

# Universal Design and Mobile Devices

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Karde AS ([www.karde.no](http://www.karde.no))

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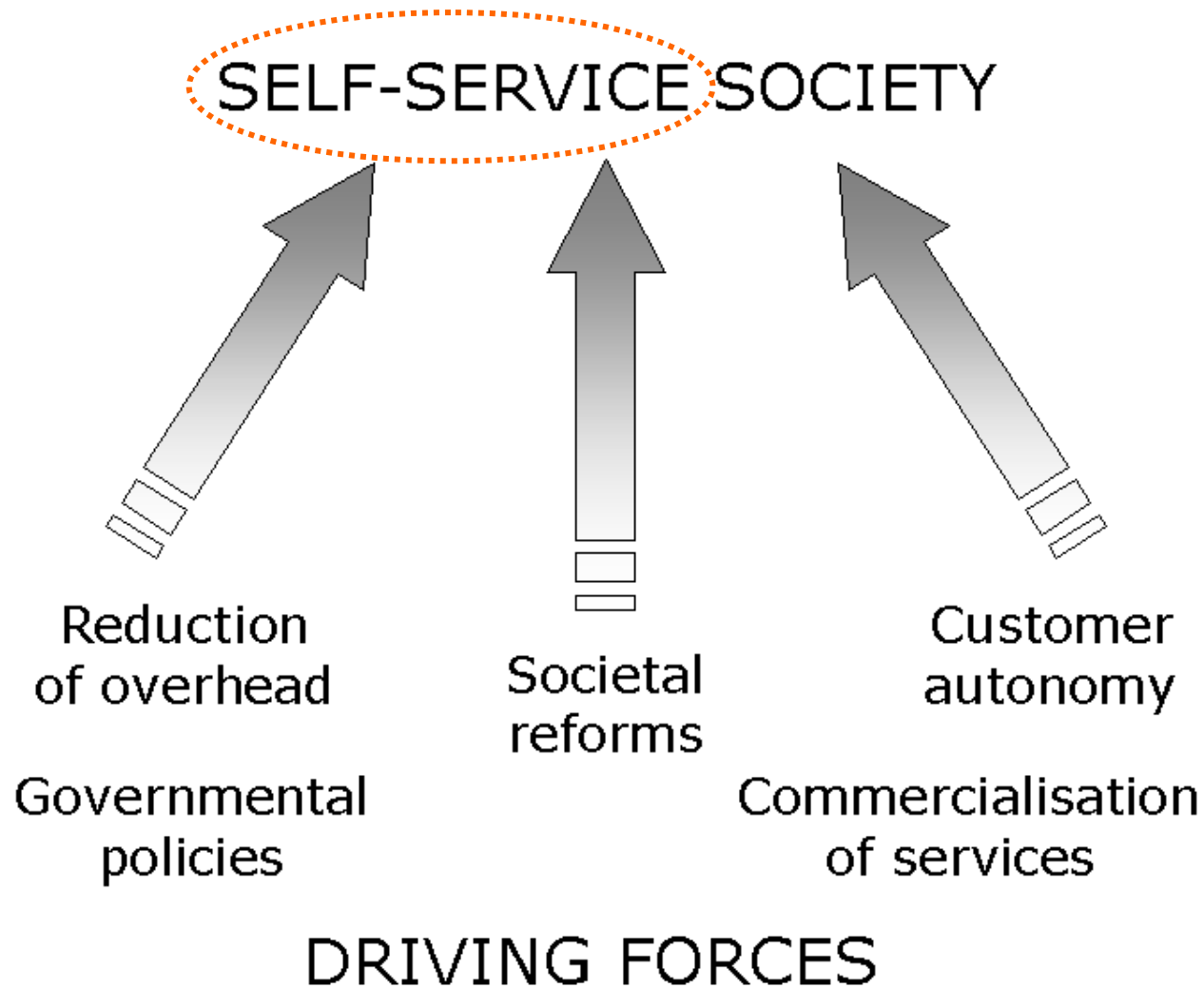
**OSIRIS-projects**

