An international conference on inclusive design for society and business

25 - 28 March 2003

Royal College of Art
London
UK

Organised by
The Helen Hamlyn Research Centre

Supported by
The Laura Ashley Foundation
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Dear Delegate

Thanks very much indeed to everyone who submitted abstracts for Include 2003. We’ve been very encouraged by the response – over 100 proposals were submitted for paper presentations, posters and workshops. We hope those selected will create a stimulating three days of robust discussion, debate, and sharing of information, and also help shape the Inclusive agenda for the future.

You will see from the programme that the scope is diverse, featuring inclusive design in the real world, domestic and public environments, guidelines, handbooks and toolkits, educational resources, interfaces, breaking with stereotypes, virtual tools, technology, soft design, fashion and clothing, and mainstream practice, together with a varied programme of workshops and poster sessions.

It is interesting to see the growth in clothing as an area of interest – exploring both the practical and fashion aspects, as well as merging with technology into ‘smart wearables’. Technology featured large, whether smart homes, navigation and wayfinding, human modelling, virtual simulations, support for dyslexia and dementia, or technologies appropriate for use by older people. Inclusive design now appears to be becoming much more a mainstream issue, as part of the national research agenda, as a driver for business strategy, in the education curriculum, and as part of a designer’s toolkit. We are confident that Include 2003 will sustain and enrich these developments.

Roger Coleman
Director
Helen Hamlyn Research Centre

Alastair Macdonald
Chair
Scientific Committee
BREAKFAST BRIEFINGS

Breakfast briefings begin at 8.45 each morning in the Senior Common Room

WEDNESDAY 26 MARCH
The Far East/Pacific Basin experience

Showcases recent developments from Japan and Australia, contrasting them with the US and European experience. In particular, how are ageing populations and disability legislation influencing the design of offices and other workplaces?

With Dr Satoshi Kose (Building Research Institute), Associate Professor Yasuyuki Hirai (Kyushu Institute of Design) and Professor Jeremy Myerson (Helen Hamlyn Research Centre).

Chaired by Professor Roger Coleman (Helen Hamlyn Research Centre) and Professor Bill Green (University of Canberra).

THURSDAY 27 MARCH
The US experience

Features recent developments in the USA. Designer Patricia Moore has surveyed how companies worldwide are responding to the challenge and we anticipate a lively debate on the implications for business and for design.

With Earl Powell (Design Management Institute), Dr Patrick Jordan (Contemporary Trends Institute) and Professor Patricia Moore (Arizona State University).

Chaired by Professor Roger Coleman (Helen Hamlyn Research Centre) and Professor Alastair Macdonald (Glasgow School of Art).

- Poor design and how to avoid it: personas and the inclusive design process
  Dr Patrick Jordan (Contemporary Trends Institute)

FRIDAY 28 MARCH
The European experience

Highlights the stories behind some notable successes in the marketplace – from an inclusively designed Berlin hotel to B&Q’s latest range of power tools.

With Matthew White (B&Q), Yasmin Mahmoudieh (Mahmoudieh Design) and Nina Warburton (Alloy Total Product Design).

Chaired by Professor Roger Coleman (Helen Hamlyn Research Centre) and Earl Powell (Design Management Institute).

- Inclusive design: the Alloy experience
  Nina Warburton (Alloy Total Product Design)
WEDNESDAY 26 MARCH

11.30 Lecture Theatre One

Debate and discussion – inclusive design in the real world
Chaired by Prof Alastair Macdonald (Glasgow School of Art)
The effectiveness of inclusive design beyond a design context is an important
discussion topic. Papers will look at the limits, the benefits, the legislation,
and above all, the reality of an inclusive environment.

11.30 Lecture Theatre Two

Buildings and environments – domestic and public access
and wayfinding
Chaired by Prof Wolfgang Preiser (University of Cincinnati)
The domestic environment impacts on the way we live and public spaces affect
how easily we can move. This session explores regulations, wayfinding systems
and ‘smart’ technology as a way to meet user needs.

2.00 Lecture Theatre One

Education and evaluation – resources and methods at
student level
Chaired by Prof Lesley Morris (Design Council)
It is increasingly important to introduce inclusive design principles and
methods at university level and below. Papers will discuss curricula, education
methods as well as case studies. Of particular focus will be the effectiveness
of these principles and methods beyond graduation.

2.00 Lecture Theatre Two

Interfaces – systems and software that limit exclusion
Chaired by Prof Bill Green (University of Canberra)
Software and systems to help aid mobility, convey information and support
those with memory loss are important interfaces. This session will look at the
strategies and benefits of designing for people who have specific user needs in
terms of ability and interacting with their environment.
THURSDAY 27 MARCH

11.30 Lecture Theatre One

**Living longer – breaking the ‘older’ stereotype**
Chaired by Rama Gheerawo (Helen Hamlyn Research Centre)
Older people are a financially powerful group, yet undervalued and misunderstood as consumers and users. By exploring aspects of older peoples’ lives such as shopping, travel and home improvement, this session looks at how we will cope with living longer.

11.30 Lecture Theatre Two

**Virtual tools – software models that aid design**
Chaired by Dr John Clarkson (University of Cambridge)
The effectiveness of inclusive design beyond a design context is an important Computer based models and Virtual Reality environments can be powerful tools in aiding design, especially when including the needs of users outside the mainstream. Papers will look at the flexibility offered by these methods and investigate the advantages through explanation of the various processes and case study evaluation.

2.00 Lecture Theatre One

**Digitally ageing – technology and the older user**
Chaired by Prof Alastair Macdonald (Glasgow School of Art)
Older people have a traditional image as ‘technophobes’, yet technology can inform, entertain and help maintain quality of life. Papers will look at specific areas of application as well as methods of researching and designing technology for older people.

2.00 Lecture Theatre Two

**Soft design – colour, lighting and sensory environments**
Chaired by Prof Bill Green (University of Canberra)
The way colour, lighting and other sensory stimuli are used can impact on the usability of a product or environment. This group of papers demonstrates various techniques, describing the impact on user groups with a spectrum of ability.
FRIDAY 28 MARCH

11.30 Lecture Theatre One

Ready to wear – beyond mainstream fashion and clothing
Chairied by Prof Clare Johnston (Royal College of Art)
Mainstream fashion generally ignores the needs of marginalised users, whether the grey market or disabled consumers. Papers will examine innovative approaches through case studies, surveys, advanced clothing technologies and design solutions.

11.30 Lecture Theatre Two

Cambridge papers – combating design exclusion
Chairied by Prof Peter Lansley (University of Reading)
The effectiveness of inclusive design beyond a design context is an important discussion topic. Papers will look at the limits, the benefits, the legislation, and above all, the reality of an inclusive environment.

2.00 Lecture Theatre One

Companies and clients – inclusive design in mainstream practice
Chairied by Dr Patrick Jordan (Contemporary Trends Institute)
The designed world frequently but inadvertently excludes many possible users and beneficiaries. This series of papers examines the reality of design exclusion and how this might be countered.

2.00 Lecture Theatre Two

Guidelines and resources – practical demonstration through case studies
Chairied by Dr John Clarkson (University of Cambridge)
This session explores an important way of introducing inclusive design into a mainstream context - working with companies and encouraging client/stakeholder participation. Different approaches are discussed from the legislative to the persuasive. Case studies from major international corporations to process and methodologies on a smaller scale will be presented.
TIMETABLE - Wednesday 26 March —— morning ——

LECTURE THEATRE ONE (11.30 – 1.00)

Debate and discussion – Inclusive design in the real world
Chaired by Prof Alastair Macdonald, Glasgow School of Art

- Defining the limits of inclusive design
  Fiona Bellerby and Gary Davis, Davis Associates Limited

- Inclusive design management strategy: a reality?
  Cherie Lebbon, Helen Hamlyn Research Centre and Elizabeth Maclarty, School of Art and Design, Staffordshire University

- Moving inclusive design into the mainstream research agenda
  Prof Peter Lansley and Verity Smith, University of Reading

- The seven business drivers for inclusive design
  Michael Underwood, Population Ageing Associates and David Metz, Population Ageing Associates and Centre for Ageing and Public Health at the London School of Hygiene and Tropical Medicine

- Beyond fire fighting: integrating inclusive design into professional development
  Carol Thomas, Disabled Persons Transport Advisory Committee (DPTAC)

- To, from and between the leaves: systematic, evidence-based autonomy, choice and innovation
  John McClenahan, King’s Fund; John Mitchell and Jude Bennington, Ergonova; Robert Chesters, AHEAD Project and Chris Ramsden, Advantage West Midlands

LECTURE THEATRE TWO (11.30 – 1.00)

Buildings and environments - domestic and public access and wayfinding
Prof Wolfgang Preiser, University of Cincinnati

- Introducing assistive technologies into the existing homes of older people
  Prof Keith Bright, Susan Flanagan, Kate Goodacre and Prof Peter Lansley, Research Group for Inclusive Environments, University of Reading

- A regulatory information management infrastructure with application to accessibility codes
  Gloria Lau and Kincho Law, Stanford University and Bimal Kumar, Glasgow Caledonian University

- Are smart homes inclusive homes?
  Kevin McCartney and Keith Chapman, University of Portsmouth

- User-centred design for smart homes
  Elizabeth Hofvenschiold, Fraunhofer IAO

- Housing quality and design: the invisible children
  Jo Milner, Centre for Inclusive Environments, University of Reading

- Universal wayfinding and information systems in complex environments from museums to airports
  Coco Raynes, Coco Raynes Associates, Inc, USA
LECTURE THEATRE ONE (2.00 – 3.30)

Education and evaluation – resources and methods at student level
Chaired by Lesley Morris, Design Council

47. Towards curricula in design for all for information and communication products, systems and services
   Colette Nicolle, Loughborough University; Cathy Rundle and Helen Graupp, RNIB

48. Simulation for inclusion – true user-centred design?
   David Hitchcock and Andy Taylor, Loughborough University

49. Inclusiveness through universal design: feedback and evaluation
   Prof Wolfgang Preiser, University of Cincinatti

50. i~design – building a toolkit for inclusive designers
   Cherie Lebbon, Helen Hamlyn Research Centre

51. Making universal design the new sustainability
   Sally Stewart and Alexander Page, Glasgow School of Art

52. Education and practice of inclusive design at student level
   Rama Gheerawo and Julia Cassim, Helen Hamlyn Research Centre

LECTURE THEATRE TWO (2.00 – 3.30)

Interfaces – systems and software that limit exclusion
Chaired by Prof Bill Green

53. SeeWord: including dyslexic computer users
   Anna Dickinson and Peter Gregor, University of Abertay Dundee, and Lucy Dickinson, University of Edinburgh

54. Considering patients’ needs: inclusive interface design for a hospital system
   Julie Barrett and Dr Geoff Cook, Research Group for Inclusive Environments, University of Reading; Rachel McCrindle, Darren Booy, Department of Computer Science, University of Reading and Frank Arnold, Royal Berkshire Hospital

55. Footpath edge extraction for vision based mobility aid
   Quazi Khalid Hassan and Shahedur Rahman, Middlesex University

56. Multimedia communication support for people with dementia
   Norman Alm, Richard Dye, University of Abertay Dundee; Gary Gowans, Jim Campbell, Duncan of Jordanstone College of Art and Design; Arlene Astell and Maggie Ellis, University of St Andrews

57. Software design for older adults to support memory loss
   Mary Zajicek, Oxford Brookes University
HENRY MOORE GALLERY, LECTURE THEATRE TWO (3.45 – 5.00):
Workshops

• New century supertrends – inclusive design for the contemporary lifestyle
  Dr Patrick Jordan, Contemporary Trends Institute; Elizabeth Hofvenschiold, Fraunhofer IAO and Catherine Ejiohu, HCI Design Consultant, Gresham Bell

• Sustainable development and Design for All
  Päivi Tahkokallio, STAKES and Lilian Henze, P5 Consultancy

SEMINAR ROOM ONE (3.45 – 5.00): Poster Q&A

• The role of context in usage research
  Stella Boess, Delft University of Technology

• Bringing the wheelchair – universal design and usability considerations for small cars
  Nikolas Fahlskog and Trond Are Øritsland, Norwegian University of Science and Technology

• Open wide: designing a research strategy to explore patients’ anxiety relating to dentistry tools
  Hasri Hassan, Howard Denton and Deana McDonagh, Loughborough University

• Tactile pictures in art and museum education: a naturalistic and aesthetic approach to touch. Creating ‘pleasurable’, tactile photographs addressing the needs of the widest possible audience
  Odile Le Quintrec, Scientist Consultant and Yann Arthus-Bertrand, Photographer

• Design for all in the working environment
  Prof dr Johan Molenbroek and Reino Veenstra, Delft University of Technology

• From showers to sensors: older people’s views
  Claudine McCreadie, Institute of Gerontology, King’s College London
Thursday 27 March  

LECTURE THEATRE ONE [11.30 – 1.00]

Living longer – breaking the ‘older’ stereotype  
Chaired by Rama Gheerawo, Helen Hamlyn Research Centre

66 • VÄINÖ - taking user centred steps with probes  
Tuuli Mattelmäki, University of Art and Design Helsinki

67 • Air travel and the ageing nomad  
Catherine Ejioagu, HCI Design Consultant, Gresham Bell and Dr Patrick Jordan, Contemporary Trends Institute

68 • Progress of universal design in Japan – can it cope with rapid population ageing?  
Dr Satoshi Kose, Building Research Institute

69 • Future-Proof homes  
Alison Wright, Future-Proof homes

70 • Shopping and the elderly: a universal design case study  
Mathijs de Wit, Delft University of Technology and Oya Demirbilek, University of New South Wales

71 • Good practice for standards setters and designers; are you considering the needs of older and disabled people?  
Margaret Ellis, West Square Associates

LECTURE THEATRE TWO [11.30 – 1.00]

Virtual tools – software models that aid design  
Chaired by Dr John Clarkson, University of Cambridge

