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# Capturing user requirements

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## Benefits

- It is well established that products, systems and services that are well matched to the requirements of their users will be:
  - more effective
  - safer
  - more likely to be used
  - more accessible
  - more acceptable
- than those which are not
- Yet there continue to be many examples of failure to meet user needs

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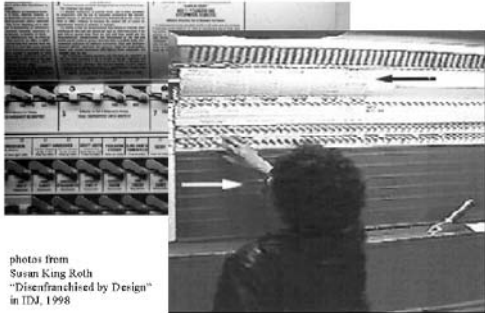
## The price of failure

- Failure to meet user needs is costly
- For example, it can lead to:
  - wasted development time and resources
  - fewer sales, lower take-up
  - problems and accidents
  - dissatisfied users and customers
  - high support costs
  - etc.



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## Failure to meet user needs – an example



photos from Susan King Roth "Disenfranchised by Design" in IDJ, 1998

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## Challenges

1. Identifying who is the user
2. Capturing their requirements
3. Designing products, systems and services that meet these

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## User diversity (1)

- In the early days, computers were mostly used within companies and research labs
- The people who used computers were easy to identify and were often highly trained specialists






### User diversity (2)

- Now, anyone almost anywhere is likely to be a user of digital technology









### User diversity (3)

- ICT users vary across multiple dimensions, e.g.
  - ability
  - access
  - age
  - education
  - income
  - location
  - motivation
  - support
- And there may be other stakeholders who have requirements too




### Stakeholders

- Consider an example – e.g. a new telehealth application for monitoring diabetes
- Primary users – people with diabetes
- Stakeholders – include other people involved directly in the care of people with diabetes, e.g. primary healthcare staff – GPs and nurses, care home staff etc., secondary healthcare - hospitals;
- Also people involved indirectly e.g. diabetes charities, NHS funding, NICE, health policy makers, broadband service providers, pharmacies, manufacturers, marketers etc.




### Role of other stakeholders


Key success factors in take-up of a new telehealth application for diabetics:	Influenced by these secondary stakeholders:
Awareness/Information	Carers; local health staff and services; NHS Direct; diabetes charities; pharmacies
Access	Carers; local health staff and services; broadband service providers; equipment manufacturers and retailers; equipment suppliers and installers; funders; legal and regulatory bodies e.g. NICE;
Ease of use	Service providers; equipment designers/manufacturers; local health staff (training and support)
Usefulness	System designers and service providers;
Attractiveness/desirability	All of the above.




### Capturing user requirements




Some can be easily collected – like seashells



Some have to be dug for – like cockles




Some only emerge from envisioning – like building sandcastles




### Capturing requirements – the 'knowns'

- Taking the example of a new telehealth application for monitoring diabetes
  - Potential users and some of their characteristics can be identified – these are likely to give rise to requirements
  - There are numerous sources of data/statistics about people that may be relevant, e.g.
    - % of people with diabetes: around 5% in the UK (source: British Heart Foundation Statistics Website)
    - % of people who have access to the internet at home: 70% of households had access in 2009 (source: National Statistics Online)
    - % of people who have specific kinds of disability: about 2 million people in the UK have significant sight loss (source: Tiresias)
    - % of people who live alone: there are currently almost 7 million people living alone in England (source: Joseph Rowntree Foundation)




**Capturing requirements – the ‘known unknowns’**

- However there are many other questions that are less easy to answer.
- For example:
  - How many people with diabetes are internet users?
  - What are their attitudes, motivations and preferences regarding their care in general?
  - What benefits/disadvantages would a telehealth application bring to them?
  - What kinds of features and functions would be useful/desirable for the proposed application?
  - How much flexibility is needed to cope with differences?
  - Is it likely to make a difference to overall outcomes for diabetes sufferers themselves and/or the health services?




**Eliciting requirements**

- To find answers to questions like these, we need to ask intended users and stakeholders
  - e.g. through interviews, surveys or focus groups
- But sometimes this can be difficult:
  - users and stakeholders may need help to understand what the product/service/system will be like before they can respond
  - demonstrators, pilots, prototypes and simulations may be used



**Capturing requirements – ‘the unknown unknowns’**

- To generate innovative ideas and explore their potential, techniques are needed which promote ‘envisioning’ and user engagement, e.g.
  - prototypes and simulations can challenge stereotypes and assumptions
  - scenarios, role playing and interactive theatre can enable exploration of options and their implications
- In the following session you will see an example of such an approach in action



**Techniques for requirements gathering**

Example Technique	Nature of stakeholder engagement	Enables exploration of options
Task analysis	Passive	Low
Observation	Passive	Low
Personas	Passive	Low
Ethnography	Active	Low
Focus Groups	Active	High
Interviews	Active	Medium
Prototypes & Pilots	Active	High
Scenarios	Active	High
Role playing	Active	High

Source: Olphert & Damodaran, 2003 "Designing technologies to bridge the digital divide". Proceedings of INCLUE 2003.