

The potential of User-Centered Design (UCD) to make radical agricultural innovations

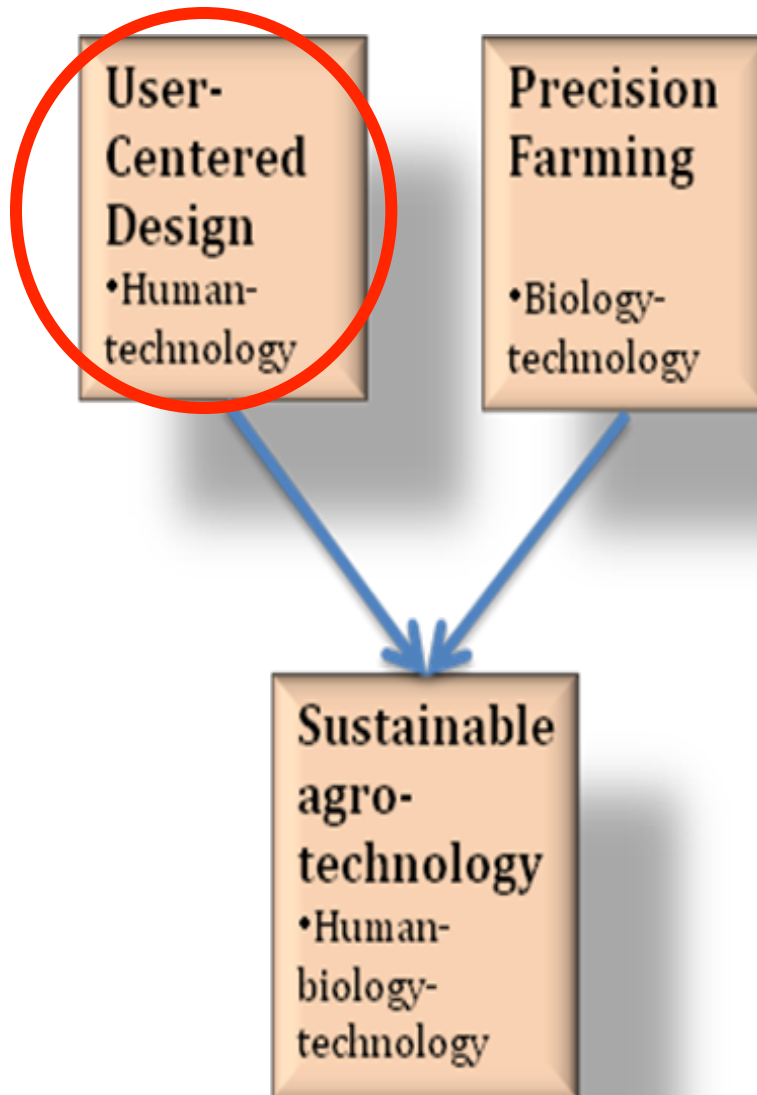
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Background



