ICT services for every citizen:

The challenge of gaps in user knowledge.

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Universal design

► Related terms: universal usability, design for all, inclusive design etc.

  ▪ Main goal: make ICT usable and accessible for as many users as possible

► One important step to include citizens in to the information society

► New Norwegian law: the Discrimination and Accessibility Act

  ▪ all services (transport, buildings, ICT) to the general public shall be **universally designed**.

  ▪ from 1st of July 2011

► Challenge:

  ▪ Universal design in ICT is not operationalized yet

  ▪ Refer to W3C/WCAG and relevant standards

Challenges of Universal Design in ICT

► Shneiderman: challenges of universal usability:

  ▪ technology variety,

  ▪ user diversity

  ▪ gaps in user knowledge

User diversity and knowledge gaps

User diversity:

- age, gender
- disability
- skills and literacy
- context, environments (mobility)

► Often met by

- Customizable interfaces, font size, contrasts, input methods
- Following standards/ guidelines, eg. WCAG

Gaps in user knowledge

- Bridge the gap between what the user know and what the user need to know.

► Often met by

- User training
- Online help
- Standard terminology
- Metaphors
- Layered interface/ scaffolding

Projects

Project name	Target groups	No of participants
P1: ICT for an inclusive working life	• Low education • Low ICT competence	15
P2: DIADEM Delivering Inclusive Access for Disabled or Elderly members of the community.	• Elderly (65+) • Cognitively impaired	22
P3: UNIMOD Universal design in multimodal interfaces.	• Low education • Cognitively impaired	5
P4: ICT barriers for visually impaired	• Visually impaired (17 – 60 years)	28

Method

Interview and observation (max 2h):

► ½ hour interview (semi structured)

► max 1 ½ h observation of users doing ICT tasks

► In familiar environments at their home, workplace or at senior center

► with their own ICT equipment

Data collection: Quite detailed minutes based on

► Notes

► Voce recordings

► Electronic log

ICT tasks across projects

Project	Software product	Web-based	Web-based electronic form	Web-based electronic form following ELMER
P1	Approving an invoice	Security course		
P2			Travel reimbursement	Safety alarm
P3				Job application
P4				Job application

"Difficult / problematic" ICT features

A. scroll windows

B. navigation

C. precise use of mouse (difficulty in hitting input field area)
(not blind users)

D. input fields requiring special formatting and special characters
(eg. entering date)

E. use of pull down menus and drop down lists switch between
windows and close windows (eg. help window)

F. upload a file (eg. attachments to an electronic form)

G. open and close file catalog

H. find and make use of help facilities

In search of patterns

- ► Use of the ICT features across studies
  - The different ICT application made use of different subsets of ICT features
  - The participants knew different subsets of ICT features

- ► The participants knowledge and ability to handle a particular ICT feature
  - quite arbitrary across the user groups
  - but clearly increased with increasing ICT experience.

- ► Lack of knowledge or skills in handling a particular ICT-feature
  - more severe obstacle to task completion than having an impairment.

- ► Users did very rarely utilize help facilities, and those users that needed help the most were least inclined to use it.

Discussion – how to meet knowledge gap?

► Make the features more accessible and easier to use, in other words strive for universal design?
  ▪ ie. redesign and test.

► Change the design in order to avoid "difficult" or complicated features.
  ▪ eg. make input fields more robust

► Change the help resources so that more users utilize them.
  ▪ eg. Diadem – personalised and adaptive text/voice messages
  ▪ eg. Unimod – use of instruction videos/ screencasts.

► Personalize and adapt the user interface to each particular user:
  ▪ eg. Diadem – common look and feel each time
  ▪ eg. Unimod – personalisation

► Define a basic set of universally designed ICT features and train citizens to use them.
  ▪ At least: train the users to use help facilities

Thank you

Comments?

Questions?

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