72 • Can computer-based models facilitate participatory design with older users?  
Dr Diane Gyi, Rebecca Cain and Ian Campbell, Loughborough University

73 • VR in the service of people with special needs  
Mike Grant, ABACUS; BA Conway and CS Harrison, University of Strathclyde

74 • HADRIAN: a human modelling CAD tool to promote ‘design for all’  
Prof Mark Porter, Dr Russell Marshall, Ruth Sims, Dr Diane Gyi and Prof Keith Case, Loughborough University

75 • An inclusive design toolbox for development of educational virtual environments  
Helen Neale, Sue Cobb and Steven Kerr, University of Nottingham

76 • Inclusive design by linking ergonomic evaluation and constraint modelling  
Thanuja Goonetilleke, Prof Keith Case, Dr Russell Marshall, Prof Mark Porter, Dr Diane Gyi and Ruth Sims, Loughborough University
LECTURE THEATRE ONE (2.00 – 3.30)

Digitally ageing – technology and the older user
Chaired by Prof Alastair Macdonald, Glasgow School of Art

78 • Growing older digitally: designing technology for older people
Guy Dewsbury, Karen Clarke, John Hughes, Mark Rouncefield and Ian Sommerville, Departments of Computing and Sociology, University of Lancaster

79 • Mutual inspiration in the development process of new technology for older people
Roos Eisma, Audrey Syme and Anna Dickinson, Applied Computing, University of Abertay Dundee; Oliver Mival, HCI group, Department of Computing, Napier University, Edinburgh; Lachimi Tiwari, ICCAVE, University of Abertay Dundee and Joy Goodman, Department of Computing Science, University of Glasgow

80 • A design study to accompany the ageing process <smart companion>
Stefanie Lauter, Institute for Ergonomics and Design Research IED, University of Duisburg-Essen

81 • Identifying elderly people’s needs for communication and mobility
Sauli A Tiitta, Helsinki Institute for Information Technology

82 • The significance of prospect in interfaces to health-related web sites for the elderly
Stan Ruecker and Rosan Chow, University of Alberta

83 • Age-old questionnaire
Joy Goodman, University of Glasgow and Audrey Syme, University of Abertay Dundee

LECTURE THEATRE TWO (2.00 – 3.30)

Soft design – colour, lighting and sensory environments
Chaired by Prof Bill Green, University of Canberra

84 • Colour and lighting design for inter-modal transport environments
Prof Keith Bright, Dr Geoffrey Cook and Dr Iyassu Yohannes, University of Reading, Hilary Dalke and Nilgün Camgöz, South Bank University

85 • The Selectronic shower: an inclusive design case study
Katie Stabler and Sabine van den Heuvel, Sensory Design Services, RNIB

86 • Project Crystal: accessible environments for deaf and hard of hearing people
Prof Keith Bright and Dr Geoffrey Cook, University of Reading and Dr Indra Sinka, Open University

87 • Inclusive lighting design in the home
Prof Keith Bright, Dr Geoffrey Cook, Sarah Hill and Lindsay O’Neill, University of Reading

88 • Remote interaction as an assistive technology
Stephen Wilcox and Eric Callahan, Design Science

89 • Research with users: colour design and lighting for public transport, prison and health care environments
Hilary Dalke and Dr Nilgün Camgöz, Colour Design Research Centre, South Bank University; Prof Keith Bright and Dr Geoffrey Cook, University of Reading; Dr Paul Littlefair and David Loe, BRE Environmental Engineering Centre
HENRY MOORE GALLERY, LECTURE THEATRE TWO (3.45 – 5.00):

Workshops

90 • Optimising the user experience through marketing and human factors
  Elizabeth Hofvenschiold, Fraunhofer IAO; Catherine Ejiogu, Gresham Bell and Dr
  Patrick Jordan, Contemporary Trends Institute
• Inclusive user involvement methods
  Roel Kahmann and Lilian Henze, P5 Consultancy

SEMINAR ROOM ONE (3.45 – 5.00): Poster Q&A

91 • Inclusive media poster
  Graham Pullin, IDEO, London
92 • Moving from theory to practice in inclusive design
  Marcus Ormerod, Rita Newton, Andy Lewis and Erika Leho, SURFACE (Salford
  University Research Focus on Accessible Environments)
93 • On the development of a friendly restroom
  Renate de Bruin and Prof dr Johan Molenbroek, Delft University of Technology; Theo
  Groothuizen, Marja van Weeren, Landmark Design Holding
94 • The development of an inclusive design resource
  Samantha Porter, Coventry School of Art and Design; Shyal Chhibber and Prof
  Mark Porter, Loughborough University
95 • Enhancing quality of life through engineering research
  Prof Peter Lansley and Verity Smith, University of Reading
TIMETABLE - Friday 28 March

LECTURE THEATRE ONE (11.30 – 1.00)

Ready to wear – beyond mainstream fashion and clothing
Chaired by Prof Clare Johnston, Fashion & Textiles, Royal College of Art

97 • Clothes for women with osteoporosis – from pilot study to pattern and book
Maria Benktzon, Ergonomidesign; Birgitta Edgren and Anne-Maria Böhme,
University College of Arts, Crafts and Design Stockholm, and Med Dr Maria Sääf,
Karolinska Hospital Stockholm

98 • Cross-application and inclusion
Prof Usha Chowdhary, Central Michigan University

99 • Functional clothing design for the active grey market
Zhengxia Li, MA Performance Sportswear Design, University of Derby

100 • Ageless and ageing - a survey of designers working in the women’s fashion
industry and their conceptions of the target group
Sonja Iltanen, University of Art and Design Helsinki

101 • Shift for new beauty concept: an approach to an inclusive design fashion studies
Keiko Imai, Momoyo Terada and Yayoi Wada, Japan Universal Fashion Association

102 • Innovative design solutions for fashion for women with severe physical disabilities
Caterina Radvan, London College of Fashion

103 • Smart wearables: a new frontier for inclusive design innovation
Julia Cassim, Helen Hamlyn Research Centre

LECTURE THEATRE TWO (11.30 – 1.00)

Cambridge papers – combating design exclusion
Chaired by Prof Peter Lansley, University of Reading

104 • User capabilities and product demands
Dr John Clarkson and Dr Simeon Keates

105 • A framework for minimising design exclusion
Dr John Clarkson and Dr Simeon Keates

106 • Supporting the adoption of inclusive design practices
Dr Simeon Keates and Dr John Clarkson

107 • Understanding issues facing one-handed users
Saemna Ahmed, Hua Dong and Dr John Clarkson

108 • UK and US industrial perspectives on inclusive design
Hua Dong, Dr Simeon Keates and Dr John Clarkson

109 • Identifying design exclusion: a review of assessment methods
Carlos Cardoso, Dr Simeon Keates and Dr John Clarkson
LECTURE THEATRE ONE (2.00 – 3.30)
Companies and clients – inclusive design in mainstream practice
Chaired by Dr Patrick Jordan, Contemporary Trends Institute

110 • Incorporating inclusive design at a major international corporation
    Jari Jarvinen, Motorola and Stephen Wilcox, Design Science
111 • Design innovation for mainstream markets through ‘critical’ user involvement’
    – the DBA design challenges
    Julia Cassim, Helen Hamlyn Research Centre
112 • Designing technologies to bridge the digital divide
    Wendy Olphert and L Damodaran, Loughborough University
113 • How can designers constructively work with users within the design process
    and does this method really carry benefits for business?
    Rama Gheerawo, Helen Hamlyn Research Centre
114 • Enabling design: the research, process and the practice of treating audience
    as client
    Sean Donahue, Research Centred Design
• Guest speaker
    Prof Ron Nabarro, Technion Israel Institute of Technology

LECTURE THEATRE TWO (2.00 – 3.30)
Guidelines and resources – practical demonstration through case studies
Chaired by Dr John Clarkson, University of Cambridge

115 • Computing: a family affair
    Jennifer Hann, Head of Industrial Design and James Pryor, Consumer Product
    Design, Coventry University
116 • Re-engineering for inclusivity – engineering workshops and classrooms
    Eoin O’Herlihy, William Gaughran, University of Limerick
117 • An integrated approach to the design of medical products for operating rooms
    Dr Robert Young, Dr Simon Smith and Rosemary Mockford, Centre for Design
    Research, Northumbria University
118 • “Aren’t you supposed to be filming me ...?” Participatory techniques to conduct
    better ethnographic research
    Nick Leon and Siamack Salari, EverydayLives Global
119 • Design for all in the working environment
    Reino Veenstra and Prof dr Johan Molenbroek, Delft University of Technology
120 • Empowerment game: the implementation of ‘Participatory Design’ in Hong Kong
    Yan Ki Lee, Hong Kong Polytechnic University
VENUE PLAN – Lower Ground Floor

Emergency Exit

- HOCKNEY GALLERY, Stevens Building
  “You’ll be older too” exhibition

- Jay Mews entrance

- Wheelchair access

- Senior Common Room
  R Cafe and Artbar
  lift and stairs

- Stairs to Henry Moore Gallery

- Registration/information desk

- Poster Q&A

- Lecture Theatre One

- Lecture Theatre Two

- Kensington Gore
VENUE PLAN – Ground Floor

- Emergency Exit

- RCA Library
- Henry Moore Gallery
- DBA Exhibition
- Dining area
- Computer cluster
- Relaxez-vous
- Green Room
- Workshops

- Albert Hall entrance
  - No access to
  - Include 2003

- The Straight or Crooked Way exhibition
VENUE PLAN - R Café, Artbar, second floor

R Café

Art Bar

Gents

Ladies

Accessible toilet
DELEGATE LIST

Helen Allen  JMU Access Partnership, RNIB
Duncan Abbott  Ergonomist and writer
Natalie Adams  Design Week
Saeema Ahmed  University of Cambridge, Engineering Design Centre
Norman Alm  University of Abertay Dundee
Peter Barker  Disabled Persons Transport Advisory Committee
Fiona Bellerby  Davis Associates Limited
Maria Benktzon  Ergonomi Design
Stella Boess  TU Delft
Martin Bontoft  IDEO London
John Bound  Helen Hamlyn Research Centre
Prue Bramwell-Davis  Royal College of Art, Industrial Design Engineering
Vic Brent  Vic Brent Audio Visual
Keith Bright  University of Reading
Robert Brown  Helen Hamlyn Research Centre
Carlos Cardoso  University of Cambridge, Engineering Design Centre
Nilgun Carnoz  South Bank University, Colour Design Research Centre
Julia Cassim  Helen Hamlyn Research Centre
Monte Cassim  Ritsumeikankan University
Mark Champkins  Helen Hamlyn Research Centre
Shayal Chhibber  Loughborough University
Usha Chowdhary  Central Michigan University
Alison Clarke  Royal College of Art, Humanities
John Clarkson  University of Cambridge, Engineering Design Centre
Adam Clitheroe  Rewind Films
Roger Coleman  Helen Hamlyn Research Centre
Steve Connolly  Rewind Films
Geoffrey Cook  University of Reading
Stewart Coulter  ADAPT
Ann Crawley  Royal Society of Arts & Manufactures
Hilary Dalke  South Bank University, Colour Design Research Centre
Oya Demirbilek  University of New South Wales
Guy Dewsbury  University of Lancaster
Milli diCampoRama  Philips Design
Anna Dickinson  University of Abertay Dundee
Sea Donahue  Research Centred Design
Hua Dong  University of Cambridge, Engineering Design Centre
John Drane  Royal College of Art, Industrial Design Engineering
Margaret Durkan  Helen Hamlyn Research Centre
Roos Eisma  University of Abertay Dundee
Catherine Ejiogu  Gresham Bell
Louise Elliott  1st by Design
Margaret Ellis  West Square Associates
Lindsey Etchell  RICAbility
Nikolas Fahlskog  University of Science Norway
Ichiro Fujiyama  Ritsumeikan University
William Gaughran  University of Limerick
Rama Gheerawo  Helen Hamlyn Research Centre
Joy Goodman  University of Glasgow
Thanuja Goonetileke  University of Loughborough
Katherine Gough  Designer
Mike Grant  University of Strathclyde, ABACUS
Helen Graupp  RNIB
Bill Green  University of Canberra
Catherine Green  University of Salford
Diane Gyi  University of Loughborough
Jennifer Hann  Coventry School of Art & Design
Hariett Hariss  Royal College of Art, Architecture & Interiors
Robert Harrison  Crown Cork & Seal Co
Hasri Hassan  University of Loughborough
Lilian Henze  P5 Consultants
Susan Hewer  Royal Society of Arts & Manufactures
Jac Higgins  Helen Hamlyn Research Centre
Prof Higuchi  Ritsumeikan University
Yasuyuki Hirai  Kyushu Institute of Design
David Hitchcock  University of Loughborough
Elizabeth Hofvenschiold  Fraunhofer IAO
Rob Holdway  Giraffe Innovation
Emily Horwood  EPSRC
Cathy Huang  Design Management Institute
Sonja Iltanen  University of Art and Design Helsinki
Clare Johnston  Royal College of Art, Fashion & Textiles
Malcolm Johnston  Central Saint Martins College of Art & Design
Leslie Jones  Helen Hamlyn Research Centre
Patrick Jordan  Contemporary Trends Institute
Roel Kahmann  P5 Consultants
Mr Kang  Ritsumeikan University
Simeon Keates  University of Cambridge, Engineering Design Centre
Gordon Kennedy  Nottingham Trent University
Steven Kerr  University of Nottingham
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<tr>
<th>Name</th>
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<tr>
<td>Satoshi Kose</td>
<td>Building Research Institute</td>
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<td>Bimal Kumar</td>
<td>Glasgow Caledonian University</td>
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<td>Alexandra Lambert</td>
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<td>Peter Lansley</td>
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<td>Carin Larsson</td>
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<td>Stefanie Lauter</td>
<td>University of Essen</td>
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<td>Zhengxia Li</td>
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<td>Irene McAra-McWilliam</td>
<td>Royal College of Art, Interaction Design</td>
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<td>Alastair Macdonald</td>
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<td>Yasmine Mahmoudieh</td>
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<td>Kevin Mawle</td>
<td>University of Portsmouth</td>
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<td>Claudine McCreadie</td>
<td>King’s College London, Institute of Gerontology</td>
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<td>Rachel McCrindle</td>
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<td>Graham Moore</td>
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<td>Henny Overbosch</td>
<td>Netherlands Ministry of Social Affairs &amp; Employment</td>
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Brian Pederson          Bolton Institute
Wanda Polanski          Helen Hamlyn Research Centre
Tim Pope                Disabled Persons Transport Advisory Committee
Mark Porter             University of Loughborough
Samantha Porter         Coventry School of Art and Design
Lucy Porter             Royal College of Art, Industrial Design Engineering
Earl Powell             Design Management Institute
Wolfgang Preiser        University of Cincinnati
Debbie Price            Applied Energy
Graham Pullin           IDEO London
Caterina Radvan         London College of Fashion
Shahedur Rahman         Middlesex University
David Ramkalawon        Photographer
Coco Raynes             Coco Raynes Associates
David Roth              B&Q
Stan Ruecker            University of Alberta
Siamack Salari          EverydayLives Global
Idit Cohen Shoob        Hadassah College of Technology
Verity Smith            University of Reading
Sally Stewart           Glasgow School of Art
Audrey Syme             University of Abertay Dundee
Päivi Tahkokallio       STAKES
Carol Thomas            Disabled Persons Transport Advisory Committee
Sauli Tiitta            University of Technology Helsinki
Lachimi Tiwari          University of Abertay Dundee
Indri Tulusan           Helen Hamlyn Research Centre
Michael Underwood       Population Ageing Associates
Sabine van den Heuvel   RNIB
Reino Veenstra          TU Delft
Mary Wagstaff           Helen Hamlyn Research Centre
Nina Warburton          Alloy Total Product Design
Matthew White           B&Q
David Whittle           Helen Hamlyn Research Centre
Stephen Wilcox          Design Science
Sarah Williams          Sensory Trust
Jane Wilmot             Disabled Persons Transport Advisory Committee
Alison Wright           Future-Proof Homes
Robert Young            University of Northumbria
Mary Zajicek            Oxford Brookes University
Prof Roger Coleman  
Helen Hamlyn Research Centre, UK  
Professor of Inclusive Design, Co-Director of the Helen Hamlyn Research Centre at the Royal College of Art (RCA). Specialising in design and ageing, he established the DesignAge programme at the RCA in 1991 and the European Design for Ageing Network in 1994. A 1994 Queen’s Anniversary Prize was awarded to the RCA in recognition of the DesignAge programme, and Roger received the Sir Misha Black Award for Innovation in Design Education in 2000. He is a director of R&D company London Innovation, and a jury member for the RSA Student Design Awards. He has lectured extensively in the UK, Europe, North America, Japan and Australia.