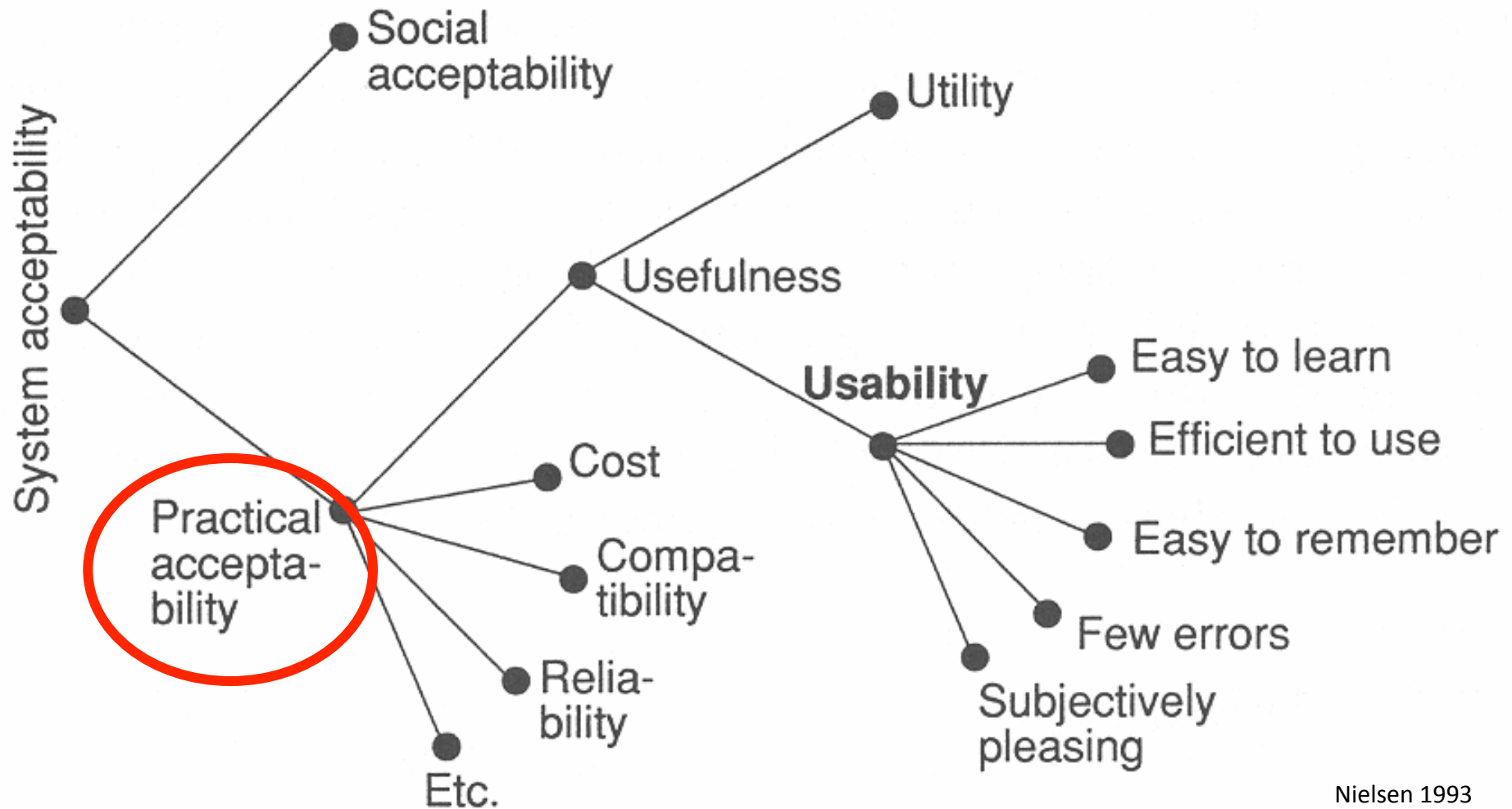
- The speed of innovation is low in agricultural engineering
- New technologies are not widely taken into practical use
- This fact limits sustainability of agriculture
- What can be done to enhance the innovation process?

