Inclusive design for ICT – utopia or reality?

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Before we start, an activity

Smart phones
Where would you put the three phones?
Upmarket
Professional
(more difficult to use)
Affordable
Easy to use

What triggered this talk

Business
Chinese-made car now world-class, says Peugeot

"Only local Chinese can get a sense of what consumers really want here," said Apode, who believes cars designed by Chinese will be sold in Europe and the US in the future.

"That's the reason we built the centre in China."
A talk in three sections:

1. The challenge of inclusive design for ICT
2. Cases from the real world
3. Conclusions about innovation processes
Political objective: e-inclusiveness

All kinds of ICT

Political objective: avoid exclusion

The size of the challenge

What are the needs?

Needs Approach Benefits Alternatives

17% Viewers born deaf or have hearing impairment

Viewers who are blind or have visual impairments
## Needs

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### The legal framework is in place

[Enable: Rights and Dignity of Persons with Disabilities](https://www.un.org/enable)

#### LATEST DEVELOPMENTS

- Ratifications of the Convention and its Optional Protocol
- Signatures of the Convention and its Optional Protocol
- Map of Signatures and Ratifications
- 143 signatories to the Convention
- 87 signatories to the Optional Protocol
- 75 ratifications of the Convention
- 48 ratifications of the Optional Protocol

#### Case 1

**Designing Smartphones**
Case 1: Designing smartphones

Globally, the mobile phone market shows sluggish growth this year, except for smartphones.

Testing for learnability and usability

Perceptive Sciences designed the test to be as objective as possible, according to senior research scientist Tim Thornton and research scientist Tim Bolliver. That's particularly important, they said, because of the high level of attention iPhone has received; it would be easy for that hype to influence the results of more subjective tests.

The company brought in 10 testers who had never used any of the three devices. It then asked the testers to perform a series of tasks on each device with specific directions, such as the text is not needed to find and use the contact list. Other tasks included setting the phone to vibrate, making a call, saving a phone number to the contact list, sending a brief e-mail, taking a photo and finding a Web site using the device's built-in browser.

Based on the test results and on Thornton's and Bolliver's observations, each phone was given a score of between one and five (five being the highest) in each of five categories. In addition, each phone was given an overall score.

It's important to remember that these are usability tests, not tests of functionality. Perceptive Sciences took a broad look at the features on each phone, but largely as they related to usability. For instance, the Nokia N95 is justly famous for its atoms feature set. But did that feature set contribute to overall usability, or detract from it?

It's also important to remember that the tests focused on how easy it was to pick up the device and use it right out of the box.

"People can eventually learn to use any device," Bolliver said. "But that's not true usability. We wanted to see how long it took to figure out how to use the phone. That's the difference between learnability and usability."

The results

Left is cut to the bottom line. In terms of usability, iPhone blew away its two competitors. Its overall score in the usability tests was 4.9 out of 5. The HTC Touch was a distant second at 3.4, and the Nokia N95 scored 3.2.

*Testers were [typically] about twice as fast doing specific tasks on the iPhone, which is pretty remarkable," Thornton said.

Here is a presentation of how each device scored in the five non-mutually-overlapping categories, along with comments from Bolliver and Thornton.
Perception mapping: smart phones

Upmarket

Professional

Easy to use

Affordable

Perception mapping: smart phones

Upmarket

Professional

Easy to use

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Perception mapping: smart phones

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Perception mapping: smart phones

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Case 2

Advanced Technologies and Hearing Aids

Pre-competitive R&D among Danish players aids R&D efficiency

Case 3:

Designing digital TV to be inclusive
### What can we do today?

**+2% production budget (maximum)**

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**Needs**
- Viewers born deaf or have hearing impairment
- Viewers who are blind / have visual impairments
- Young viewers of foreign language programmes
- Viewers of programmes in foreign languages

**Approach**
- Signing and subtitling
- Dubbing or voice-overs (lectoring)
- Audio description (AD) or spoken subtitles

**Benefits**
- Greater accessibility
- Improved understanding

**Alternatives**
- Additional budget allocation
- Collaboration with deaf and blind communities
- Use of sign interpreters
What can we do today?

Immigrants

Subtitling in major immigrant languages

Viewers of programmes with colloquial or fast language

Same language subtitles

Needs                  Approach Benefits            Alternatives

What can we do tomorrow?

WHAT
• Clean up the sound
• Spoken EPGs
• Spoken subtitles
• All access services opt-in

HOW
• Signal processing in TV
• Speech synthesis in TVs
• Speech synthesis in TVs
• Use the TV + broadband

But doesn’t it cost too much?

• For films and major TV productions, adding subtitles and Audio Description costs less than 2% of the total production budget.
• Adding speech synthesis cost about USD2 in components
How to progress? The big picture

The blind priests/men and the elephant

Rounding off

1. What is the challenge?
   • Designing to include social groups and people with impairments

2. Case studies
   • Apple I-Phone, WTC and Nokia smartphones
   • Intelligent hearing aids
   • Digital TV receivers/personal video recorders
   • Mobile TV - technology in search of a market?

3. Conclusions
   • Innovation is more than technological superiority
   • Some niche markets are big, if you work globally
   • Creative clusters for pre-competitive research seems to pay for itself
   • Designing for and with the product’s users is a must

Thank you!

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