Dr John Clarkson  
Cambridge University, UK  
Returned to Cambridge University’s Department of Engineering in 1995 following a seven-year spell with PA Consulting Group’s Technology Division where he was manager of the Advanced Process Group. He was appointed director of the Engineering Design Centre in 1997 and a Reader in 2001. John is directly involved in the teaching of design at all levels of the undergraduate course.
Rama Gheerawo  
Helen Hamlyn Research Centre, UK  
Research Co-ordinator at the Helen Hamlyn Research Centre (HHRC). He has a BEng (Hons) in Mechanical Engineering, from Imperial College, London and an MA in Industrial Design Engineering from the Royal College of Art. He has worked in the automotive, product design and civil engineering industries for companies such as the Rover Group, Robert Benaim and Associates and Atlantic Design. He is also Design Manager of a web and electronic media company.

Prof Bill Green  
University of Canberra, Australia  
Graduated in Industrial Design in the dark ages and has been involved in professional design, education and research for 40 years. His work in England, Australia and Holland has focused on human-centred design, and he has been active internationally in promoting the links between ergonomics and design. He was Professor of Applied Ergonomics and Design and Head of Industrial Design at Delft University of Technology until his return to University of Canberra, Australia. Bill is chairman of the Technical Products group of the IEA and maintains close associations with both the ergonomics and design communities worldwide.
Yasuyuki Hirai
Kyushu Institute of Design, Japan
Associate Professor of Industrial Design at the Kyushu Institute of Design in Fukuoka, Japan, since 2000. He was born in Osaka in 1961 and studied product design at the Kyoto City University of Arts and furniture design at the Royal College of Art, London. He has worked for the Japanese office furniture manufacturer Kokuyo, and for IDEO Product Development in the US. His many awards include the Red Dot Prize and the Good Design Award.

Prof Clare Johnston
Royal College of Art, UK
Clare Johnston is Professor of Textiles at the Royal College of Art and Design Consultant for Liberty. Responsible for the teaching curriculum, staffing and organisation of the Printed and Constructed Textile courses within the school of Fashion and Textiles. Research, innovation, creativity, versatility and individuality are the core elements of the departmental philosophy. Clare has extensive professional practice through her work with Nigel French Enterprises, Marks and Spencers and Liberty Plc, working across fashion and textiles on colour and fabric design. Responsible for the direction of the Liberty design team since 1998, design of brand products, the international wholesale fabric collection, and international licenses in UK and Japan. Involved in colour prediction and consultancy work for the British Textile Colour Group, Tissus Premiere Textile show, and the Mix prediction company. Also advisor for Glasgow Centre of Advanced Textiles, and committee member for Texprint.
Dr Patrick Jordan  
**Contemporary Trends Institute, USA**

Head of the Contemporary Trends Institute, formerly Electronics, with responsibility for communicating brand image. He was also Head of User Research at Symbian, a joint venture by Motorola, Nokia, Psion, Ericsson and Panasonic. Patrick has over 100 publications, has won numerous professional awards, has written or edited five books and is currently Europe’s best selling author in his field. His latest book *How to Make Brilliant Stuff that People Love and Make Big Money Out of It* was released by Wylie in 2002. In 2001/2002 he was awarded the Nierenberg Chair of Design at Carnegie Mellon University, the most prestigious appointment in US design education.

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Dr Satoshi Kose  
**Building Research Institute, Japan**

Senior Research Fellow at the Building Research Institute, Japan. Born in 1948, he graduated from the University of Tokyo in 1971, joining the Building Research Institute of the Ministry of Construction in 1972. During 1978-79 he was based at at the UK Building Research Establishment. He specialises in building safety and human factors, and is one of the leading figures in universal design research in Japan. Publications include guidelines for dwellings for the ageing society. Satoshi’s awards range from the Distinguished Paper Award of the Japanese Institute of Human Posture, the Ron Mace Designing for the 21st Century Award, to awards from Japan’s Minister of Construction and the Minister of Education, Science and Technology.
Prof Peter Lansley  
University of Reading, UK

Professor of Construction Management at the University of Reading. Until recently he was involved mainly with helping construction and engineering firms improve their performance. Currently, he is engaged in national research and development initiatives to meet the needs of older people and those of physically, sensory and mentally impaired people. He chairs the EPSRC EQUAL Committee. He has advised national and international bodies on organisational development issues and governments on the evaluation and assessment of research and innovation programmes. He has published widely on organisational performance, innovation, research into practice, and the role of the professions.

Prof Alastair Macdonald  
Glasgow School of Art, UK

Head of Department of Product Design Engineering (PDE) at Glasgow School of Art. PDE challenges the traditional approach to mechanical engineering education and has provided an exemplar for other courses in the UK and overseas. PDE tackles issues from a human-centred point of view: human factors and aesthetics concerns are as integral as engineering and science. Alastair lectures and publishes widely, particularly in human factors, inclusive design, aesthetics-related issues, and futures technologies.
Yasmine Mahmoudieh
Mahmoudieh Design, Germany

An international architect and interior designer. Born in Germany, she studied Art History in Florence, Architecture in the École d´Interieur in Geneva, Interior Design at the College of Notre Dame in Belmont as well as Architecture and Interior Design at the University of California, Los Angeles, where she got her diploma. In 1986 she founded her first own studio in Los Angeles. In 1992 she opened studios in Hamburg and Berlin, Germany, and later in Barcelona and London. Her work includes complete interior design concepts for hotels, restaurants, shopping centres and office complexes as well as multiuse projects.

She also designs furniture and exhibitions. Her company Mahmoudieh Concepts works on complete conceptions for more functionally orientated designs in the commercial real estate sector. She has won awards for interior design projects at the Coconut Grove Plaza, Miami, office buildings for Tishman Speyer, the Wyndham Hotels chain and Massachusetts Museum of Contemporary Art.
Prof Patricia Moore  
Arizona State University, USA

Principal of Moore Design Associates, is an internationally renowned gerontologist and designer and a leading authority on the requirements and behaviours of consumers as they progress through the lifespan. For three years (1979-1982) she travelled throughout North America disguised as a woman of over 80 years of age. With her body altered to simulate the sensory changes associated with ageing, she was able to respond to people, products, and environments as an elder. She holds degrees in Graphic and Industrial Design from the Rochester Institute of Technology, in Biomechanics from New York University's School of Medicine and the Institute of Rehabilitation, in Psychology and Counseling, and in Social Gerontology from Columbia University.

Patricia was presented with the 1997 Professional Recognition Award by the Arizona Design Institute, and is an Adjunct Professor of Industrial Design at Arizona State University. She has been named by ID Magazine as one of The 40 Most Socially Conscious Designers in the world and was named in 2000 as one of the 100 most important women in America. ABC World News has chosen her as one of 50 Americans defining the new millennium.
Lesley Morris  
**Design Council, UK**  
Design Learning Manager at the Design Council. A trained interior designer, for 18 years she worked in design consultancies on commercial interior design projects. She went on to develop and lead the MA Design Leadership programme at Middlesex University, and joined the Design Council in 1997 as a senior manager, with responsibility for working with higher education and developing links with the Council’s business projects worldwide. Lesley is currently working on a European research project, Design for Future Needs and on a project looking at the potential role of design in technology transfer activity in universities. Her special interests and expertise include: links between education, industry, policy and design practice; design leadership and management, design education and professional development, design research.

Prof Jeremy Myerson  
**Helen Hamlyn Research Centre, UK**  
Professor of Design Studies and Co-Director of the Helen Hamlyn Research Centre at the Royal College of Art (RCA). A writer, editor and academic specialising in the study of the work of designers in relation to social and technological change, he is a graduate of Hull University and of the RCA. From 1986-1989, he was Founding Editor of Design Week, the world’s first weekly news magazine for designers and their clients - a publication that profoundly influenced how design firms in the UK operate. His many books include The Creative Office, New Public Architecture, and Design Renaissance, an edited collection of essays setting out humanist and inclusive agenda for design.
**CHAIRS and KEYNOTE SPEAKERS**

**Earl Powell**  
**Design Management Institute, USA**  
President of the Design Management Institute since 1985. During his tenure, many innovative programmes have been initiated, and the Institute has developed an international reputation for excellence in design management research, scholarship, and educational programmes. He has worked to ensure that the Institute’s web site serves the worldwide design and design management communities. He holds a degree in industrial design, an MA and MFA in painting, and has worked as an industrial designer, design manager, artist, college instructor and academic dean. He serves on numerous boards, including the European Academy of Design, the Japan Institute of Design, and the German Design Council. In 2002 Earl received an honorary doctor of letters from the University of Westminster for his contributions to design management. He is a frequent lecturer and design management consultant.

**Prof Wolfgang Preiser**  
**University of Cincinnati, USA**  
Professor of Architecture at the University of Cincinnati. With over 35 years of teaching experience in theory, research methods and applications in programming and evaluation of environments, he has held visiting lectureships at 30 universities in the US, and over 35 worldwide. Publications include 13 books and over 75 chapters, monographs and articles on building evaluation, programming, regional architecture and environmental design research in general. Recent examples include the Universal Design Handbook (2001); and Improving Building Performance (forthcoming). Wolfgang has been principal investigator for research grants totalling more than $2.7 million on design in the cross-cultural context, public housing and evaluations of many other building types, and his many Awards include the Progressive Architecture Annual Award and Citation (1985) and 1989) and the EDRA Career Award (1999).
Nina Warburton
Alloy Total Product Design, UK
Started her career at the Centre for Industrial Design in Newcastle, she joined Random Product Design in 1997, and in 1999 became a founder director of Alloy, an independent employee-owned consultancy providing product innovation and design services worldwide. Her design philosophy is driven by human needs, aesthetic values and a robust technical foundation. She has worked across a wide range of sectors including child care products, airline seating, medical equipment, consumer electronics and structural packaging, for clients including BT, Toshiba, Virgin Atlantic and Yorkshire Water. Committed to breaking down the barriers between design and research practice, Nina is one of few people to have carried out a truly practice-based design research doctorate, with a PhD awarded in 2002.

Matthew White
B&Q, UK
Consultant Designer and Engineer. He was born in 1977, and graduated from the University of Birmingham in 1998 with a Bachelor of Mechanical Engineering. While studying for an MA in Industrial Design Engineering at the Royal College of Art, his re-invention of the watering can was a winner in the Helen Hamlyn Research Centre’s ‘Design for our Future Selves’ competition. He joined the Centre’s Research Associate programme in 2000 to develop a range of user friendly power tools with DIY retailer B&Q plc. Two products, a drill and a sander, were launched with national TV advertising in late 2002. Matthew currently works as a consultant for B&Q, applying his user-centred design approach to further product categories.
Defining the limits of inclusive design

Wednesday 26 March (11.30 -13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Fiona Bellerby and Gary Davis
Davis Associates Limited, UK

Abstract
The aim of inclusive design, according to RICA (Research Institute for Consumer Affairs), is ‘to design mainstream products and services so as many people as possible can use them’, although they acknowledge that ‘there will always be some people who need specialist equipment’ (Ricability, 2002). As these statements indicate, there are practical limits to Inclusive Design. Marketing is used in a commercial setting to ‘identify, anticipate and satisfy customer requirements profitably’ (Lancaster and Reynolds, 1999). It achieves its goal, in part, by separating the population into measurable segments because marketers believe that ‘attempting to satisfy all of the market will in fact satisfy the needs of none of the market segments effectively’ (Lancaster and Reynolds, 1999).