Sustainable technology



Haapala 2011

Acceptable technology



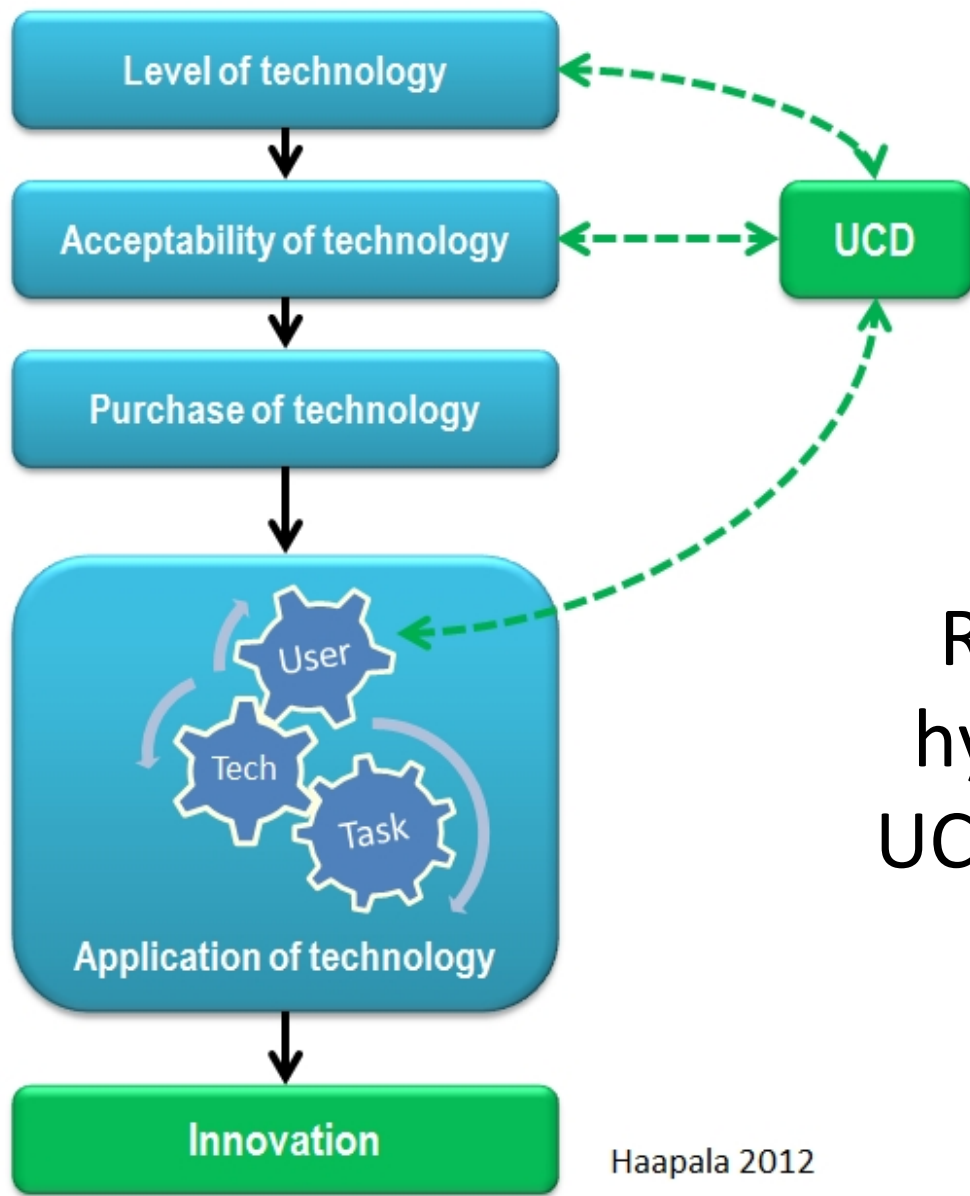
Nielsen 1993

The OECD CRP research



- Topic 'Speeding up Innovation in Agriculture'
 - Sustainable Precision Farming through User-Centered Design
- A Webropol[©] questionnaire for experts
- Interviews of selected experts
- Conclusions for research policy

FIGURE 1. User-Centered Design (UCD) as a tool to enhance innovation (Haapala 2012).



Research
hypotheses:
UCD as a tool

Haapala 2012

Research Question



- How could User-Centered Design help users to adopt new efficient Precision Farming applications? -Creating innovation with UCD.

The Webropol questionnaire



- A. The level of PF technology (Actual – Desired, Now – in 2020)
- B. The application rate of PF technology (Actual – Desired, Now – in 2020)
- C. Acceptability as a challenge in PF (and new agricultural technologies in general)
- D. User-Centered Design: its applicability to agricultural engineering



Results

FIGURE 2. The level of PF technology (scale 1-5).
 Dark bar = 'now', light bar = 'in 2020'.

