Rebranding of assistive technology: towards social acceptance of AT products

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Assistive Technology product design: Towards an optimised methodology

George Edward Torrens

ALT2012
1st DMU Assisted Living Technologies workshop
20th November 2012
This lecture draws upon 25 years experience working with people who have impairments and live with disability.

The lecture highlights the scope of the issues facing those with impairment or disability within current UK society; the challenges facing designers in this field relating to user acceptance of AT products provided; and, the associated stigma. The reasons behind the lack of social acceptance for Assistive Technology (AT) products are explored through values, beliefs and doctrines.

The context of AT products are defined within a user-centred new product development (NPD) process. The viewpoint of the user, associated stakeholders and a wider UK society are described, along with their associated preferences. The generic mechanisms of perception and emotional response to a product are discussed and mapped onto the given process. The semantics of words images and forms are shown to be critical influences on the perception of an individual and society.

The lecture provides an example process and design tools that has been practically applied through many successful AT product developments. Further examples of current Finalist student product designs will demonstrate some of the principles described. The process described uses a combination of conventional evidenced-based NPD alongside specific methods of the manipulation of perception and semantic meaning. Design tools such as value web-diagrams, technology footprint, iconography and product DNA are demonstrated within the NPD examples.

In conclusion, the expansion of the market is discussed and demonstrated through changing perceptions and responses to an AT-focused product using alternative words and forms to emphasize ‘enhanced living’.
Introduction

Practical experience of AT product design (1986-present)

- What are the issues for people living with impairment and disability?
- What is Assistive Technology?
- Challenges facing AT designers
- A way forward: methodology
- Rebranding AT products: Semantics and social value
- Expanding the AT market: convenience not assistive
What are the issues for people living with impairment and disability?

- **12 million people** of state pension age.. almost **1 in 5** of the UK’s total population (National Statistics Office 2010)

- Nearly **14%** of the UK population are registered as disabled, **(over 1 in 10)**
What are the issues for people living with impairment and disability?

Systemic and endemic discrimination (Barnes 1995)
- Social discrimination (despite the Equality Act, 2010, UK)
- Medical model and treatment reinforces segregation
- Doctrine of human adaptability and fixed environment
- Social model (late 20th Century - early 21st Century)

Reasons
- Innate behaviour: weak/ill members disassociated from the main group
- Perception: disability = weakness - leading to social stigma

Inclusivity
- Social integration
- Change perceptions
- Change behaviours
- Education and awareness
- Change environments
What is Assistive Technology?

**Assistive Technology**
Enabling a person to achieve
*Normal Activities of Daily Living (ADL’s)*

*Note: ‘Normal’ only appeared in the English dictionary in 1884 (Barnes 2011)*

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Seven principles of Universal Design:

- Equitable Use;
- Flexibility in Use;
- Simple and Intuitive Use;
- Perceptible Information;
- Tolerance for Error;
- Low Physical Effort; and,
- Size and Space for Approach and Use
## What are the Challenges facing AT designers?

### Challenges

- Limited funding for purchase or R&D
- End user vs. stakeholder as purchaser
- Fragmented, niche markets (perception)
- Additional risk with limited return (medical prices)
- Demanding market

### Opportunities

- Effective methods to define market needs and aspirations
- Identify key budget and stakeholders
- Identify similar or comparable needs and aspirations within other markets
- Rigorous design practice (ISO 9000)
- All markets are demanding
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A way forward

LAT-UCD methodology: Semantics and Social value

[Diagram showing the LAT-UCD methodology process]
A way forward

**LAT-UCD methodology:** Semantics and Social value

Source: Torrens, 2011
A way forward

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A way forward
LAT-UCD methodology

User; Task; Environment

- Empathic modelling (replicating the physical elements of a medical condition)
- Mixed methods research (quantitative/qualitative)
- Product/cultural probes
- Ethnography (lifestyle specification)
- Personas (lifestyle description/definition)
- Product champion (user/stakeholder)
- Co-design (close iterative cycles of user/designer development)
- Predictive modelling
A way forward
LAT-UCD methodology: Semantics and Social value

- User product champions and stakeholders (Mapping scope and context)

Source: Torrens & Black 2011
A way forward

LAT-UCD methodology: Semantics and Social value

- User product champions and stakeholders (Mapping scope and context)

Source: Torrens & Black 2011
A way forward

LAT-UCD methodology: Semantics and Social value

User; Task; Environment

- **Product semantics** (meaning of colour form texture, sound, movement)
- Define and manipulate **social value** through evocative stimuli: User experience (UX)
- Define and manipulate semantics through **visual disassembly** of AT product and those for association
- Define AT product DNA (Storer 2011) and for product association
- Offer alternative stimuli to evoke desired response
- Apply Jordan’s ‘four domains’
A way forward

**LAT-UCD methodology: Semantics and Social value**

**User; Task; Environment**
- Product semantics
  - Use Marr’s theory of computational theory (1990) to disassemble objects into visual graphemes and phonemes

**Product DNA**
- Match persona to desirable attributes for rebranding

**Social value**
- Change weakness in alternative form of strength (Body/persona modification)

**Rebrand**
- Alternative stimuli to evoke desired response using above elements

**Source:** Storer, 2012
A way forward

LAT-UCD methodology: Semantics and Social value

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**LAT-UCD methodology:** Semantics and Social value

**User; Task; Environment**

Product semantics: Technology footprint

- Minimise visual area of technology over the person (Black/subdued colour, minimise physical structures)
- Customise to persona (Combine with clothing accessories)
- Emphasise conventional/normal human outline/profile (Marr’s theory of perception)
- Highlight/apply familiar iconography colours and textures within current mainstream society

Source: Torrens 2011
A way forward

LAT-UCD methodology: Semantics and Social value

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Designer: George Torrens
Leics & Rutland REMAP
A way forward

**LAT-UCD methodology:** Semantics and Social value

*User; Task; Environment*

*Product semantics: Customisable prostheses*
A way forward

LAT-UCD methodology: Semantics and Social value

User; Task; Environment
Product semantics: Customisable prostheses
A way forward

LAT-UCD methodology: Semantics and Social value

User; Task; Environment

Product semantics: Customisable prostheses
A way forward

LAT-UCD methodology: Semantics and Social value

User; Task; Environment

Product semantics: Customisable prostheses

Designer: Scott Allen
Expanding the AT market

Marketing

User; Task; Environment
Identify needs and aspirations in other markets: Hearing enhancement system

Assistive Technology

Inclusive

HQ Audio
White noise Generator
Mobile phone
Ear defender
Jewellery

Designer: Alex Roper

Loughborough Design School
Expanding the AT market

Marketing

User; Task; Environment
Identify needs and aspirations in other markets: Hearing enhancement system

Assistive Technology

Inclusive

- HQ Audio
- White noise Generator
- Mobile phone
- Ear defender
- Jewellery
- Hearing Aid

Designer: Alex Roper
A way forward

Research and design methods
A way forward
Research and design methods

- Time
  - Expand investigate
  - Research
  - Choices focused
  - Challenging conventions
  - Optimum compromise
  - Design solution
  - Design development
  - Product Design Specification
  - Resources
  - Evaluation Reflection

- Other applications for physical and social function
- Wider market
Future challenges
Changing perceptions How do we:

- Make AT products and associated impairment socially acceptable
- Make society and each of us more inclusive in viewpoint
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Dame Tanya Grey-Thompson, Paralympian
Future challenges
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Dame Tanya Grey-Thompson, Paralympian
Apl.de.ap, Rapper, Black-eyed peas
Thank you

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