Inclusive design enables the development of products that are usable by as many people as possible. This paper discusses the quantifiable parameters of Inclusive Design. It considers market segments and the recognition of people with disabilities. It also assesses the value of methods and tools available for defining the needs of the consumer. The paper proposes an Inclusive Design Process that will assist decision-makers in understanding the people in their market segments and encourage the development of Inclusive products.
Inclusive design management strategy: a reality?

Wednesday 26 March (11.30 -13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Cherie Lebbon
Helen Hamlyn Research Centre, Royal College of Art, UK

Elizabeth Maclarty
School of Art and Design, Staffordshire University, UK

Abstract
Developing products and services that meet the requirements of a population with differing capabilities is essential in light of the rapid ageing of populations across the world. Inclusive design approaches and processes can support businesses and designers through this change from market sector focus to user need and aspiration focus. Whether a company is dealing with products or services, inclusive design calls for a people focus from building the factory to ultimately the purchasers. The authors suggest that a design management framework is needed to support an inclusive strategy.

This paper looks at two major issues, inclusive design and corporate strategy, and examines the role of design management in mediating between the two. It goes on to map out a possible framework for design management in this context and discusses in some detail responses to these issues within design education, in particular a workshop held with design management and product design students at Staffordshire University. Two case studies of collaborative design research projects by new graduates of the Royal College of Art offer practical examples of how companies can begin to engage with these issues.
Moving inclusive design into the mainstream research agenda

Wednesday 26 March (11.30 -13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Prof Peter Lansley and Verity Smith
University of Reading, UK

Abstract
If it is to have a substantial and beneficial influence on society then inclusive design research has to become a major feature of mainstream research activity and be reflected in national research policies. There are major challenges to achieving this because so few of those involved with inclusive design research are part of the research policy influencing establishment. Similarly, although understanding the contribution to be made by inclusive design, few of the establishment appreciate the defining characteristics and culture of inclusive design research.

A good example of this situation is found in construction. Official reports on the state of the construction research in the UK have not only ignored work concerned with quality of life but have criticised mainstream construction research for lacking those features which are characteristic of inclusive design research – for example, multidisciplinarity, a concern for the end user, and quality of research personnel.

Construction research is being revitalised by the pursuit of issues concerned with improving the quality-of-life of older people and disabled people through the better design of environments and products – inclusive design. It is introducing new skills and resources and a new excitement for research. However, this research is taking place outside of mainstream research communities and is largely ignored by commentators and policy makers. Positioning inclusive design research so that it becomes part of the mainstream requires a careful understanding of how and where to present relevant research work, to whom to present it, and how to lobby effectively.
The seven business drivers for inclusive design

Wednesday 26 March (11.30 -13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Michael Underwood,
Population Ageing Associates, UK

David Metz
Population Ageing Associates and Centre for Ageing and Public Health
at the London School of Hygiene and Tropical Medicine, UK

Abstract
This paper examines inclusive design from a business perspective. It considers a
number of generic business drivers that are known to influence companies and how
they operate, and will discuss how the arguments for inclusive design could be
used to address these business drivers. Seven drivers are examined, ranging from
legislation (the ‘stick’ at one extreme), through standards, procurement, competitive
threat, customer feedback, competitive advantage to brand image (the ‘carrot’ at the
other extreme). It is unlikely that any single such driver will make a business case on
its own. Their combination is likely to be the key, the precise combination depending
upon the organisation and the market within which it operates.

As yet, there is no well-established literature, formal or informal, on the business
benefits to be derived from inclusive design. Without legislation or these benefits
being clearly identified, it is likely to be several years before most companies are
designing products and services for a wider section of the population. This is despite
the fact that the demand for inclusively designed products is likely to increase
significantly over the coming years as both the absolute and relative numbers of
older people in the population increase due to increasing longevity and a decreasing
birth-rate.
Beyond fire fighting: integrating inclusive design into professional development

Wednesday 26 March (11.30-13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Carol Thomas
Disabled Persons Transport Advisory Committee (DPTAC), UK

Abstract
This interactive session will involve a panel presentation from leading figures in architecture, disability and academia and facilitated discussions. It marks the launch of the Disabled Persons Transport Advisory Committee’s Charter on improving education and training in inclusive design. It will address the following questions:

• How do current education and training processes help professionals understand the needs of the whole community?
• What skills and competencies are required to deliver inclusive environments?
• How can we collectively raise the skills and competencies of the professional development community on inclusive design?
• How can inclusive design principles be taught effectively?
• What are the barriers to an understanding of inclusive design?

Following presentations from the panel, participants will be invited to identify their priorities for addressing the skills gap in inclusive design and select the actions they feel have the greatest potential impact on securing the delivery of an inclusive environment.
To, from and between the leaves – systematic, evidence-based autonomy, choice and innovation

Wednesday 26 March (11.30 -13.00) – Lecture Theatre One
Debate and discussion – inclusive design in the real world
chaired by Prof Alastair Macdonald

Jude Bennington and John Mitchell
Ergonova, UK

Robert Chesters
AHEaD Project, UK

John McClenahan
King’s Fund, UK

Chris Ramsden
Advantage West Midlands, UK

Abstract
‘By definition, the end-users of products, services and facilities are ‘at the end of the line’. They are as distant from each other and from the support system that maintains them as individual leaves on a tree. This paper examines the mutual benefits of inclusion, the evidence that is needed to direct and drive it and how evidence can be passed from, to and between end-users. The evidence-journey starts at the leaf with the priorities, problems and feedback of individual users. Plants cannot survive without chlorophyll from their leaves. Innovation is fed by knowledge of market and user needs. The effects of badly chosen or designed products can be catastrophic for disabled people. Accordingly systematic, high quality evidence about their requirements is essential for maximising autonomy and inclusion.

Laterally sharing information between users is also needed to break the isolation between individual users and empower them to make the tree react more effectively to their individual and collective needs. Disabled users also need information ‘from the tree’ about the quality and effectiveness of products and services that could restore their autonomy.

continued ...
What we have described is an evidence-system. It only exists in part at present but there are now few remaining technological problems in establishing it. Advances in assessment and information and communication technologies can enable evidence about individual lives and priorities to be ‘mapped’ and ‘benchmarked’ as the starting-points for choice, evaluation and costing. Plans are being developed to ‘pool’ and analyse individual data into a strategic ‘evidence-base’ to support systematic choice and innovation. Interactive, learning systems are also being developed to enable user-groups to gather the information they require and shape it to their own requirements. At the same time, IT carriers for delivering product information to users are also being set up and new stakeholder alliances as are also being formed.

Will the emerging evidence tree look piecemeal, like a Baobab, random and unconnected like a bamboo thicket or well planned and nourished like an oak, a chestnut or a beech? The King’s Fund team believes that only the last can meet the needs of stakeholders fully and effectively and calls on them to help ensure that this is the outcome.
Introducing assistive technologies (AT) into the existing homes of older people

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and wayfinding
chaired by Prof Wolfgang Preiser

Prof Keith Bright, Susan Flanagan, Kate Goodacre and Prof Peter Lansley
Research Group for Inclusive Environments, University of Reading, UK

Abstract
The paper reports the findings of a research project on the introduction of AT for older people in the existing housing stock. In the project, 82 properties representing a wide range of dwelling types from the stock of nine different housing providers were audited and assessed with respect to the feasibility and cost of providing a typical range of AT. The feasibility of incorporating AT into the dwellings was considered with regard to constraints imposed by spatial and constructional factors, together with the appropriateness of typical housing stock for incorporating current and future demands for the provision of AT. AT that could enable older people to make safe and independent use of their homes was examined, together with its suitability for incorporation into an existing building.

The views of older people living independently in the community and experiencing a range of sensory and physical disabilities were gathered to establish their expectations, experiences and acceptability of AT in the home. The research has established that whilst there are opportunities for improving the home environment of older and disabled people, there are serious constraints with some typical dwellings. Even with considerable financial investment, certain types of adaptation to some property types will, for the foreseeable future, be uneconomic. This has serious implications for some housing providers.
A regulatory information management infrastructure with application to accessibility codes

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and wayfinding chaired by Prof Wolfgang Preiser

Gloria T Lau and Kincho H Law
Stanford University, USA

Bimal Kumar
Glasgow Caledonian University, UK

Abstract
This paper describes a research project that addresses the difficulties in dealing with regulatory documents such as national and regional codes. These documents tend to be voluminous, heavily cross-referenced, possibly ambiguous and even conflicting at times. There are often multiple documents that need to be consulted and satisfied; however it is a difficult task to locate all of the relevant provisions, and also sections dealing with the same or similar conceptual ideas sometimes lay down conflicting requirements.

We propose a framework for regulation representation, analysis and comparison with emphasis on the extraction of similarities between provisions. We focus on accessibility regulations, whose intent is to provide the same or equivalent access to a building and its facilities for disabled persons.
Are smart homes inclusive homes?

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and wayfinding
chaired by Prof Wolfgang Preiser

Kevin McCartney and Keith Chapman
Faculty of Environment, University of Portsmouth, UK

Abstract
A partnership between a housing association, a city council and a university formed the basis for a research programme into Smart Housing for Physically Disabled People, funded by the Housing Corporation. It involved consultation exercises, technology reviews, and design studies, and will be completed with a period of post-occupancy monitoring. Based on the early stages of this research, the housing association constructed six dwellings – the Portsmouth Smart Homes. Three of these were intended to provide an opportunity for a greater level of independent living for wheelchair users who might also have limited upper limb function.

This paper considers the relationship between the design guidance derived from the consultation exercises and the design responses at both the research and the construction stages. This leads to some reflection on the reasons for discontinuities between the wishes of user groups and the eventual products of the design and construction processes. Different approaches to the 'smart' home are considered in order to identify alternative means of improving responsiveness to user needs, and the inclusivity of the outcome.
User-centred design for smart homes

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and
wayfinding
chaired by Prof Wolfgang Preiser

Elizabeth Hofvenschiold
Fraunhofer IAO, Germany

Abstract
Ubiquitous computing has begun to seep into our domestic world. The technology
now available for use in our homes is impressive and has the intention of making
our domestic lives easier and more enjoyable. Why then is the smart home concept
perceived as technologically elitist and often not as useful as is hoped? For the
purpose of this paper, a smart home refers to a house with networked products
that can interact with each other and with house environment settings (e.g. heating
system), which can be electronically predetermined and controlled by the inhabit-
ants from a central and/or mobile input device. The paper describes the approach
taken by the usability engineering team at the Fraunhofer IAO for a smart home
project called LIVEfutura.

LIVEfutura is a project sponsored by the German Ministry for Education and
Research (BMBF). The main goal of the project is to support private life in a
high technology environment. To do this, the project aims to accomplish three
things. The first is the networking and integration of objects, network technologies,
application domains and user interfaces. The second is the adaptation of user
interfaces for user needs, products and network parameters. The third is the
automation of routine tasks. Three Fraunhofer institutes are involved in the project
and they are FOKUS (project coordinator), IMS and IAO. IAO’s role is to provide
the human dimension and to ensure that the user remains in control of his or her
domestic life.
Housing quality and design: the invisible children

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and wayfinding
chaired by Prof Wolfgang Preiser

Jo Milner
Centre for Inclusive Environments, Reading University, UK

Abstract
The built environment has been traditionally designed around a stereotyped concept of users as adult and non-disabled (Imrie R and Hall P, 2001). Although recent legislation and design guidance aimed at addressing the wider needs of people has comprised a useful staging post on the road towards incrementally including all, they are also based on a narrow interpretation of disability and the life-course, which privileges mobility impairments and older peoples’ needs.

This paper will offer evidence drawn from a recent review of UK regulatory frameworks as they relate to housing quality and design, which demonstrates that despite measures to promote the social inclusion of disabled people, children have remained largely invisible. The paper concludes that building design polices must be reviewed with the intention of accommodating cultural diversity and physical difference irrespective of life-stage.
Universal wayfinding and information systems in complex environments: from museums to airports

Wednesday 26 March (11.30 -13.00) – Lecture Theatre Two
Buildings and environments – domestic and public access and wayfinding
chaired by Prof Wolfgang Preiser

Coco Raynes
Coco Raynes Associates Inc, USA

Abstract
Coco Raynes Associates is a multidisciplinary design firm that has worked extensively towards providing equal information to blind and visually impaired travelers in the public environment. In 1990 the firm developed the Raynes Rail, the patented Braille and Audio Handrail System. The product was an answer to the new ADA regulations, requesting that all doors of public buildings be marked with Braille, creating the missing link between the building entrance and the desired destination. For this invention Coco Raynes was honored in 1994 with the prestigious Gold Award from the Industrial Designers Society of America, the Honor Award from SEGD, and the Design Excellence / Innovation Award from I.D. Magazine. The Rail was followed by tactile maps and floor markings, which became part of comprehensive wayfinding and accessible information systems for Parks, Libraries, Museums and Transportation Facilities.

The presentation will focus on opening national museums and Charles de Gaulle Airport to blind visitors.
Towards curricula in design for all for information and communication products, systems and services

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level
chaired by Lesley Morris

Colette Nicolle
Ergonomics and Safety Research Institute (ESRI)
Loughborough University, UK

Cathy Rundle and Helen Graupp
Royal National Institute for the Blind, UK

Abstract
The aim of the Inclusive Design Curriculum Network (IDCnet) is to integrate information and identify core knowledge sets and skills for model curricula in design for all (DfA) specifically for information and communication products, systems and services. Identifying such knowledge and skills is a step towards providing designers with training and competence in inclusive design principles, methods and tools. One of the first major activities of IDCnet is a workshop to be held in Helsinki in February 2003 called ‘Design for All Curriculum: Towards a synergy of the needs of ICT industry and education.’ The workshop will be bringing together:

- Experts from DfA-aware industries to discuss and suggest what they would expect from graduates they would employ who claim to have proficiency in DfA.
- Experts from the academic world, with teaching or research interests in DfA, to use their own experiences in the field to suggest key knowledge sets and skills that would be necessary for curricula in this area.