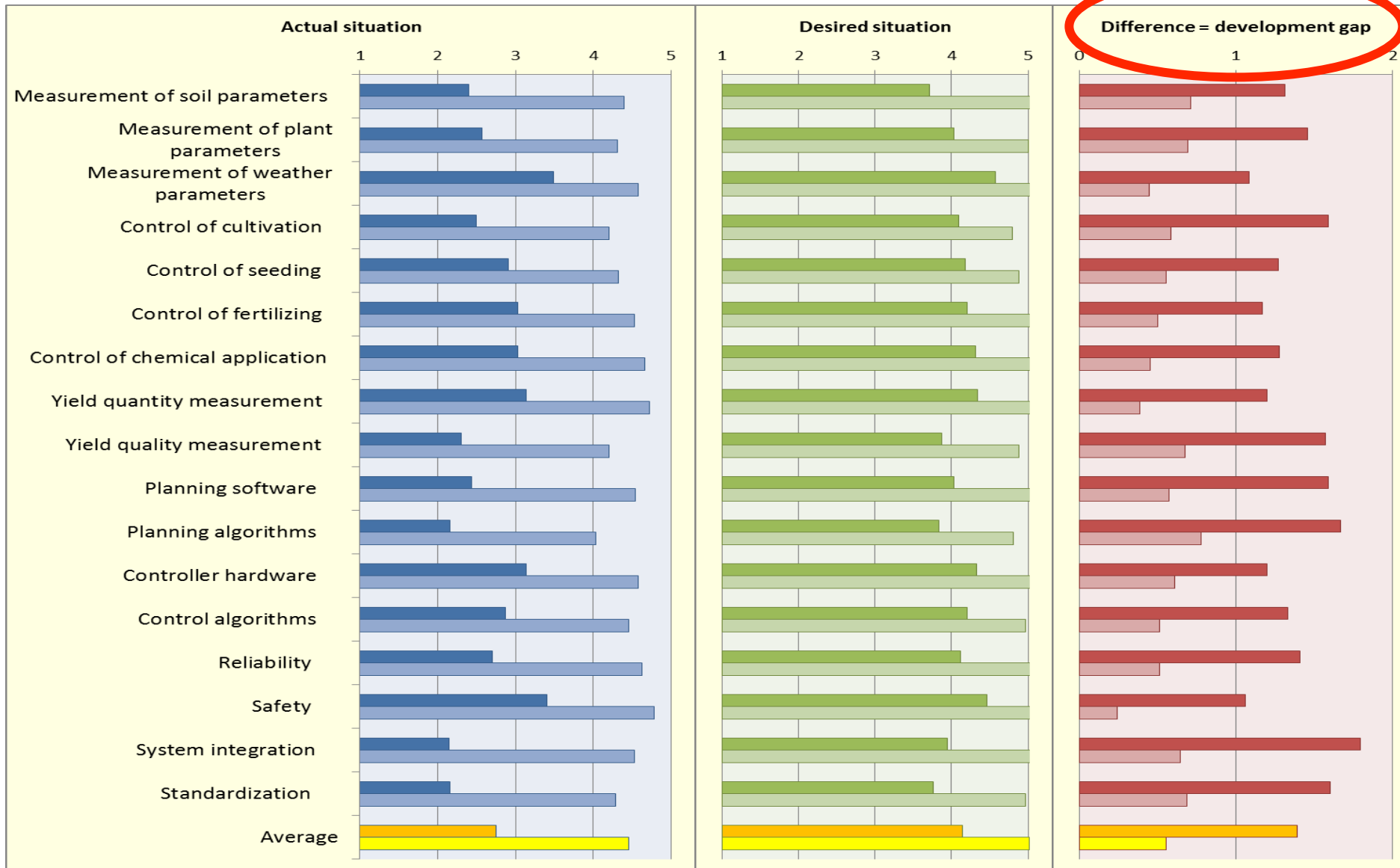


FIGURE 3. The application rate of PF technologies (scale 1-5).
 Dark bar = 'now', light bar = 'in 2020'.