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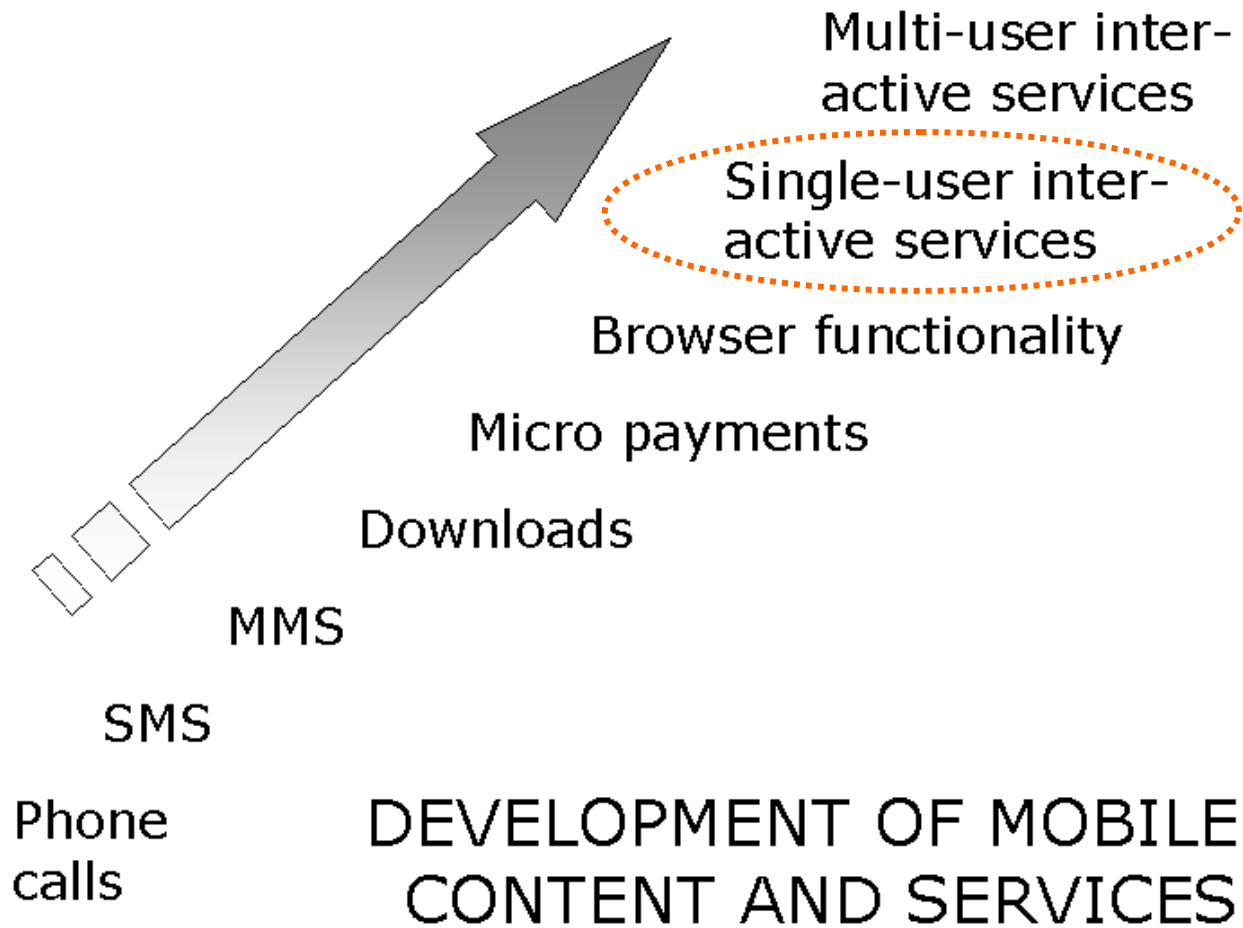
HCI International 2007, Beijing