This presentation will:
- Summarise and discuss the Helsinki results and recommendations
- Discuss existing fora, information resources, materials and tools which could form part of model DfA curricula.
- Seek further views and opinions from educators, trainers, students, education policy makers and end-users.
- Promote the network to a wider audience of those interested in design for all curricula in the specific field of ICT.
Simulation for inclusion... true user-centred design?

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level
chaired by Lesley Morris

David Hitchcock and Andy Taylor
Loughborough University, UK

Abstract
Ergonomics continues to offer useful contributions to the inclusive arena; anthropometry data, guidelines for designers and usability research. One particular tool, the ‘Third Age Suit’, commissioned by Ford to raise awareness of the physical capabilities of older users (‘Third Agers’) has raised considerable media interest. There are, however, limitations to using wearable devices like the suit for simulation. Their intention is to provoke the designer to ‘dig deeper’ into the needs of their target end-user group. The suit, for example, is insufficiently developed to consider the complex synergies of restricted movement and accommodate different states of degeneration or impairment.

In this paper, the authors report on student projects to refine various wearable devices to address such limitations, and discuss plans to produce wearable simulation which is truly user-centred – representative of those it endeavours to simulate and usable by the designers.
Inclusiveness through universal design: feedback and evaluation

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level
caired by Lesley Morris

Prof Wolfgang Preiser
School of Architecture and Interior Design, University of Cincinnati,
and Editor, Universal Design Handbook, USA

Abstract
The momentum for an increasing acceptance of universal design is growing. With
the publication of the Universal Design Handbook in 2001, a new design paradigm
for the 21st Century was presented on a global level, with 69 author groups from
18 countries making theoretical, philosophical, pedagogical, as well as practical
and case study contributions. The question arises whether the seven Principles
of Universal Design, echoing a somewhat idealistic stance toward building
performance, can be operationalised and implemented in the great number
and diversity of building types and real world situations.

The main goal of this paper is the presentation of a conceptual process model for
universal design evaluation. In principle, universal design evaluations can be used
to obtain performance feedback and to feed the lessons learned into databases
and the programming of future, similar projects. Such 'knowledge building' can
contribute significantly to successful, feedback-based guidelines and performance
criteria, as well as continuous quality improvements. At the same time, as demand
for universal design evaluations increases, this presents an opportunity for a
universal design research agenda for the future.
i~design – building a toolkit for inclusive designers

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level chaired by Lesley Morris

Cherie Lebbon
Helen Hamlyn Research Centre, Royal College of Art, UK

Abstract
The main object for HHRC within the i~design project was to collect methods, approaches and strategies for inclusive design and to map them in a way that related these to the working practice of designers.

A literature review exploring methods for working with and understanding the needs of people revealed that the impetus for inclusive design had different roots in different countries – USA, Europe, UK. It also showed that User Centred Design, Ergonomics and Human Computer Interface design had so far had a major influence on methods for understanding user need. However these methods left a huge gap because they did not deal at all with aspirational aspects of use.

A series of questionnaires and interviews helped us discover how many design companies thought that inclusive design was relevant to them and important for their clients. A workshop attended by a representative group reviewed available resources and explored what was useful and usable. From this we discovered the different ways of working when designers consider who will use their designs and that many social science methods were being adapted for design research purposes.

The resulting toolkit provides a resource for designers and enable them to select methods, approaches and strategies that suited whatever type of project they were engaged with.
Making universal design the new sustainability

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level chaired by Lesley Morris

Sally Stewart and Alexander Page
Glasgow School of Art, UK

Abstract
Universal design makes perfect sense. To design to include rather than to exclude would seem obvious, why then is it such a difficult concept to get over to architecture students. At a point where the profession is finally accepting that universal, inclusive principles are good design principles, for many students it appears to be a specialist activity – outwith the mainstream. How can we make inclusive design the new sustainability?

This paper looks at some of the issues in encouraging architecture students to change their perceptions of the needs of their clients and adopt the principle of universal design as a norm. It considers the development of briefing tools and soft research as well as looking in detail at several projects at third year level within the Mackintosh School where universal design is an integrated into the project aims and assessment criteria.

In considering these issues in relation to our students, it offers us an opportunity to reflect on our own teaching practice, design practice and attitudes.
Education and practice of inclusive design at student level

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre One
Education and evaluation — resources and methods at student level
chaired by Lesley Morris

Rama Gheerawo and Julia Cassim
Helen Hamlyn Research Centre, Royal College of Art, UK

Abstract
How can we encourage young designers who are mostly fit, able-bodied individuals with good eyesight, excellent hearing and a strong degree of mobility to think about people other than themselves, especially groups such as older people or disabled people who are culturally and socially removed from their immediate experience? One answer is to educate designers when they are still at student level, but can this be effectively done when the curriculum holds a multitude of other skills to be learnt? A further challenge is to break down the barrier that most young people (design students included) instinctively put up between themselves and marginalised groups.

This paper addresses these issues through presentation and discussion of an annual competition and award scheme run by the Helen Hamlyn Research Centre (HHRC) for graduating MA design students at the Royal College of Art (RCA). Young designers are encouraged to participate in forums of ‘critical users’ and to explore the practical design implications of key social developments.

The generic problems and solutions of running this type of programme are discussed and a range of innovative and socially inclusive results are presented as a potential model for similar competition programmes elsewhere.
SeeWord: including dyslexic computer users

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre Two
Interfaces – systems and software that limit exclusion
chaired by Prof Bill Green

Anna Dickinson and Peter Gregor
University of Abertay Dundee, UK

Lucy Dickinson
University of Edinburgh, UK

Abstract
There are significant numbers of people who find traditionally designed word processing systems very difficult to use and who are thus effectively excluded from the advantages that such systems can provide; those excluded include older people, people with learning disabilities, people with ocular motor problems and people with specific reading disability (e.g. dyslexia). In addressing the specific problems encountered by one such excluded group, insights will arguably be gained into the issues associated with developing more inclusive word processing systems in general.

Dyslexic readers are a readily available group among student populations; they often display a wide range of difficulties with word processing systems. In spite of the enormous potential benefits, many dyslexic readers are effectively excluded from successful word processor use by long hierarchical menu structures, excessively complex interface options and uncomfortable visual environments. Addressing these problems as dyslexic readers reported them made possible the design and development of a prototype word processing system, SeeWord. Evaluation with groups of dyslexic participants indicated not only that SeeWord made reading and text production significantly easier but also enabled participants to use the system more easily. This paper reports on the development of SeeWord, the design strategies employed, the initial evaluation results and discusses the wider implications of this design process for developing better computer systems for everyone.
ABSTRACTS

Considering patients’ needs: inclusive interface design for a hospital system

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre Two
Interfaces – systems and software that limit exclusion
chaired by Prof Bill Green

Julie Barrett and Dr Geoffrey Cook
Research Group for Inclusive Environments, University of Reading, UK

Rachel J McCrindle and Darren Booy
Department of Computer Science, University of Reading, UK

Frank Arnold
Royal Berkshire Hospital, Reading, UK

Abstract

For hospital patients and their non-professional carers it is becoming increasingly important to seek information about their condition, treatment and recovery. Furthermore, many hospital patients feel isolated from telephone/electronic contact with their family, friends and work mates. This paper briefly describes the features offered by a ‘hospital portal’ that provides information, communication and entertainment to patients and the ongoing work to develop an inclusive interface for such systems.

The aim is to design an interface that can be used easily and effectively by all members of the patient community regardless of age, ability, computer experience or first language. In addition, the goal is to design a system that will be useful to patients. Thus, an early phase in the development of the hospital portal was to gather information on user requirements for the content and functions provided by the portal. User requirements were elicited using focus groups with participants who had been hospitalised. This work and the findings are reported in this paper.
Footpath edge extraction for Vision Based Mobility Aid

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre Two
Interfaces – systems and software that limit exclusion chaired by Prof Bill Green

Quazi Khalid Hassan and Shahedur Rahman
School of Computing Science, Middlesex University, UK

Abstract
Traditionally visually impaired and blind people use long cane and guide dog as primary mobility aids. Our research goal is to develop a secondary aid called Vision Based Mobility Aid (VBMA). In this paper, we are presenting a part of our research results which identifies the footpath edges from moving images. Identifying footpath edges is as important as identifying obstacles on the street for providing safe navigation information to visually impaired and blind people.

We have used a number of image processing techniques to extract the footpath edges. In the pre-processing phase, mean filtering and modified Deriche edge detection method have been applied to reduce the noise and to generate the basic edge elements. Footpath edges are then extracted by excluding the near horizontal edges. These horizontal edges are used to eliminate the static/standing features like trees, bus stoppage, cars etc. which are not considered to be the elements of the footpath edges. The other main characteristic of the footpath is the ‘parallelism’ feature of the opposite sides. The parameters length, angle and distance between two lines, have been used to determine the parallel edges. At the final stage of the processing, segmentation is applied to evaluate the radiometric properties within the identified parallel edges of the image. Radiometric variation within the parallel edges is considerably less unless the image segment within the parallel lines has been occluded either by trees or by shadows. This process continues until the complete picture of the footpath edges is finalised.
Multimedia communication support for people with dementia

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre Two
Interfaces – systems and software that limit exclusion
chaired by Prof Bill Green

Norman Alm and Richard Dye
Applied Computing, University of Abertay Dundee, UK

Gary Gowans and Jim Campbell
Duncan of Jordanstone College of Art and Design, University of Abertay Dundee, UK

Arlene Astell and Margaret Ellis
School of Psychology, University of St Andrews, UK

Abstract
A multi-disciplinary team of designers, software engineers, and psychologists is developing an innovative approach to helping older people with dementia to communicate, by using an easily accessible multimedia reminiscence aid. The system is designed in such a way as to help users to be able to use it easily, and to be able again to enjoy holding conversations with relatives, friends, and carers. The conversations are based on reminiscence about the past, since long-term memories can remain relatively intact with dementia, even where short-term memory is ineffective. A first prototype has been developed and evaluated by people with dementia and carers. Both care staff and people with dementia have responded very positively to the system and report great enjoyment in using it. An important general point about this work is that design which can compensate for such serious cognitive problems in users may also have more general application in making complex multimedia material accessible in an easy and enjoyable way.
Software design for older adults to support memory loss

Wednesday 26 March (14.00 - 15.30) – Lecture Theatre Two
Interfaces – systems and software that limit exclusion
chaired by Prof Bill Green

Mary Zajicek,
Department of Computing, Oxford Brookes University, UK

Abstract
Successful product design for older adults means supporting a wide range of age related differences that are not found in younger people. This paper covers lessons that can be learnt from the world of software design for older adults, which have relevance for the design of other interactive products such as video recorders, interactive TV and other interactive electronic devices.

Two examples of software design which support older adults are described, and are used to demonstrate principles which are particularly relevant to the design of any interactive appliance which involves instruction, and where users must develop strategies for using the product.
New century supertrends - inclusive design for the contemporary lifestyle

Wednesday 26 March (15.45 - 17.00) – WORKSHOP

Dr Patrick W Jordan
Contemporary Trends Institute, USA

Catherine Ejiogu
Gresham Bell, UK

Elizabeth Hofvenschiold
Fraunhofer IAO, Germany

Abstract
A criticism that is often levelled at ‘universal’ or ‘inclusive’ approaches to design is that they encourage those involved in the product creation process to take an impoverished view of the user. Traditionally, universal design approaches have tended to focus on fitting the design of a product to the cognitive and physical abilities of a user. This has led to an emphasis on design for effectiveness and efficiency of use with little attention to emotional impact, aesthetics and hedonic aspects of product-person interaction.

Contemporary approaches to usability and design have used extended definitions of usability, looking not only at effectiveness and efficiency but also at pleasure of use. This means setting user requirements, which not only address effectiveness and efficiency in use, but which also specify the ways in which products should support and affirm the user’s lifestyle. This workshop will look at the use of lifestyle trends as a tool for capturing user requirements with respect to delivering a pleasurable experience in use.
The role of the users’ context in usage research

Wednesday 26 March (15.45 – 17.00) – POSTER Q&A

Stella Boess and Theo Rooden
Delft University of Technology, The Netherlands

Abstract
What are possible strategies for furthering the inclusivity of design outcomes, whereby designers ensure that their products and services address the needs of the widest possible audience?

We will attempt a reflection here on our own past research. Our reflection takes as its theme the role of the users’ context in our research. Two studies are discussed, which were each part of PhD projects. Both studies had been conducted in order to derive insights on product usage that are relevant for the design of new products or environments. We review the studies retrospectively here, seeking to address some of the issues surrounding designed products and their interface with a situation of usage, and to derive insights for possible roles of the users’ context in future design research.
Bringing the wheelchair – universal design and usability considerations for small cars

Wednesday 26 March (15.45 - 17.00) – POSTER Q&A

Nikolas Fahlskog and Trond Are Øritsland
Department of Product Design, Norwegian University of Science and Technology, Norway

Abstract
Considerations of usability and universal design do not seem to influence the solutions offered to the wheelchair user who needs to bring the wheelchair in the car. The two main technological solutions offered today affect, to a large extent, either the interior or the exterior of the car. The only solution that does not require modifications to the car is the manual approach of lifting the wheelchair into the car.

Based on interviews with users and professionals in the Norwegian market, this article assesses existing solutions for bringing the wheelchair into or onto the car from the perspectives of usability and universal design. It is found that users prefer the manual approach because the technology is found unsatisfactory and inefficient. Universal design guidelines indicate that a better solution may be found by addressing the universal design of car interiors.
Open wide: designing a research strategy to explore patients’ anxiety relating to dentistry tools

Wednesday 26 March (15.45 - 17.00) – POSTER Q&A

Hasri Yunardi Hassan, Howard Denton and Deana McDonagh
Department of Design and Technology, Loughborough University, UK

Abstract
This paper proposes a strategy to explore the effects of colour and form of dentistry equipment and effects on patient anxiety. Anxiety may develop from fear of pain, previous unpleasant experience and conditioning by peers, which lead to the avoidance of treatment or follow-up treatment and present long term difficulties. Of particular interest is the concept of sensory triggers that generate anxiety.