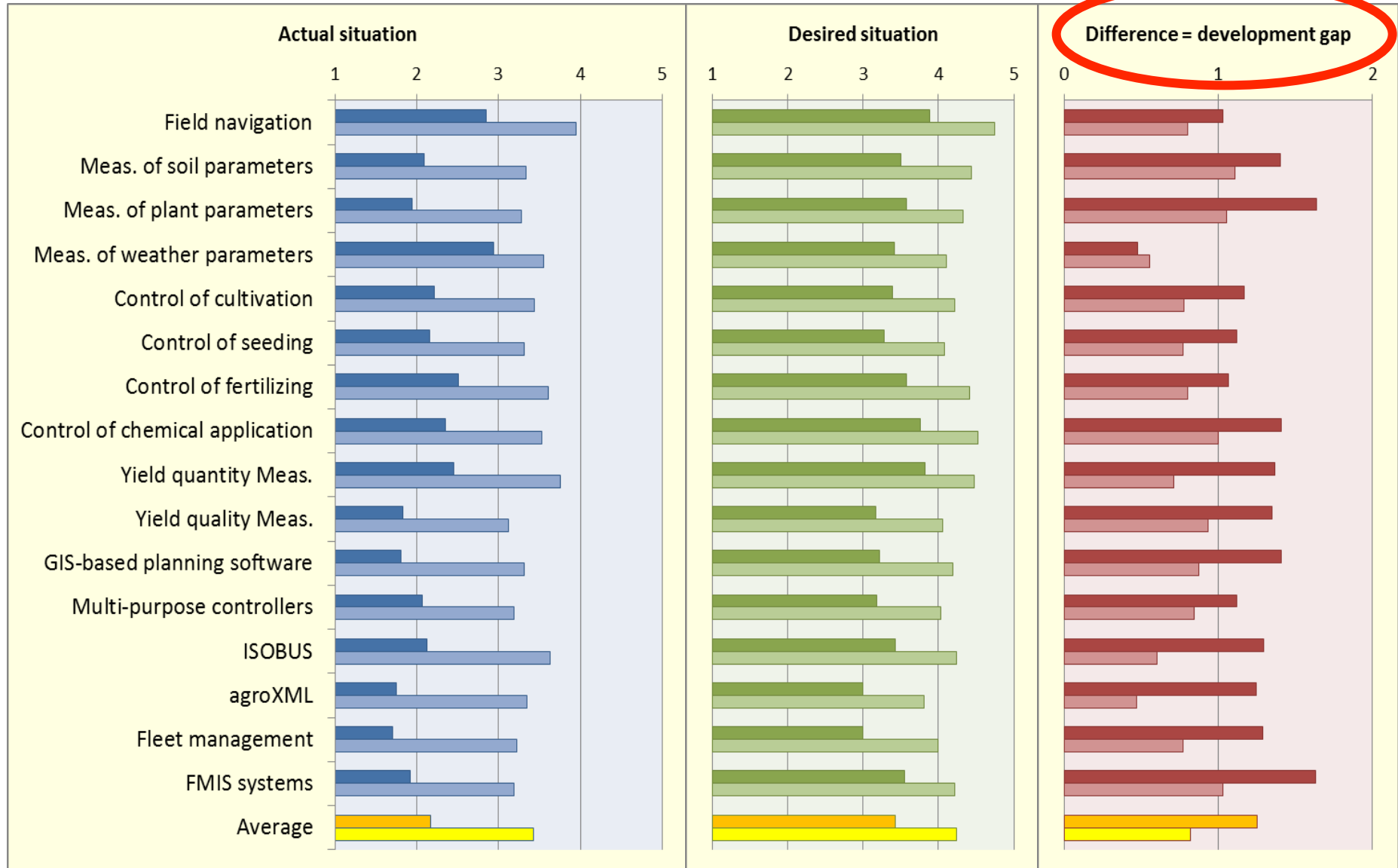


FIGURE 4. Acceptability of PF technology (scale 1-5).
 Modified classes of Nielsen (1993).