Mobile Interaction and Universal Access, Friday 26.7.2007

# Trend 1



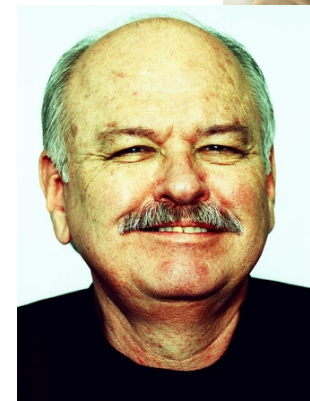
## Trend 2



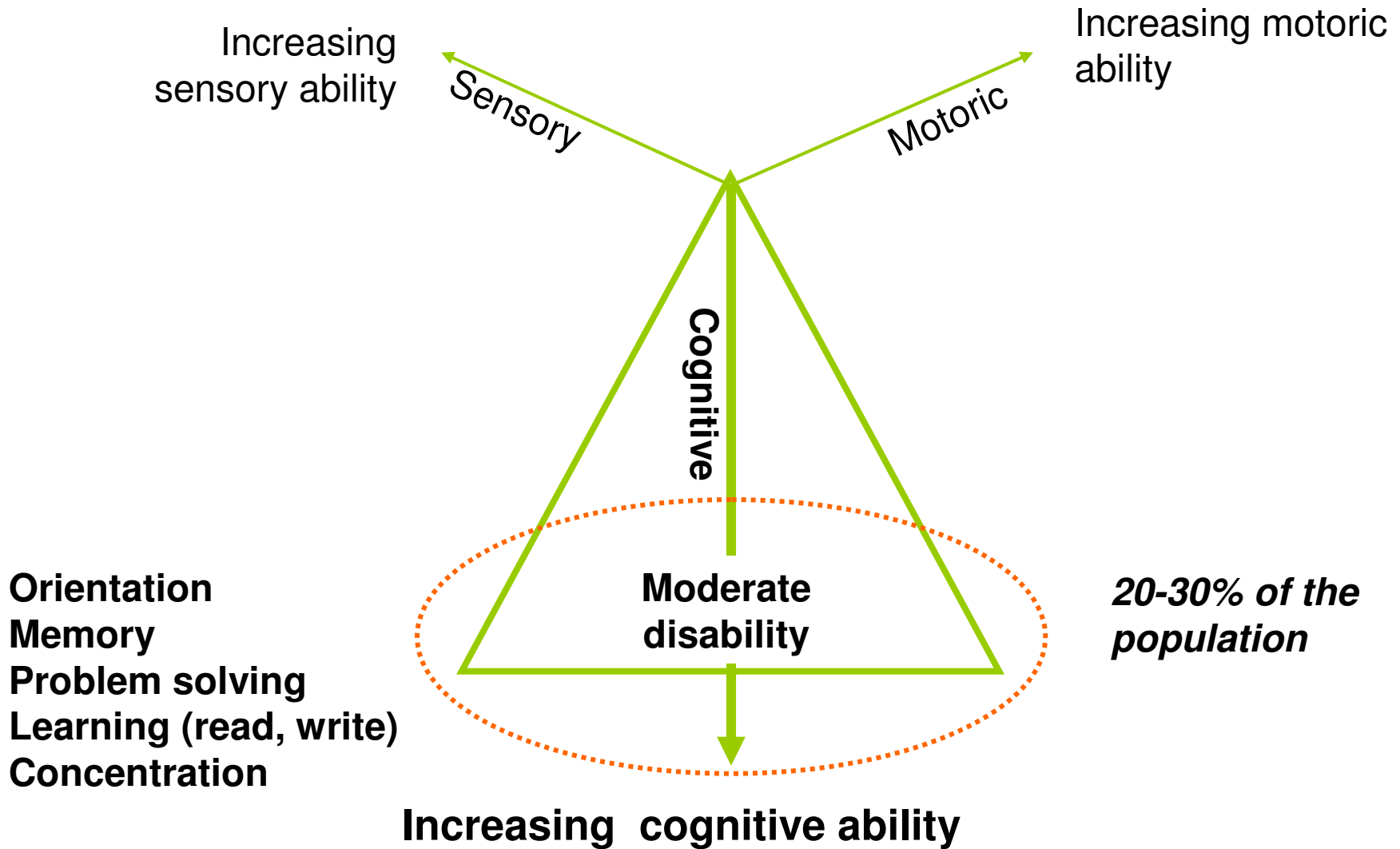
# Trend 3

## CHANGES IN DEMOGRAPHY

- In developed countries 20% of today's population is 60 years or older
- By 2050 the proportion is projected to be 32% (OECD)
- Age exerts a strong influence on computer use
- Negative association between age and cognitive skills/abilities