The paper explores ways of gaining feedback from patients and dental professionals with a view to the development of design tools. This is far from straightforward as anxiety is an emotive concept and is often extremely difficult for a person to express or a researcher to measure and record. The paper also explores ways in which patients and dental professionals may be included within the designing process relating colour and form to new dental equipment.
Tactile pictures in art and museum education

Wednesday 26 March (15.45 - 17.00) – POSTER Q&A

Odile Le Quintrec
Scientist consultant, France

Yann Arthus-Bertrand
Photographer, France

Abstract
This interdisciplinary collaboration addresses the relationship between vision, blindness and invisibility. The main aim of this experimental work is to unite the visible and invisible worlds in the Earth from the Air exhibition. Created by famous photographer Yann Arthus-Bertrand, every aerial photograph tells a story about our changing planet, biodiversity and environmental conservation.

This session will discuss work on a project aiming to make ‘pleasurable’, tactile photographs from the Earth from the Air exhibition, free and accessible to the widest possible audience. It will describe the context and philosophy on which this project is based, and explore the potential uses of tactile pictures in art and museum education. This research is focused on the idea that a tactile picture is a ‘living object’ with which the visitor has an emotional and pleasurable relationship. Following the Jordan example, this study has considered a model for pleasure on four different levels: Physio-pleasure, socio-pleasure, psycho-pleasure and ideo-pleasure.

This paper will describe a tactile photograph developed by the authors that meets the aesthetic considerations of the photographer, the tactile and cognitive requirements of visually-impaired people and can be used equally by all people in different educational and leisure activities.
Design for all in the working environment: inventory of workspace adaptations

Wednesday 26 March (15.45 - 17.00) – POSTER Q&A

Reino Veenstra and Prof dr Johan FM Molenbroek, Section Applied Ergonomics and Design, Delft University of Technology, The Netherlands

Abstract
In July 2001, a report titled ‘Design for All in the Working Environment’ was published. The research project was initiated by the Ministry of Social Affairs and Employment. It discussed a research project on the application of Design for All in the working area. The aim was to find further areas of research for the application of Design for All in policy making on working conditions. On beforehand it was necessary to give general information about the status of Design for All. For the more specific part of the research project, 20 case studies were conducted among employees in a variety of working areas. At the end of the research project, we came to a number of general conclusions for every party possibly involved: the policy makers, the designers and architects, the employers and the employees, and the consumers. The report has provided the Ministry with sufficient information to link the topic Design for All to existing policy and future policy making, and to initiate further research.

The biggest challenge now is to develop a programme for the public and for the managers, but also to develop tools for designers to apply Design for All.
From showers to sensors: older people’s views

Wednesday 26 March (15.45 - 17.00) – POSTER Q&A

Claudine McCreadie
King’s College London, UK

Abstract
The paper reports on findings from a research project Introducing Assistive Technology into the existing homes of older people: feasibility, acceptability, costs and benefits, funded by the Engineering and Physical Sciences Research Council (EPSRC). As part of the research, seventy older people were interviewed in detail about their use and experience of a wide range of equipment, adaptations and alarms (Assistive Technology) that they had in their home to help them manage more effectively.

The respondents, living independently in the community, were aged between 70 and 97, and suffered from a spectrum of sensory and physical disability. The paper draws on the respondents’ own words to understand some of the design factors which shape the acceptability of Assistive Technology to older users.
Poor design and how to avoid it: personas and the inclusive design process

Breakfast Briefing
Thursday 27 March (8.45-10.00)
The European experience

Dr Patrick Jordan
Contemporary Trends Institute

Abstract
There has been no deliberate decision to exclude disabled people from product use; it has just happened by default. In my experience this is a very typical problem. In the vast majority of cases people end up being excluded from the user population not because the designer or anyone else has explicitly concluded that they should be, but because nobody has bothered to think about the issue in the first place.
ABSTRACTS

VÄINÖ – taking user centred steps with probes

Thursday 27 March (11.30 - 13.00) – Lecture Theatre One
Living longer – breaking the 'older' stereotype
chaired by Rama Gheerawo

Tuuli Mattelmäki
University of Art and Design Helsinki, Finland

Abstract
Population ageing is one of the potential topics of interest in several industry branches. There is a lot of data available about consequences of ageing and about the requirements and needs of elderly people. Using this information only can make designers rely on stereotypes or their own connections from that 'user group'. The danger with stereotypes is that they are not real people and ageing neighbours or parents form too limited interpretation of the wide group.

The probes approach can be used as a tool for collecting empathic material, both for inspiration and information, in a user centred concept design process. The case study was conducted in Väinö, a project, where different partners had a shared interest in learning about concept design and ageing people. The stories and illustrations gathered in the study were presented to support design teams common user understanding and insights for design empathy.
Air travel and the ageing nomad

Thursday 27 March (11.30 - 13.00) – Lecture Theatre One
Living longer – breaking the ‘older’ stereotype
chaired by Rama Gheerawo

Catherine Ejiogu
Gresham Bell, UK

Dr Patrick W Jordan
Contemporary Trends Institute, USA

Abstract
More people are travelling to foreign destinations, for leisure, business and professional opportunities. Low-cost flights have contributed to this phenomenon. However, flight delays, long queues and cancellations are becoming the norm. The dangers and discomforts associated with long haul economy flying are well publicised and the additional fears surrounding terrorism have made flying a physically and psychologically unpleasant experience for many.

This paper looks at the air travel requirements of a group known as ‘ageing nomads’. These are older people whose work requires that they spend a significant amount of time travelling.

Changing work patterns and the ageing of the population mean that there are increasing numbers of people who come into the ageing nomad category. They tend to be successful people with high-powered jobs and good salaries, but may also suffer from some of the disabilities that come with ageing. User requirements surveys were used as the basis for establishing the air-travel needs of the ageing nomad. Examples of the problems faced by older air-travellers are highlighted and suggestions using current and future technology are suggested.
Abstract
The crucial importance of design for all, or universal design, emerged with the notion of rapid ageing of the society in Japan. In 1986, the government acknowledged that Japan would be one of the most aged countries with nearly a quarter of population 65 years old and over. However, it took quite a long time before design for the aged population gradually transformed to design for all ages (and for all abilities). It started to be recognized by many only when the government finally accepted in 1997 that Japan will have about a third of population 65 years and over in 2050.

If we look back the Japanese developments of the past 15 years, we will notice that situation on housing, building, and public transportation has significantly improved. However, product design is still more tuned to specific user population, most notably to younger consumers (particularly evident with mobile phones) and paradigm shift is yet to come.

This paper tries to show what the recent moves are, and what else should be done to catch up the speed of population ageing. After all, no country has ever experienced such a highly aged society, and Japan has to open up the new horizon by itself.
Abstract
Traditionally home adaptation has been a reactive solution to diminishing personal independence. The results are often unattractive and stigmatizing to the user, by highlighting their disabilities and loss of independence. This was the premise of a two-year research project presented at Include 2001. The results of the study, which focused upon kitchen and bathroom design, were that information and practices linked to improving the homes of older people were based on a traditional medical model with limited information available to older consumers outside the context of disability. The practical outcome of the research project was the interactive web site www.futureproofhome.co.uk which was launched at Include 2001.

Through the web site’s inspiration and information older people, their friends and family are encouraged to actively ‘future-proof’ their homes by taking control of the design process in a pro-active way before their needs and abilities change significantly. The presentation at Include 2003 will report upon the progress of the web site from the perspective of:

1. Hands-on experiences and difficulties of marketing the site in an emerging market
2. Reaction and responses to the site from end users, including older people and care providers
3. The role of industry in the development and funding of the site. With reaction from companies whose 281 products make up the current catalogue of products.

In order to maintain and refresh the web site, new ideas and information are constantly being sourced through research in practice. The latest examples of future-proof work in progress and completed home interiors (currently featured in a mainstream interiors magazine) will be presented for discussion along with examples of the latest products identified for their inclusive features, according to future-proof criteria.
Shopping and the elderly: a universal design case study

Thursday 27 March (11.30 - 13.00) – Lecture Theatre One
Living longer – breaking the 'older' stereotype
chaired by Rama Gheerawo

Mathijs de Wit
Delft University of Technology, The Netherlands

Oya Demirbilek
University of New South Wales, Sydney, Australia

Abstract
Nowadays more then a billion different products are manufactured everyday. We do not need most of these and there are only a few products for people that really need them. Elderly people are still often forgotten as far as product design is concerned. A lot of normal products impose physical and mental barriers for these users, which make them feel different or even disabled. The Universal Design philosophy as an inclusive approach to design is now receiving proper attention from the industry. This might be due to the fact that the ageing of the population is now a widely acknowledged and accepted fact in most countries.

Even though we have come a long way in relation with including the elderly, they are still facing ageist attitudes. An example of study where the designer empathised with the elderly in order to design a shopping bag will be given in this paper. The present study was done in order to gain user understanding related to shopping activities for the elderly (mainly carrying groceries) and interpret it for a wider range of needs and aspirations. This was accomplished in an attempt to find a Universal Design solution related to grocery carrying activities that will allow the elderly to participate normally and independently in the society, contributing to their everyday life in a positive way.

The study involves a literature search, observations in shopping malls in Sydney, a survey applied to 14 elderly participants, and the trial of a prototype in shopping malls. Shopping habit examples and survey results from Sydney will be given to illustrate the present inclusive design study.
Good practice for standards setters and designers, are you considering the needs of older and disabled people?

Thursday 27 March (11.30 - 13.00) – Lecture Theatre One
Living longer – breaking the ‘older’ stereotype
chaired by Rama Gheerawo

Margaret Ellis
West Square Associates, International Commission for Technology and Accessibility (Europe) and CEN Working Group Needs of Older and Disabled People in Standards Setting

Abstract
For many years, there have been large numbers of Standards setting groups within Europe. Until recently, little thought was given to the needs of older and disabled people in the work of these organisations. Millions of Euros has been spent on the work but only now has real consideration been given to making standards truly accessible. This initial work has been undertaken because The European Union set up a Mandate 283 ‘Mandate to the European Standards Bodies for a guidance document in the field of safety and usability of products by people with special needs (e.g. elderly and disabled)’ was given by the EU Commission to CEN, CENELEC and ETSI. Two working groups, CEN/BT/WG113 and CLC/BT/WG101-5 (secr: SIS and AENOR), were established, but the work has been carried out in close co-operation between those groups and ETSI and ANEC. The work is partly financed by the EU Commission and has been done alongside an International initiative worldwide through ISO. A Guide 71 has now been published outlining the Standards, which give guidance on the Needs of Older and Disabled People. In the EU, this is called Guide 6. The Guide covers all aspects of goods and services.

In doing this work it was appreciated that soon these groups will form about 20% of the population of EU, in some countries a far higher percentage. Therefore not a minority but a considerable proportion of the spending force within society!

Each section of the Guide has some bright ideas and suggestions. Designers and manufacturers of goods and services would be wise to review the published Guide and include the relevant aspects in their future work. Older and disabled people can comment on the relevance for them and assist people in future developments.

The EU working Group is following on with some more detailed aspects of the work. Some special topics have been covered. A bibliography is currently being prepared.
Can computer based models facilitate participatory design with older users?

Thursday 27 March (11.30 - 13.00) – Lecture Theatre Two
Virtual tools – software models that aid design
chaired by Dr John Clarkson

Dr Diane Gyi, Rebecca Cain and Ian Campbell
Loughborough University, UK

Abstract
It is accepted that the European population is ageing and that there are clear social and economic gains to be made by involving users in the designing process. Computer based models provide a potential mechanism for giving users a voice early in this process and an opportunity for the stakeholders in product development to meet, work with and understand their needs and aspirations. Computer based representations of products have become more advanced over recent years and offer considerable scope for participatory design, however few studies address the issues of how users relate to such models.

A pilot study was conducted with 13 older users, all over the age of 50 (six males and seven females) to investigate their understanding of model formats that are often used by designers at an early stage of prototyping. The results indicate that whilst users were able to identify the basic purpose or function of a familiar product from the line drawings, perceptions of size, weight and materials were poor. Perceptions of specific design features and the ‘softer’ attributes, particularly with a less familiar product were unclear. Generally, the users’ ability to discuss product properties increased as the models progressed through to 3D images and physical models. These findings have implications for inclusive design and in particular in the communication of product ideas between users and designers share their design ideas and requirements with design/construction professionals who will implement the changes for them.
VR in the service of people with special needs

Thursday 27 March (11.30 - 13.00) – Lecture Theatre Two
Virtual tools – software models that aid design
chaired by Dr John Clarkson

Mike Grant
ABACUS, Department of Architecture and Building Science, University of Strathclyde, UK

BA Conway
Bioengineering Unit, University of Strathclyde, UK

CS Harrison
Department of Design, Manufacturing and Engineering Management
University of Strathclyde, UK

Abstract
The normal application of Virtual Reality is directed towards the simulation of environments which are in some way special – remote, hazardous or purely imaginary. This paper describes research and development work which changes the paradigm by simulating perfectly ordinary buildings for special people. Some 1.5% of the population have some form of physical impairment – a proportion likely to rise in line with an ageing population (Prosthetic and Wheelchair Committee, 1996). New legislation, e.g. the UK Disability Discrimination Act places additional responsibility on building owners to ensure adequate access for people with an impairment and this places additional responsibility on the architect. Current methods of auditing access for new building are primitive and require the auditor to interpret plans/sections of the proposed building against a checklist of requirements specific to the special need. This paper reports on progress in the use of an immersive VR facility to simulate access to buildings for those with a mobility impairment. ABACUS and the Strathclyde Bioengineering Unit have completed a research project, funded by the Engineering and Physical Science Research Council EQUAL programme, to develop a virtual reality facility that can be used to generate, via an interaction between architects, designers and wheelchair users, guidelines which address the issue of wheelchair access to, and within, the built environment. A wheelchair motion platform where users can explore virtual representations of buildings has been designed, built and evaluated with real users; it is a powerful and cost effective means of evaluating wheelchair access provision early in the design and redevelopment of buildings.
ABSTRACTS

HADRIAN: a human modelling CAD tool to promote ‘design for all’

Thursday 27 March (11.30 - 13.00) – Lecture Theatre Two
Virtual tools – software models that aid design
chaired by Dr John Clarkson

Prof J Mark Porter, Dr Russell Marshall, Ruth Sims,
Department of Design and Technology, Loughborough University, UK

Dr Diane Gyi
Department of Human Sciences, Loughborough University, UK

Prof Keith Case
Department of Computing, Loughborough University, UK

Abstract
The arguments for a ‘design for all’ or ‘inclusive design’ approach to product, environment or service design are clear and well understood. In order to address the underlying issues it is vitally important that designers are educated, informed and supported in the principles of ‘design for all’, with appropriate and applicable data, and with the tools and techniques to employ this data in their design activity. This paper introduces our approach to supporting the designer in a Design for All philosophy. The main focus of this approach is our computer aided design and analysis tool HADRIAN.