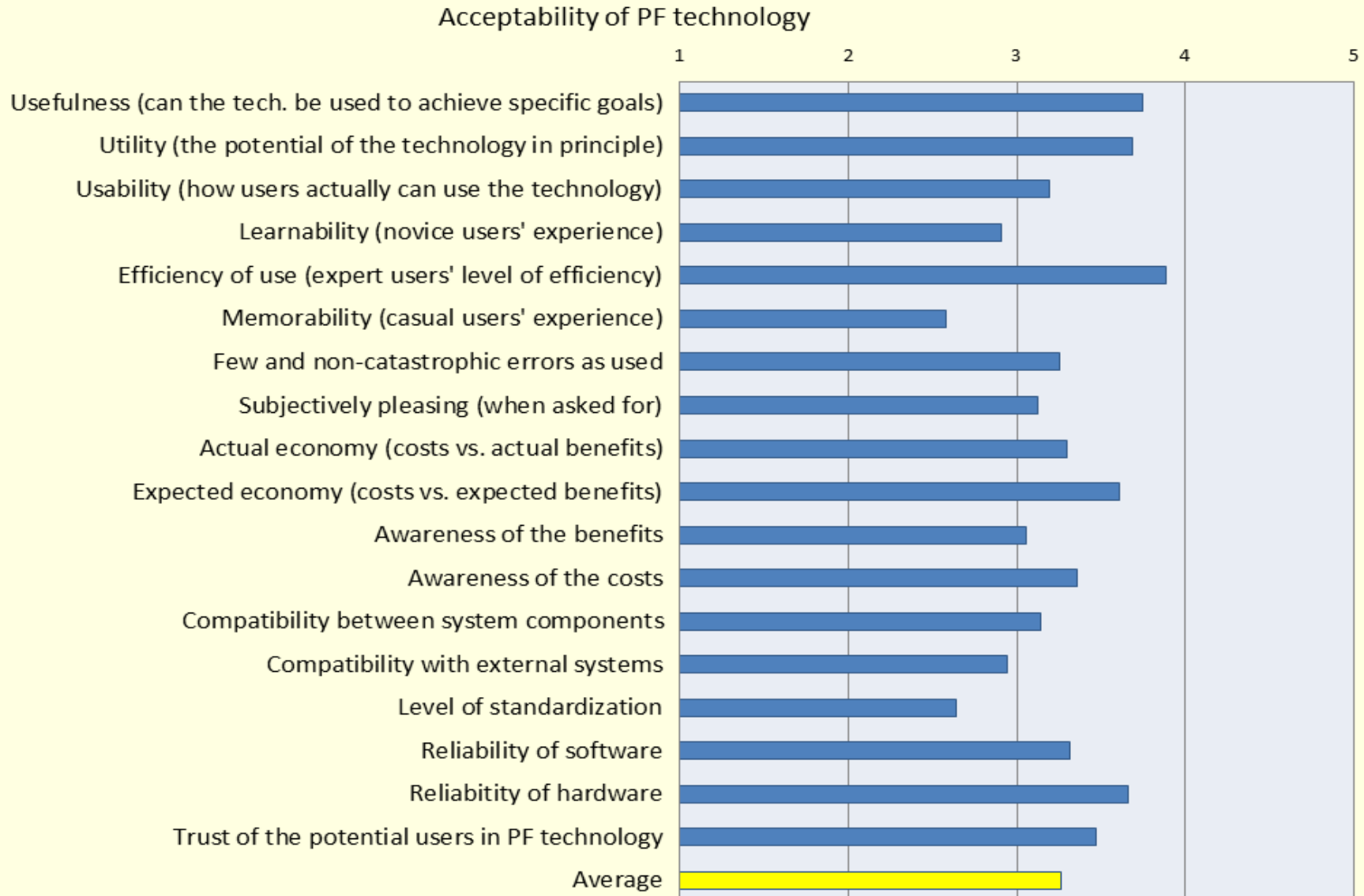
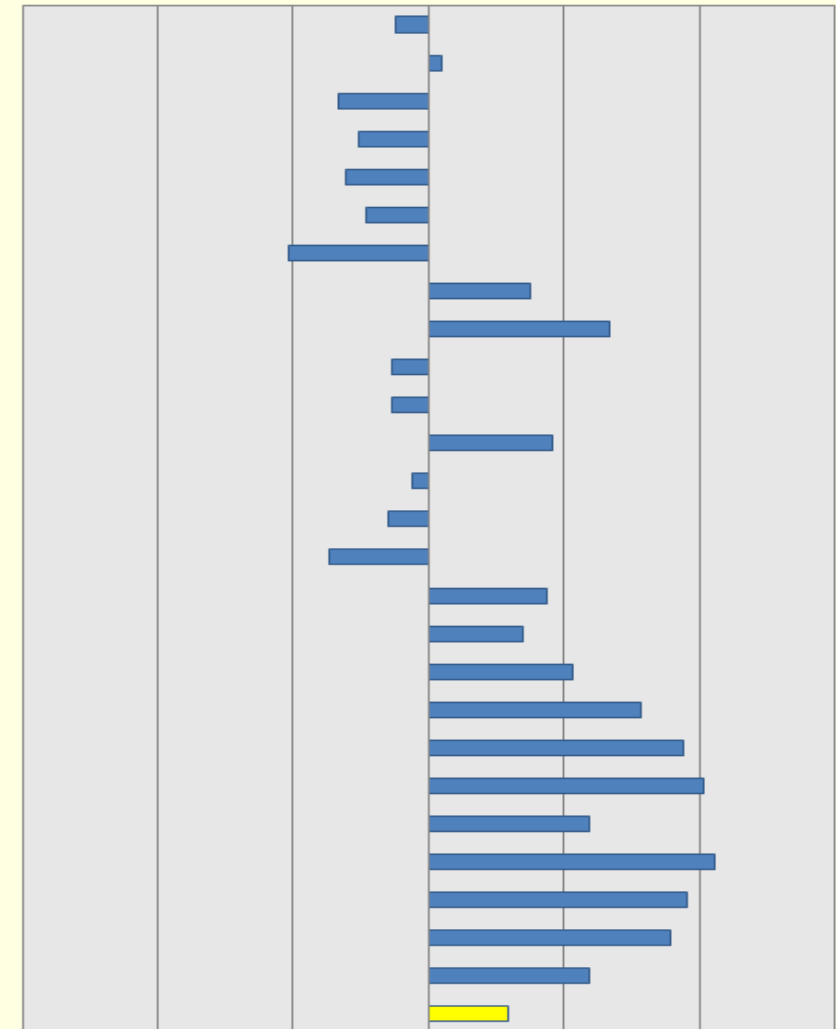


FIGURE 5. Innovation process and UCD in Agricultural Engineering. Arguments (-3=agree, 0= neutral, 3=agree).



Innovation process and UCD in Agricultural Engineering

-3,00 -2,00 -1,00 0,00 1,00 2,00 3,00



Conclusions

How could UCD help users to adopt new efficient Precision Farming applications?



- User-Centered Design (UCD) could speed up the innovation process.
 - If users are more involved in the design process, the products are easier to use and they fit better to their use.
 - The design phase would be shorter because less iteration is needed to design a product.
 - Users also adopt the better usable products easier.

Conclusions...