# Target group (!)



# Focus

- Usability and accessibility of services (content) on mobile phones
- Cognitive accessibility problems of particular concern to elderly and people with disabilities
- Point of departure
  - Principles for Universal Design \*
  - The design of products, environments, and communication to be usable by all people, to the greatest extent possible, without adaptation or specialized design.
  - \* Center for Universal Design, College of Design, North Carolina State University
  - Several other accessibility guidelines (“all similar”)

# Design guidelines for mobile phones

Synthesis of existing guidelines, resulting in guidelines relevant to mobile phones and legal case management for cognitively disabled users:

- Navigation and work flow
- Errors
- Search and queries
- Input/output-techniques
- Time
- Text and language
- Voice and sound
- Graphics
- Figures and numbers
- Help and information



[www.tellu.no](http://www.tellu.no)

# Case: The Mobile Tax Demonstrator

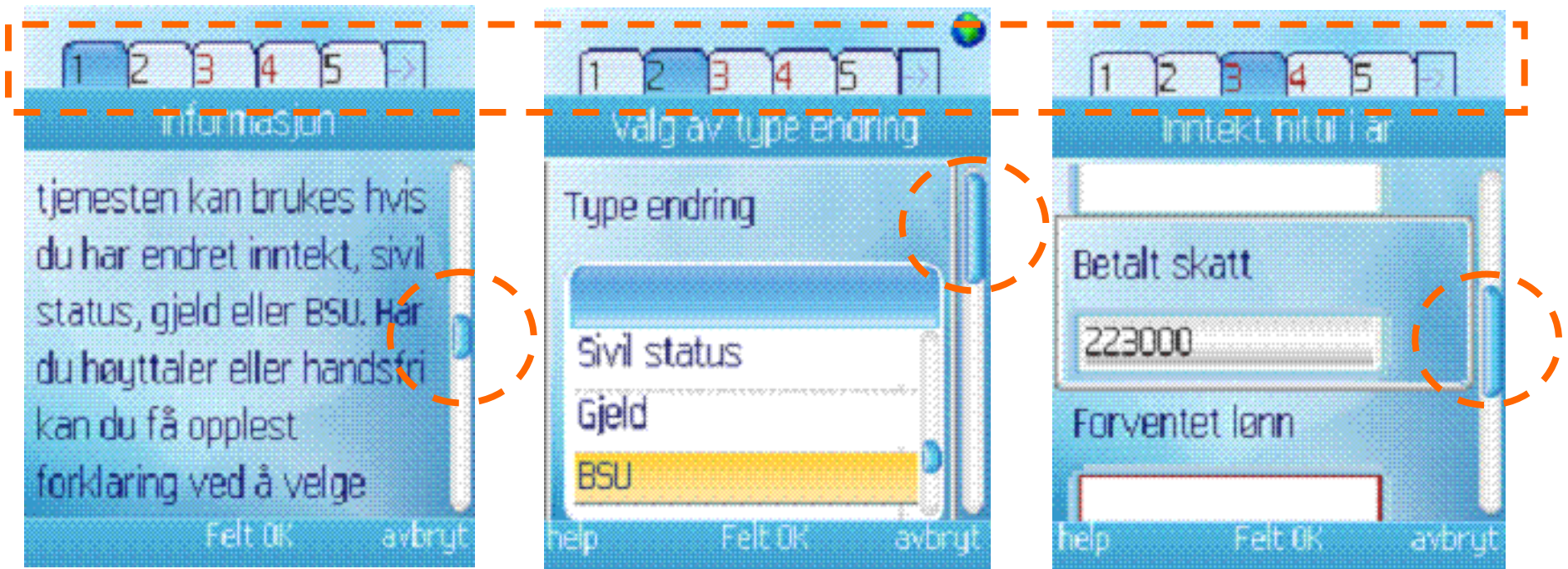
- Functionality for
  - updating information required for tax calculations
  - ordering a new tax deduction card
- Service meant to be used by **all** citizens, including the elderly and disabled
- Provided by the Norwegian Tax Authorities
- Currently available on the Internet
- Developed by [www.tellu.no](http://www.tellu.no)