HADRIAN provides our sample database of 100 individuals across a broad spectrum of ages and abilities together with a task analysis tool. Working in combination with the existing human modelling system SAMMIE the system allows the designer to assess their designs against the population in the database to determine the percentage who are effectively ‘designed out’. The system has been developed to build empathy with the target population. In addition, the system provides a relatively simple, yet powerful, method of obtaining a form of user feedback and insight normally only attainable through expensive prototypes mock-ups and user trials. This feedback is also provided at a much earlier stage of the design process. HADRIAN is the result of a three year EPSRC funded project that was part of the EQUAL initiative. This project concluded in October 2002 but the development of HADRIAN is ongoing.
An inclusive design toolbox for development of educational virtual environments

Thursday 27 March (11.30 - 13.00) – Lecture Theatre Two
Virtual tools – software models that aid design
chair by Dr John Clarkson

Helen Neale, Sue Cobb and Steven Kerr
University of Nottingham, UK

Abstract
Virtual environment technology provides a novel medium for learning that may be particularly advantageous in special needs education and training. Virtual Environments (VEs) are 3D computer generated ‘worlds’ which may be used to simulate real places. This offers the potential to bring ‘real world’ scenarios into the classroom and to allow students to practise tasks and activities in a safe environment. Successful design and implementation of VEs requires direct involvement of users, teachers and training professionals in the design process. However, due to the nature and diversity of user requirements within this domain, combined with the large design space of VEs, we have found it necessary to adapt traditional Human Computer Interaction (HCI) design approaches. Our methods for inclusive design have evolved, taking into account different needs, abilities and communication skills of specific user populations. As a result we have a ‘toolbox’ of methods suitable for different kinds of stakeholders that can be used at various stages within the design process. This paper describes the range of components within the toolbox using case examples of VE development.
Inclusive design by linking ergonomic evaluation and constraint modelling

Virtual tools – software models that aid design
cared by Dr John Clarkson

Thanuja Goonetilleke and Prof Keith Case
Department of Mechanical and Manufacturing Engineering,
Loughborough University, UK

Dr Russell Marshall, Prof Mark Porter and Ruth Sims
Department of Design and Technology, Loughborough University, UK

Dr Diane Gyi
Department of Human Sciences, Loughborough University, UK

Abstract
To enable designers to ‘design for all’, a sound understanding of the intended users, their anthropometry and mobility is needed. Information is also required regarding users’ abilities and disabilities based on the tasks they are to perform while using the product being designed. Users, each of whom is an individual (and not just a part of the population), have different needs, physical sizes, coping strategies, abilities and disabilities. To use and apply each of these parameters together with the variables of the product and to meet the challenges of ‘design for all’ criteria, it is imperative for the designers to use effective and efficient tools.

This paper presents an approach for design synthesis with the objective of determining design parameters of a design that would meet the needs of a specified user population or maximise the percentage accommodation.

A new software tool is being developed to assist designers in the product development process. This software is able to suggest design parameters that would maximise user accommodation, after considering all the data sets for individual users. To achieve this, the software utilises capabilities of three very different pieces of software. The first of these is called HADRIAN, which is the prototype software currently under development, by the ‘Design for All’ project group at Loughborough University. HADRIAN provides an integrated database about
individual users and can carry out a task analysis for the tasks that the user has to perform when interacting with the product or the environment that is being developed. Mathematical analysis software is used to fit functions to this data so that the SWORDS Constraint Modelling software can be used to find the optimum parameters of the design that would maximise the user accommodation.

Issues in the design and implementation of this software system are discussed in the context of simple examples from kitchen design and automated teller machines (ATMs).

were into it’s surroundings, redefines the relationship between the complexity of its use and the simplicity of its metaphors.

The second is the inherent contradiction in current $i^3$ research: the issue of control. The issue of ‘control’ is paramount especially in those projects that deal with children. Through simple programming, body movements, dialogue with other children, the changes that are brought about in the direct environment (whether on a screen, or on a display or on a wall where an image is projected) appear to be directly and instantaneously brought about by the child herself. She’s in control.
Growing older digitally: designing technology for older people

Thursday 27 March (14.00 - 15.30) – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Guy Dewsbury, Karen Clarke, John Hughes, Mark Rouncefield, and Ian Sommerville
Departments of Computing and Sociology, University of Lancaster, UK

Abstract
This paper documents work from the EPSRC ‘EQUATOR’ and ‘Dependability’ Interdisciplinary Research Collaborations, concerned with the appropriate design of assistive technology to enable older people maintain a quality of life within their own homes. The focus of this paper is methodological since methods for identifying user needs and system requirements in home and care settings are relatively under-developed and present a very complex set of challenges for inclusive design.

We report on our experiences of using observational studies and adapting ‘cultural probes’ to foster an ongoing dialogue with the members of our user groups, to gain insights into their needs and generate design relevant information and inspiration.
Mutual inspiration in the development process of new technology for older people

Thursday 27 March [14.00 - 15.30] – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Roos Eisma, Audrey Syme and Anna Dickinson
Department of Applied Computing, University of Abertay Dundee, UK

Joy Goodman
Department of Computing Science, University of Glasgow, UK

Oliver Mival
HCI group, Department of Computing, Napier University, UK

Lachimi Tiwari
ICCAVE, University of Abertay Dundee, UK

Abstract
In technological development processes there often is predominantly a one-way flow of information in the exploratory phase, with researchers aiming to learn about the users’ needs and wants, and trying to match them with technological solutions. More active involvement of users only takes place in later stages, when prototypes or scenarios are presented for feedback, or when a well-defined design problem is solved in a combined effort.

There are few guidelines on how to involve older people in the design process of new IT related products. In this paper we describe some of the difficulties encountered when working with older people, and introduce the concept of mutual inspiration, illustrated by our experiences. We argue that mutual inspiration can provide a way to make interactions with older people more effective, leading towards more active involvement in the development process and more innovative results.
A design study to accompany the ageing process
<smart companion>

Thursday 27 March (14.00 - 15.30) – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Stefanie Lauter
University of Duisburg-Essen, Germany

Abstract
This paper describes a research project that addresses the difficulties in dealing with the impulse to enforce the project <smart companion> went along with the Mia Seeger Scholarship I received from the Design Center Stuttgart in 2000. When I started the study in 2000, I realised there still was potential for designing a particularly tailor-made device for seniors which cares for their special needs. During my research I came across a paper of the Federal Ministry for Research and Technology, Germany. Already in 1989 the Ministry initiated the work on devices which tackle communication of seniors. Social contacts should be maintained and isolation prevented in case of illness. Besides, solutions for small size medical devices should be developed, with special services offered to the elderly.

This paper will offer an inside view into the developed with a certain concern for an elderly target group, the so-called generation 55 plus. Basically, the study wants to support the seniors in their communication activities and search for other spheres of life where they might need backing. The elderly should be able to organise their life themselves and thus live independently. Furthermore, the device should motivate the ‘young old people’ to indulge in their interests. The conclusion of the study is a digital device, which is termed <memo>. The technical aspect behind the tool was to find a new solution for the already existing electronical devices. In addition to this, the premise was to include the changing during the ageing process, meeting the special needs, prospects and aspirations of the users.
Identifying elderly people’s needs for communication and mobility

Thursday 27 March (14.00 - 15.30) – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Sauli Tiitta
HIIT (Helsinki Institute for Information Technology), Finland

Abstract

The Finnish parliament’s future commission has listed challenges in elderly peoples lives that could be overcome using new technology. The two most important inhibiting factors affecting the quality of life of elderly people were identified as solitude and immobility. The purpose of this research is to identify everyday motivational needs concerning communication and mobility of elderly people and present a categorization that can be exploited when designing information appliances to overcome these difficulties.

Qualitative user research was used for identifying the phenomena typical in elderly people lives. Out of all observed phenomena the ones that were related to the elderly people’s habits for communication and mobility were selected. These phenomena were documented in the form of narratives, which were individually analysed in order to uncover the motivational needs that resulted in the observed phenomenon. An iterative process was used to group phenomena with similar motivational needs in the same category. The process resulted in a categorisation describing the most likely motivational needs that should be taken into account when designing information appliances for the elderly.
The significance of prospect in interfaces to health sites

Thursday 27 March (14.00 - 15.30) – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Stan Ruecker and Rosan Chow
Department of Art and Design, University of Alberta, Canada

Abstract
It is important to align the structure of an interface with the underlying structure of the domain it represents. This principle finds a strong implementation in interfaces with some form of prospect, where a meaningful representation of collection items is intrinsic to the retrieval interface. Some of the new affordances offered by interfaces with a strong collection prospect include: direct insight into content, context, structure, navigation, and limitations; suggestions of potential connections between elements in the collection; reminders of forgotten content items; and reassurance of quality of search results.

This paper examines these topics with respect to public access of health-related web sites, where several specific user issues can be addressed through provision of these affordances, such as potential insight into more holistic health topics; ideas concerning possible drug interactions and side effects; potential alternative medications and their implications; and provision of cognitive reassurance in areas where data collection and analysis are sometimes linked to strong personal investment.
Age-old Questionnaire

Thursday 27 March (14.00 - 15.30) – Lecture Theatre One
Digitally ageing – technology and the older user
chaired by Prof Alastair Macdonald

Joy Goodman
Department of Computing Science, University of Glasgow, UK

Audrey Syme and Roos Eisma
Department of Applied Computing, University of Abertay Dundee, UK

Abstract
Older people are an important and growing sector of the population, yet are often excluded by design. It is important to find out more about this user group so that they can be included effectively. As a first step towards this, we carried out a questionnaire and interview study in Scotland with 353 participants over the age of 50, investigating their use of and attitude towards technology. This is a method which can be very useful yet also fraught with difficulties. This paper therefore discusses how it can be used effectively, observing in particular the use of survey interviews in extracting more in-depth information.

It also describes the study and some of its results, discussing trends in technology use among older people and possible reasons for these trends, noting in particular the effect of technology age and complexity. It also discusses the implications for designers. We will discuss failures as well as successes in arriving at a user-centered interface for this health communication programme.
ABSTRACTS

Colour and lighting design for inter-modal transport environments

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments chaired by Prof Bill Green

Dr Geoffrey Cook, Prof Keith Bright and Dr Iyassu Yohannes
Research Group for Inclusive Environments, University of Reading, UK

Hilary Dalke and Dr Nilgün Camgöz
South Bank University, UK

Abstract
A report on travel and accessibility (COST 335, 1999), suggested that as many as 25% of all passengers across Europe struggling when travelling by train. It also goes on to highlight the need for colour, lighting and design to play a major role in creating socially inclusive environments. However, prior to this project little had been done to examine the relationships between vision impairment, lighting, colour design and contrast within public transport environments. This paper describes the scope and content of a research project concerned with producing design guidance for the colour and lighting of inter-modal transport environments. The research methodology includes literature reviews, questionnaires, semi-structured interviews, real-world tests and photometric and colour measurements.

A selection of findings from a pilot questionnaire are summarised to outline the nature of the respondents and their views on using transport environments. When the findings of the project are fully analysed, this research will identify the factors that contribute to accessibility, safety, confidence and independence when travelling. It focuses on areas where colour, lighting and design are current factors of failure or stress for visually impaired users of transport environments.
The Selectronic Shower: an inclusive design case study

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments
chaired by Prof Bill Green

Katie Stabler and Sabine van den Heuvel
Sensory Design Services, Royal National Institute of the Blind, UK

Abstract
This case study follows the inclusive design and development process of the Redring Selectronic Shower. It describes how Redring, the leading shower brand of Applied Energy Products Ltd has benefited from working in partnership with a major disability charity in the UK; the Royal National Institute of the Blind (RNIB) to ensure the development of an inclusively designed new shower unit for the care sector. By involving user groups and champions actively through all design stages, an immensely usable and stylish product has been developed.

This project demonstrates that the all-round benefits of inclusive design involving user-group champions can far outweigh the initial outlay of time and resources, and help make the process of involving users much less of a 'fearful' and 'risky' business for manufacturers.
Project Crystal: inclusive environments for deaf and hard of hearing people

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments
chaired by Prof Bill Green

Prof Keith Bright and Dr Geoffrey Cook
Research Group for Inclusive Environments, University of Reading, UK

Dr Indra Sinka
Open University, UK

Abstract
This paper is a summary of a substantive research project concerned with deaf and hard of hearing people accessing the built environment. In order for a building to provide a range of facilities for disabled people, the results of this and other work should be adopted by the construction industry. Changes in legislation, such as the introduction of the Disability Discrimination Act 1995, are also increasing the obligations on designers and managers of the built environment to fully consider the needs, and especially the diversity of needs, of all users. Whilst many users are now aware of the needs of wheelchair users, this is not the case for some other disabled groups such as those with visual or hearing impairments.