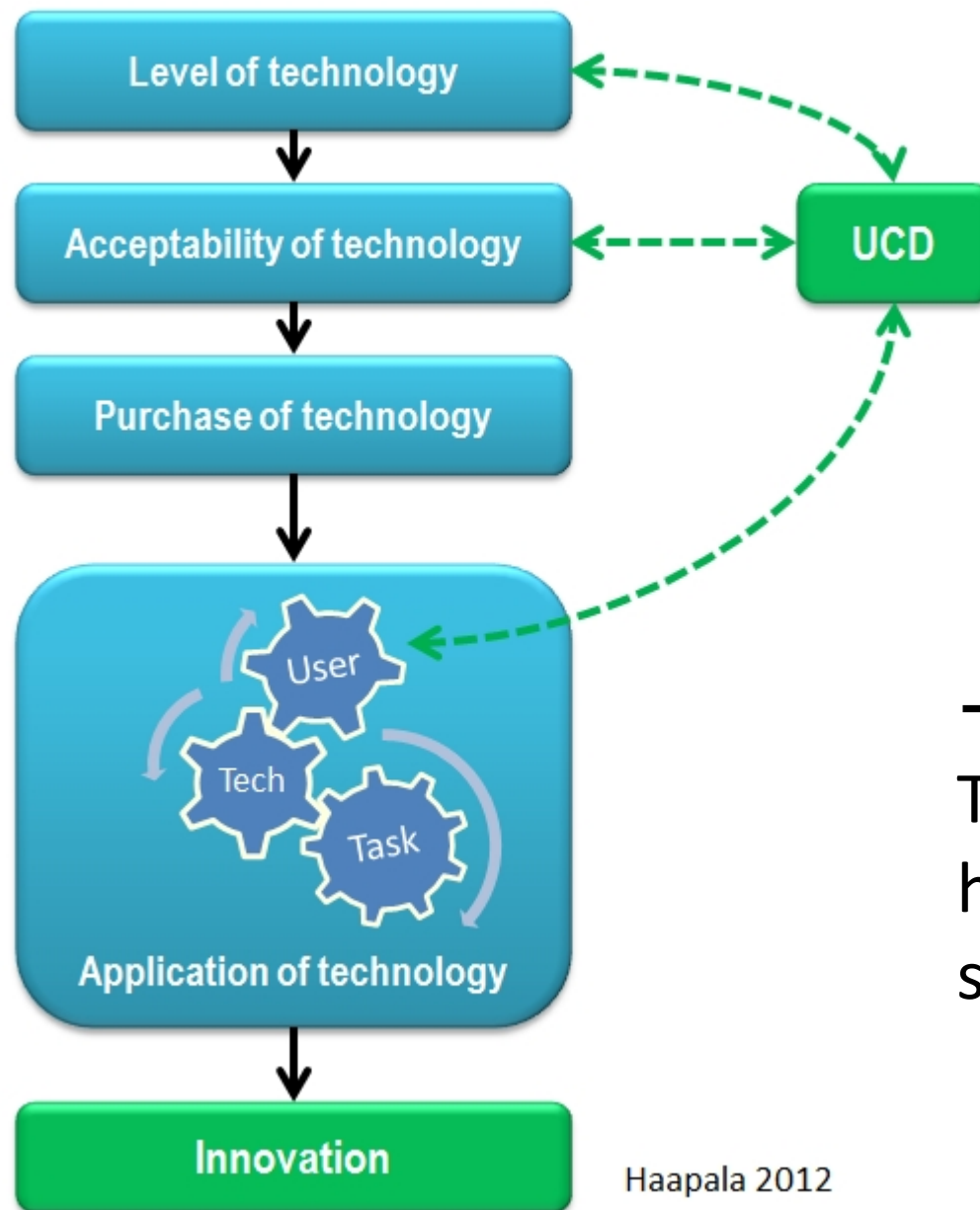


- In the future, research and development should be more directed towards the acceptability of new technologies, including usability and ease of use.
- Innovation in the applications of UCD is needed.

Conclusions...



