and user centred design.
- DfA emphasis the importance of user study and surveys and co-design i.e. taking into account diverse users (old, disabled, users with special needs).
### The aspects of accessibility

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Exhibition</th>
<th>Informants</th>
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</thead>
<tbody>
<tr>
<td>Physical accessibility</td>
<td>Kokemus (experience)</td>
<td>Visitors (interviews)</td>
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<tr>
<td>Multimodal accessibility</td>
<td></td>
<td>Aged, disabled</td>
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<tr>
<td>Intellectual accessibility</td>
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<td>Visually impaired, tangible media</td>
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<tr>
<td>Social and cultural accessibility</td>
<td></td>
<td>Mentally disabled, children</td>
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<tr>
<td>Accessible information</td>
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<td>Easy to access, public transport</td>
</tr>
<tr>
<td>Economical accessibility</td>
<td></td>
<td>Info in exhibition, Internet</td>
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<tr>
<td>Accessible decision making</td>
<td></td>
<td>Fees</td>
</tr>
<tr>
<td>Biased accessibility</td>
<td></td>
<td>“Who is average”</td>
</tr>
</tbody>
</table>

- How the (digitalized) information opens to the user?
- How designers can increase accessibility and usability?
The rapid increase in the number of older people will reshape the demographic, social and cultural structure of the European Union over the next 25 years. Approximately 12% of the population of the European Union suffer from some disability. The variety of needs of people with disabilities and older people is not recognised enough.

GDP-02: User-Friendly GSM Desktop

The GDP-02 You Can: Make phone calls over a 900/1800 MHz GSM network using standard SIM cards · Write text messages quickly on the complete QWERTY alphabetical keyboard · Read text messages easily on the large illuminated LCD display · Dial numbers comfortably with the desktop phone’s large buttons and speed-dial keys · Make hands-free phone calls via the phone’s built-in speakerphone and microphone · Change phone locations conveniently because the GDP-02 has a built-in rechargeable battery for mobility

http://www.jablotron.cz/
IDEAS FOR ACCESSIBILITY

Tangible objects
From visual experience to multimodalities

Experience with several senses

haptics, tangible, sense of touch, force-feedback

Feel For Design
The science of haptics (haptikos is Greek for "to grasp") is slowly finding its way into low-cost consumer devices.

GAMES Wheels, joysticks and controllers use haptics to pulse, rattle and purr.

Mobile Phones Ring tones become vibratones, identifying callers by their unique vibe.

Autos BMW's iDrive knob adjusts its tactile response, depending on the function.

Medical Haptic devices give trainees a feel for using catheters and needles.

Technology Touch and Go David Armstrong, 02.28.05
Methods in user centered design, methods to understand
**Difference between seeing and touching**

Main difference between seeing and touching is the amount of information, and properties of the object which can be perceived through tactile and visual perception. (Österlund 2003)

[Katriina Rautavuoma (2005)
Threshold Association Occupational Therapist,
Student of Graphic Design]

<table>
<thead>
<tr>
<th>VISION / VISUAL PERCEPTION</th>
<th>TOUCH / TACTILE PERCEPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>† sense of distances</td>
<td>† sense of closeness</td>
</tr>
<tr>
<td>† visual perception just happens, without physical or psychological attempts</td>
<td>† tactile perception demands conscious will, continuous exploration and adequate exploration strategies</td>
</tr>
<tr>
<td>† by seeing is perceived: colors, minimal and large objects, distances, shapes, perspective</td>
<td>† by touching is perceived: shapes, properties of surfaces, dimension, weight and temperature</td>
</tr>
</tbody>
</table>
DfA & Taik - projects

IRIS-center for visually impaired.
Tactile map made by Nao Saito - space design dept.

TaiK & DfA - projects

HUOMIOI KAIKKI - Path installation in Design
Museum autumn 2005
http://mlab.uiah.fi/huomioiikakki

installation & workshops
Final thesis projects

MA-lopputöy, Pekka Hanelius 2003

Tietoyhteiskunta kaikille
Valitse suunnitella WWW-sivujen saavutettavuuden arviointi


Sara Henriksson ja Ritva Kettunen 2003

TASAVALLAN PRESIDEN Tim KANSLAN
VERKKopalvelun suunnittelu

- verkkopalvelun suunnittelun kansalaiskäytännössä

Vähiten käytetyt, mutta erityisryhmä
kiinnostavat sivut suunnitellaan
saavutettaviksi

Pikälä alavälisten suosituksivut ja myös uudet WWW-
sivut suunnitellaan AAA-tason mukaisiksi

Yleisesti käytetyt sivut suunnitellaan A-tason
mukaisiksi

Kaikki uudet sivut suunnitellaan AA-tason mukaisiksi
ja sääntöjen noudattamista seurataan

TARKASTUSPROSESSISSA

Aloitussuunnit ja muut suositut sivut muutetaan
välttämättä A-tason mukaisiksi

www-sivujen saavutettavuuteen ei ole kiinnitetty
huomiota

Sara Henriksson ja Ritva Kettunen 2003
Design for All network
http://www.stakes.fi/dfa-suomi/
http://www.e-accessibility.org/

University for All -initiative coordinator Antti Raike
Taik network of researcher and teachers
Dissertations concerning usability, accessibility
user centered design
Virtual University

Links

- http://www.nvkirjasto.fi/ohje.html
- http://www.srfriks.org
- http://www.centil.dk/internet
- http://www.w3.org/TR/WAI-WEBCONTENT/
- http://trace.wisc.edu/world/web
- http://cast.org/bobby
- http://www.papunet.net/
- http://www.stakes.fi/dfa-suomi/
- http://www.mlab.uiah.fi/huomioikaikki/
- http://elokuvantaju.uiah.fi
User centered design

Interpretation process (p. 104)

1. Applying interpretation models
2. Categorization based on the material
3. Condensing and combining
4. Direct interpretation