The screenshot shows a web browser window with the URL <https://skort.skatteetaten.no/skd/skattekort/skattekort>. The page header includes the logo for Skatteetaten (Norwegian Tax Authority) and a "Hjelp" (Help) link. The main heading is "Identitetskontroll" (Identity Control). The text on the page reads: "PIN-kodene finner du på del 3 av skattekortet ditt for 2007, datert 11.12.2006. Hver av kodene kan bare brukes én gang." (The PIN codes are found on part 3 of your tax card for 2007, dated 11.12.2006. Each of the codes can only be used once.) Below this, it says: "NB Du har tre forsøk på å taste inn riktig PIN-kode." (NB You have three attempts to enter the correct PIN code.) and "Bruk PIN-kode 1 fra arket som er datert 11.12.2006." (Use PIN code 1 from the card dated 11.12.2006.) It also states: "Du logges automatisk ut dersom du ikke har klikket på en av knappene innen 40 minutter." (You are automatically logged out if you do not click one of the buttons within 40 minutes.) There is a form field for entering the PIN code, with the text "Tast inn PIN-kode 1 fra arket datert 11.12.2006" and "(5 sifre)" (5 digits). Below the field are two buttons: "Fortsett" (Continue) and "Avbryt" (Cancel). At the bottom, there are links for "linkingskontoret" (Linking Office), "brukerstotte@zergo.no" (User Support), and "personvern" (Data Protection).



