I.T. supporting older and disabled people:

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The research portfolio at Dundee University

- Over 30 researchers designing and developing C & IT systems for
  older and disabled people
- A multi-disciplinary team:
  Computing   Engineering
  Social Work   Nursing
  Psychology   Philosophy
  History   Mathematics
  Speech and Language Therapy

User Sensitive Inclusive Design

- "Sensitive
    - Lack of truly representative group of users
    - Difficulties in communication with users
    - Conflicts of interest between different groups

  "Inclusive"
    - an achievable and appropriate goal.

- "Design":
    - More than just guidelines.

Different attitude of mind for designers

Design for Dynamic Diversity

Systems are needed

which are sensitive to :

- The diversity of the population of older users
- The changing nature, and the rate of change, of their characteristics

Some Specific projects

- Reminiscence and conversational support
- Fall and gesture recognition
- Memory Aids
- Design methodologies
- Lifestyle modelling
- Accessibility

Support for Dementia

Multi-media software as a cognitive & communication prosthesis

- To provide support for accessing long term memory naturally within a conversational setting

- To facilitate successful reminiscence

- To provide conversational scaffolding

CIRCA - Computer Interactive Reminiscence and Conversational Aid

- Touch screen technology with simple controls usable by people with dementia

- Gives people with dementia more control over interactions
  - Songs and Quiz format particularly successful

Communication Systems for non-speaking people

Communication systems incorporating Speech Act prediction using

- The structure of everyday conversations
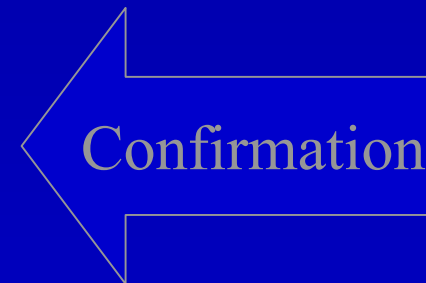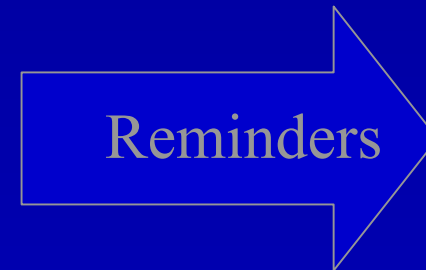- Scripts to accomplish tasks

PDA/mobile phone memory aid

- An Interactive device

- Available technology

- Specialised software

- Evaluation in real situations

Project MemoJog

Reminders

Confirmation

(Slide image within the figure:)
Project MemoJog - Aims
- **User** - Development of an interactive memory aid
  - Users more independent
  - Reduced workload for carers
- **Software** - User-friendly design (for carers and users)
  - Easy to program (staff, carer, and user)
  - Easy to use (user)
  - Fun/motivation to use/user acceptance
- **Hardware** - Combine mobile telephony and palm-top technology

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Advanced sensors for supportive environments

Technical Developments

- Gesture recognition
- Fall detection

Requirements Gathering: Issues of:

- Design processes
- Appropriate Technology
- Ethics
- Acceptability

Theatrical Techniques for Requirements Gathering

- Iterative development.

- Scenarios written by a professional script writer

- Professional actors and directors produce video sequences

- Videos facilitate interactive discussions with user groups

Some findings from drama

- Illustrative anecdotes about falling
- Problems/benefits from current systems

Passive system a good idea, but:

- Anxieties
  - "real video" not wanted (exceptions)
- Communication with carers
  - Issues of how and when

Lifestyle modelling

Investigating how deviation from generic and from personal lifestyle models can be used for vulnerable older users to:

- alert care providers
- facilitate early intervention

Methods for alerting care services

- Monitor and Interpret Activity
- Construct :
  - models for individuals, and
  - a generic model for a common group
- Detect changes in lifestyle
- Correlate change well being
- Alert care services to change

UTOPIA

Usable Technology for Older People – Inclusive and Appropriate

Project led by Dundee University, plus
- Napier University,
- Glasgow University,
- University of Abertay Dundee.

How do we educate designers ?

We need data, but in what form ?

- formal research data,
- guidelines,
- formal and informal case studies.

Are these sufficient ?

Methodologies

Guidelines on how to involve older people in the development process

- Mutual inspiration – both older person and researcher in a creative mode

- Instantiated by specific projects

Utopia case study projects

- Older peoples' characteristics and their relationship with technology

- Games technology and older people

- Artificial companions

- Interface Design

- Accessibility of "Accessibility options"

- Navigation aid outside the home

Cohort of older people

Requirements gathering by:

- Questionnaires
- Focus groups
- One-to-one in-home visits
- Hands-on facilitated discussions
- Theatrical techniques

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The Digital Media Access Group

- Advice & support on accessibility of
  - Web sites, and
  - Other aspects of the digital landscape

  A commercial service providing
  - Audits
  - Advice, consultancy & guidelines

Accessibility – e.g. Word processing for dyslexics

Hugh range of individual differences
Need for individual & pragmatic solutions

Seeword

- Designed with groups of dyslexics
- Direct manipulation interface for text size, font, colour and background colour

Produced improved comprehension and reading comfort

Accessible systems

Design of portal for older people who are frightened of technology

- Email / Communication

- Search and navigation

- What can the designer assume about the user group

- Appropriate metaphors, icons, organisation

Some examples from portfolio of research at Dundee

- Over 20 years experience developing I.T. systems for disabled people

- Increasing focus on the challenges of older people

Queen Mother Research Centre for Information Technology to support older

- *Developing technology to meet the challenges of the ageing population*
- *Supporting other researchers and industry in responding to the demographic opportunities and challenges*

Older people will be

integral to the research team

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