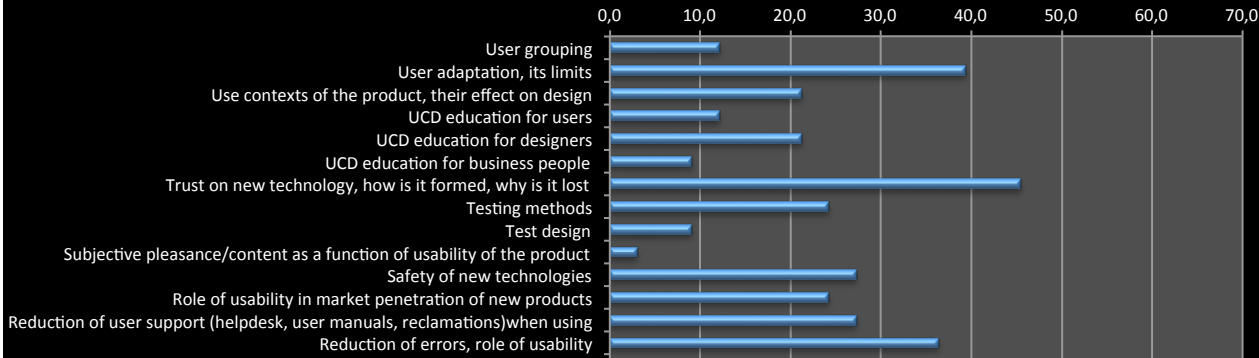
- Education topics are found in UCD methods and practices for designers.
- Eventually,
 - the users should be activated *to demand for better products.*



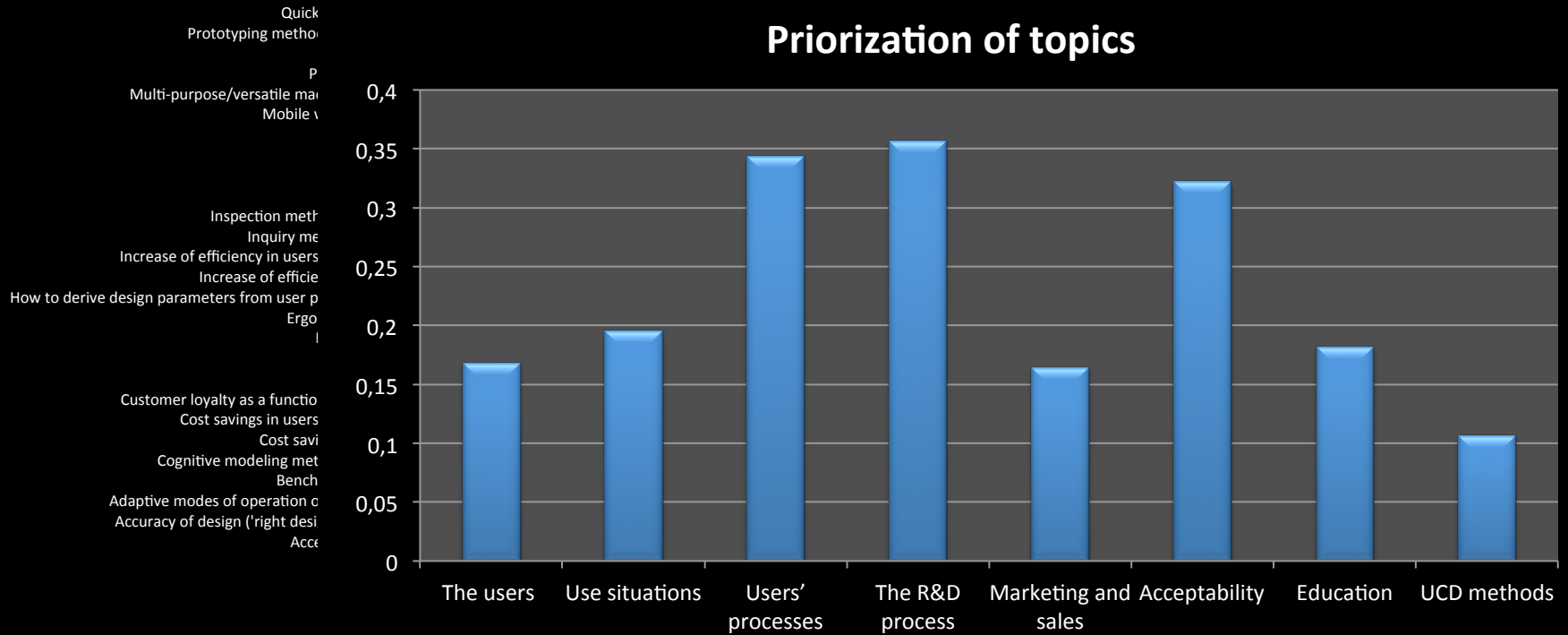
Haapala 2012

→
The research
hypotheses got
support

Priorization of topics



Priorization of topics



Acknowledgements



- OECD Co-operative Research Programme awarded me the Research Fellowship and related funding
- IVIA, Valencia Spain / prof. Florentino Juste Perez acted as a fine host for me during the fellowship
- Seinäjoki UAS gave me a five-month leave from the job of Research Director
- Development Fund of Seinäjoki Joint Municipal Authority for Education gave funding for my leave period

Thank you!

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