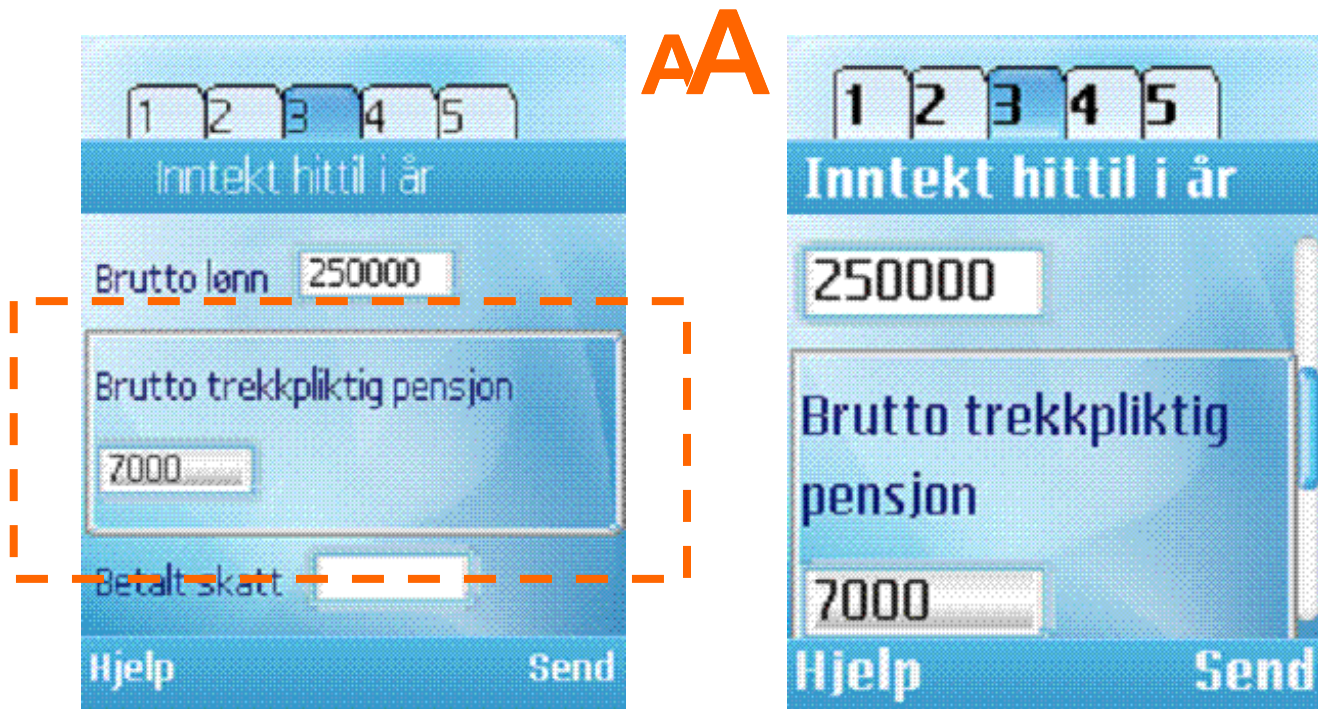
# Examples 1



Task cards and marking of the active card, i.e. the active task, in the task flow.

Scroll bar showing the relative position.

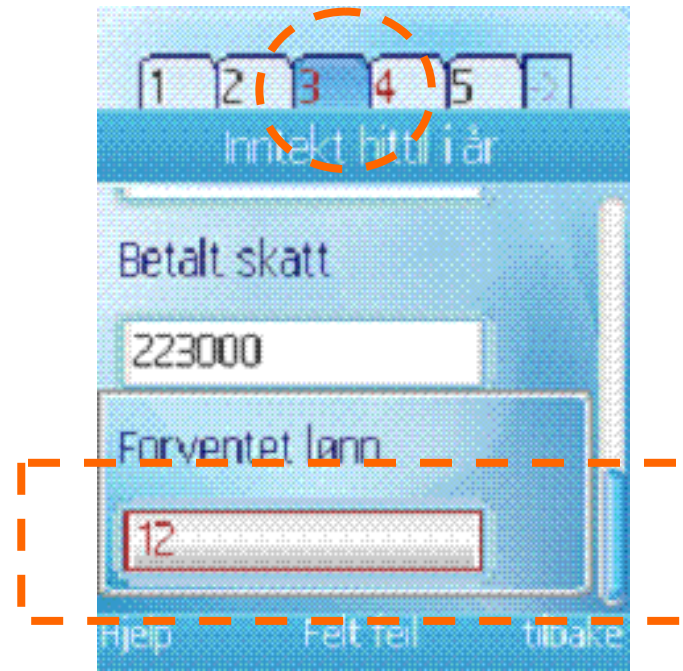
## Examples 2



Changes in the size of the font all over the user interface, or only in selected fields.

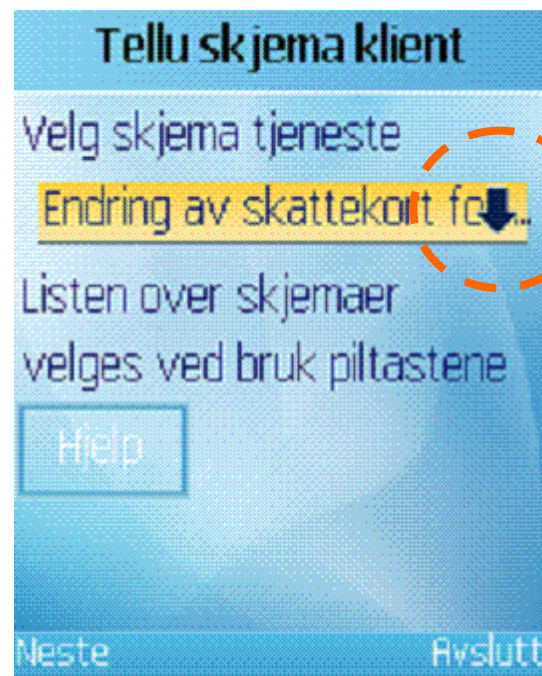
Working area is accentuated by a frame.

## Examples 3



Changes in the colour scheme indicate invalid input (fields containing '12' and, cards number '3' and '4').

## Examples 4



Help texts can be read aloud (multimodality).

Menu and help functionality can be connected both to a physical key on the device, and to an easily operable screen button.

# Conclusions

- Services connected to **legal case management**
- User interface for **elderly and cognitively disabled users**
- Avoiding complexity and visual clutter
- Governmental electronic services as “proof of the pudding”
  
- Next steps (2007-8):
  - Small scale field experiment
  - Large scale field experiment (with real users, i.e. citizens)
  - Production use?

