

# Making accessible mobile devices a reality

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Presentation for The Caring Mobile – 16th July 2008

# Overview

- What have we done so far?
- What are the barriers?
- What do we have to do now?
- Why include and why it goes wrong
- Work performed within Europe
- An evaluation methodology for mobiles

# What have we done so far?

- Recognise cultural significance of the mobile phone/device
- Understand potential usefulness to people with disabilities
- Ensure accessibility through standards
- Support technologists to find practical solutions

# What are the problems?

- Difficulty just getting a phone with access technology
- Viability of magnification on tiny screens
- Just too "techie"! The 49%
- Touch screen and other ergonomic issues

# What do we have to do now?

- Wireless delivery of content
  - Books, magazines, podcasting
  - "a portal"
- Wayfinding
- Where is the technology going?
- The cost is still prohibitive!

# We are only human!

- Some people may not be able to:
  - See visual information
  - Hear audio information
  - Reach objects
  - Operate small controls
  - Hold objects for even short periods
  - Walk very far
  - Go up and down stairs
  - Understand information or signs
- These capabilities makes designing a challenge!

# Blind and partially sighted people

Limited user experience by:

- Graphically User Interfaces without speech
- poorly designed product exteriors
- Visual only alerts (information)
- Matrices/grids
- Legibility of information

# Challenges

- Disabled people likely to have a secondary disability
- It is likely that an elderly person has some or all of these factors
- Elderly people often do not identify themselves as “blind” or “deaf” but see it as a result of getting older.
- Very difficult to engage with elderly people

## Why include?

- Promotes
  - independent living
  - Promotes freedom of choice
- An “inclusive product” is more usable by everyone
- Over 55's have the most disposable income in the UK
- Population as a whole is getting older.

# Why does it go wrong?

1. This design is satisfactory for me - it will therefore, be satisfactory for everybody else.
2. This design is satisfactory for the average user - it will therefore, be satisfactory for everybody else.
3. The variability of human beings is so great that it cannot possibly be catered for in any design - but since people are wonderfully adaptable it doesn't matter anyway.
4. Ergonomics is expensive and since products are purchased on appearance and styling, ergonomic considerations may conveniently be ignored.
5. Ergonomics is an excellent idea. I always design things with ergonomics in mind - but I do it intuitively, and rely on my common sense so I don't need tables of data.

Pheasant (1986)

# COST 219ter: Accessibility for all to services and terminals for next generation networks

“to increase the accessibility of next generation telecommunication network services and equipment to elderly people and people with disabilities”

- Canvassed test houses of Europe
- Identified useful evaluation methods
- Toolkit designed and validated
- Book published “Towards an Inclusive Future” (2007)

# What is the Toolkit?

- A detailed checklist which pinpoints the key accessibility issues which could stop a disabled person from using the phone.
- Toolkit has two aspects:
  - Hardware
  - Software (firmware/operating system)
- Contains detailed information
- Intended for manufacturers
- Provides
  - clear guidance
  - Pass/fail system

# Validation study

- Aim
  - To determine whether the Heuristic guidelines on mobile phone accessibility match what end users say they need in order to have an accessible mobile phone.
- What was involved?
  - Expert evaluation (using the toolkit)
  - End user evaluation
  - A comparison of the results to determine:
    - If the results matched and the extent of any matches
    - If any points had been missed



supporting blind and  
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# Interesting results

- **Customisation**
  - Users wanted to move menu items around
  - 50/50 split between whether to display the menu as a grid format or as a list format
  - Customise the buttons that allow shortcuts
- **Overall**
  - The results highlight the need to make the operating system of the phone highly customisable
  - Participants could do more with the phone than they thought they could

# Conclusions of the work

- Majority matched end user opinions
- Included new checkpoints identified
- Provide consultation period

# Hardware principles

These checkpoints cover:

- Product orientation
- Printed and non printed visual information on the product (e.g. text, symbols, colour and contrast, LED's)
- Buttons, switches, dials, joysticks, connectors, sockets, battery, SIM, and memory
- Tactile information
- Audible information
- Improving ease of use
- Compatibility
- Instructions and Packaging

# Software principles

These checkpoints cover:

- Interaction (e.g. with voice/tactile input and visual/audible output)
- Optimising and personalising the input/output method
- Optimising flexibility
- Designing easy to understand menus
- Intuitive prompts and feedback
- Error prevention and recovery
- Connectivity and compatibility with other devices/software
- Task completion

# The mobile phone – next generation?

- Handset design
  - More inclusive design
  - Increased usability and accessibility of devices
- Increase in smart phones
  - All in one device
  - Not all Symbian based
- Connectivity
  - Communicating with environment

Thank you

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