This project studied the effects of colour and artificial lighting on the process of communication by speech reading and by the use of British Sign Language (BSL). Through the use of a questionnaire, focus groups and tests in a controlled environment, the study has critically appraised a range of issues that affect the ability of deaf and hard of hearing people to use and communicate with other people in the built environment. This paper describes the laboratory based research element that considers the environmental conditions that assist or hinder deaf and hard of hearing people in the communication process and builds on previous work carried out to determine the needs of visually impaired users.
Inclusive lighting design in the home

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments chaired by Prof Bill Green

Prof Keith Bright, Dr Geoffrey Cook, Sarah Hill and Lindsay O’Neill
Research Group for Inclusive Environments, University of Reading, UK

Abstract
It is widely accepted that one outcome of the ageing population will be an increase in the number of visually impaired people. Also, the recent advances in Assistive Technologies and Smart Housing have increased independence meaning that older people are able to live in their own homes for longer. However, little research has been carried out on how lighting in a domestic environment may be optimised for visually impaired people (VIPs).

This project, funded by the Thomas Pocklington Trust aims to address this need. Pocklington is Britain’s largest specialist provider of housing and support services for people with sight loss. The three main phases of data gathering were: Questionnaire Survey; Home Surveys; Implementing Lighting Solutions. The findings of this project will be the basis for the development of guidance and recommendations on how to achieve the optimum lighting conditions for older people and people with sight loss, without excluding the other members of the household with whom they share their home and therefore lighting.
Remote interaction as an assistive technology

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments
chaired by Prof Bill Green

Stephen B Wilcox and Eric Callahan
Design Science, Philadelphia, USA

Abstract
So far, the primary focus of assistive technologies for folks with severe mobility deficits has been upon methods for improving mobility. Thus, increasingly sophisticated powered chairs have been developed, and the built environment has been altered (particularly in the US) to accommodate them. At the same time, systems have been developed to make driving more feasible and to make public transportation more accessible.

This paper presents a vision of a new technology that we have dubbed ‘remote interaction’. It involves using new technology to project one’s perceptual systems and ability to act into remote locations in real time. We think this technology that will change the way that people interact with each other and with their environments, and that these changes will have unique benefits for people who have severe mobility deficits. associated with teaching and the EFQM Excellence Model.
Research with users: colour design and lighting for public transport, prison and healthcare environments

Thursday 27 March (14.00 - 15.30) – Lecture Theatre Two
Soft design – colour, lighting and sensory environments chaired by Prof Bill Green

Hilary Dalke and Dr Nilgün Camgöz
Colour Design Research Centre, South Bank University, UK

Prof Keith Bright and Dr Geoffrey Cook
Research Group for Inclusive Environments, University of Reading, UK

Dr Paul Littlefair and David Loe
BRE Environmental Engineering Centre, UK

Abstract
The Colour Design Research Centre at South Bank University is involved in research, consultancy and the application of colour design and lighting focused on specifier and user needs, from products to environments. Current projects are in the transport, prison and hospital sectors. The EPSRC/DTLR LINK funded project (2001-2003) Inclusive Transport Environments: Colour Design, Lighting and Visual Impairment is being conducted jointly with the Research Group for Inclusive Environments at the University of Reading. The project examines issues concerning colour design and lighting in future multi-modal public transport environments for visually impaired and elderly users. The Home Office, Construction Unit project on safer custody in prison is currently working on six prison sites in the UK.

The Disability Discrimination Act 1995 (DDA) is applicable to service providers (Prophet 1998) yet few practitioners understand the complexity of colours’ role in making environments truly accessible. Field studies with visually impaired people have revealed that colour can affect acuity (Dalke, H et al., 2002). Colour is aesthetic, practical and an inherent property of materials. The widespread use today of monochromatic schemes and highly reflective surfaces is known to be problematic for visually impaired people. Older environments are similarly complex due to levels of ‘visual noise’. Research to establish some mechanisms from the complexity of these environments and to understand how colour design affects people who occupy different types of environments.
Optimising the user experience through marketing and human factors

Thursday 27 March (15.45 - 17.00) – WORKSHOP

Elizabeth Hofvenschiold
Fraunhofer IAO, Germany

Catherine Ejiogu
Gresham Bell, UK

Dr Patrick W Jordan
Contemporary Trends Institute, USA

Abstract

What makes a product usable does not necessarily make a product desirable. There is increasing recognition in the field of human factors (HF) that user-centred design (UCD) should not only focus on the hard or physical and cognitive issues (i.e. what the user needs) but also on developing products, which are desirable or pleasurable to the user. There is a move towards addressing the soft or emotional issues of design (i.e. what the user wants) or understanding why a customer actually chooses and uses a product. The fact that a product is user-friendly does not mean that the users it was designed for will actually use it.

Inclusive design should not only encompass the traditional HF design approaches but also provide enjoyment and support other emotional needs the user might have. As Teague and Whitney (2002) have pointed out, the emotional needs of users have a direct impact on the usability and ultimate success of a design. Usability is not everything. Or as Jordan (2000) puts it, people would miss the user-friendliness of a product if it was not present but would not necessarily be pleased to discover if the product was usable. A total approach to inclusive design needs to address the both the hard and the soft issues if the design is to be successful and truly acceptable to its users.
Inclusive user involvement methods

Thursday 27 March (15.45 - 17.00) – WORKSHOP

Roel Kahmann and Lilian Henze
P5 Consultants, The Netherlands

Abstract
If industry is prepared to take up inclusive design into their strategy and inclusive design is really implemented, inclusive usability testing is necessary. As professionals in human-centred design we took up the challenge of being the consumer’s advocate and the designer’s facilitator. Usability and user research leads to objective information on the human characteristics, interactions and context to be communicated to the design team. Looking at the extremes in the human-product-interactions is a basic approach to get insight in expected success and failure of design.

Although methods to raise awareness on problems faced by a variety of disabilities and data on specific problematic interactions of specific impairments are available, these are not directly applicable in usability testing in the product development process. As a consequence inclusive research methods are needed.
Moving from theory to practice in inclusive design

Thursday 27 March (15.45 - 17.00) – POSTER Q&A

Rita Newton, Marcus Ormerod, Andy Lewis and Erika Leho
SURFACE (Salford University Research Focus on Accessible Environments), Salford University, UK

Abstract
SURFACE has been seeking to bridge the gap between theory and practice in inclusive design. The team used a variety of techniques to obtain information from designers, building owners, access groups and voluntary organisations to investigate how inclusive design approaches could be incorporated into the architectural design process. The results of the research demonstrate that designers are keen to incorporate inclusive design principles but there is a knowledge gap particularly when designers are dealing with complex design problems; that users want to be involved in the design process but feel they have a limited amount to contribute; that there are a number of concerns relating to the implementation of the Disability Discrimination Act in October 2004 and in particular, what is ‘reasonable’ provision remains uncertain.

The authors propose that further consideration needs to be given to how designers and professionals can achieve innovation in inclusive design solutions in the built environment, and for the need to have an integrative approach to inclusive design.
On the development of a friendly rest room

Thursday 27 March (15.45 - 17.00) – POSTER Q&A

Renate de Bruin and Prof dr Johan FM Molenbroek
Faculty Industrial Design Engineering, Delft University of Technology, The Netherlands

Theo Groothuizen and Marja van Weeren
Landmark Design Holding, The Netherlands

Abstract
The EU-project Friendly Rest Room (2002-2004) aims at developing a user-friendly rest room for elderly and people with limited abilities. It is being facilitated by recent sociological, ergonomic & anthropometrical studies and technology developments and initiated by a company ATI in Jerusalem, who found nine other partners to join the consortium from different countries (http://frr.nurs.uoa.gr/KB/template/index.htm). These institutes vary in expertise from rehabilitation to social sciences, user societies, nursing and focusing on design ergonomics. To integrate these disciplines there is an industrial design team. There is a commercial company to emphasise the realistic outcome and an ethical review committee is involved to verify what is asked and what is done with the response. Because there is no method in the handbooks, an interdisciplinary approach is followed, starting with observing the primary user where possible, but also defining other types of users; the secondary user assisting the user and also the maintenance person and the architect or builder who make decisions about the development process.

Without knowing the outcome at this moment, we can predict that a unique collection of user behaviour and cultural influences from all over Europe will be compiled. Existing anthropometric tables might not be a great help in deciding where to support users with special needs in all the countries, although the method to measure small samples of the target population could add actionable knowledge for the design team. This could be of importance when it is more dynamic or functional e.g. when measuring a reach envelope (dynamic) instead of a reach depth (static). Also, the experience in a nursing and occupational health environment will contribute to analyse the optimum human-product-interaction, which is necessary to develop the product idea of a smart toilet that will compensate the special needs in a user-friendly way. The production-ready and tested prototype should be completed at the end of 2004.
The development of an inclusive design resource

Thursday 27 March (15.45 - 17.00) – POSTER Q&A

Samantha Porter
Coventry School of Art and Design, Coventry, UK

Shayal Chhibber and Prof Mark Porter
Department of Design and Technology, Loughborough University, UK

Abstract
In this paper we propose that inclusive design, as well as promoting design for a wide range of potential users, should also promote an inclusive view of each individual, seeking to understand more about their emotional and hedonic needs as well as their physical and cognitive ones. The aim of the research programme is the development of a design resource focused on how products can elicit ‘pleasure’ in a user. The resource is intended to guide and focus designers early in the design process on users and their emotional needs. Current research activity is focused on the designers themselves, attempting to understand how they currently work towards adding ‘pleasure’ into their designs, and gaining insight into what sort of design resource they would like to have at hand.

This information is currently being used to develop concepts as to how a design resource might be structured, and what information it may contain. It is clear from the interviews to date that any resource must be highly visual, with a ‘pleasurable’ interaction for the designer. The information it carries must also be accessible in a number of different ways, ranging from exploratory browsing to provide inspiration, to very constrained searches that provide specific information for design decisions.
Enhancing quality of life through engineering research

Thursday 27 March (15.45 - 17.00) – POSTER Q&A

Prof Peter Lansley and Verity Smith
University of Reading

Abstract
The EQUAL Research Initiative is concerned with promoting physical science and engineering research to meet the needs of older people and disabled people. This paper discusses the development of the initiative in the context of mainstream engineering research and the interests of industry. It suggests that the initiative is contributing a new style of research; one which is richly diversified, interdisciplinary and strongly user focused. This is both symbolically and practically important to the manner in which industry and the professions can be helped to understand and meet the needs of society. The opportunities to arise from a more complete understanding of the needs of users are considerable.
Inclusive design: the Alloy experience

Breakfast Briefing
Friday 28 March (8.45-10.00)
The European experience

Nina Warburton
Alloy Total Product Design

Abstract
In 2001, Alloy answered the challenge of the DBA’s design challenge, to achieve ‘innovation through inclusive design’. We answered the call by reconsidering one of the most dangerous, yet one of the most heavily used appliances in the home, the kettle. Our objective? Through designing inclusively, to inspire a product that would significantly improve an everyday experience for all people of all ages, able and disabled. The final solution was reached by taking a common sense look at the issues surrounding the generation and use of boiling water in the kitchen, hence the name: Kettlesense.

Although our most in-depth, Kettlesense is not our only experience of inclusive design. Alloy have been involved in the design of many inclusive products for clients such as BT and invoke many inclusive considerations in the work we do for clients such as E2V. Designing inclusively presents some unique challenges to product designers. This paper discusses some of the practical experiences that Alloy has had as a product design consultancy pursuing an inclusive design agenda, reflecting on what this has taught us about why we should carry out inclusive design; looking at various aspects of the inclusive design experience in terms of the issues facing inclusive designers, the integration of users into the design process, and how the lessons learnt through these projects can be applied to future design challenges and working practices.
Clothes for women with osteoporosis – from pilot study to pattern and book

Friday 28 March (11.30 - 13.00) – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing chaired by Prof Clare Johnston

Maria Benktzon
Ergonomidesign, Stockholm, Sweden

Birgitta Edgren and Anne-Maria Böhme
Konstfack, the University College of Arts, Crafts and Design, Sweden

Maria Sääf
Karolinska Hospital, Department of Endocrinology and Diabetology, Sweden

Abstract
‘Klädd’ is a book for women whose size and body shape has changed because of osteoporosis (i.e. brittle bones) or because of normal changes due to age. Behind the book is a project of research and development with Konstfack, the University College of Arts, Crafts and Design in Stockholm, Ergonomidesign and the Karolinska Hospital, collaborating for several years.

Woman with osteoporosis and vertebral fractures may decrease up to 20cm in length; get a stooped posture and a tender and protruding abdomen, which causes problems to find suitable and attractive clothing with good fit. This leads to loss of self-esteem and feelings of being less attractive. Despite severe pains the women experienced clothing as a greater problem. The concept idea is a common basic cut for all models with strategically placed seems to allow individually fitted garments. The book contains patterns and descriptions for sewing basic types of a jacket, a waistcoat, trousers and skirts. The patterns come in sizes small, medium and large, based on a completely new system of measuring that has been developed within the project. There are suggestions for several variations of the basic models.
Cross-application and inclusion

Friday 28 March (11.30 - 13.00) – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing
chaired by Prof Clare Johnston

Prof Usha Chowdhary
Central Michigan University, UK

Abstract

The need for social acceptance forces individuals to conform to the norms for social identification in every society. Functional clothing is invariably singled out because of its focus on meeting an occupational need, a physical disability, or developmental need. Moore (1985) used role-playing technique to understand the needs of the elderly prior to designing products for them. Feather (1991) identified the need to mainstream the clothing styles for the special markets to reduce stigma attached to the special needs categories and enhance acceptance of self and clothing. Both Feather (1991) and Chowdhary (2002a) noted buying from ready-to-wear through careful selection as the viable option. Chowdhary (2002b) looked at the aesthetics and function provided through catalogues for individuals with special clothing needs.

Recently, ready-to-wear apparel has introduced some design features for the mainstream consumers that were traditionally recognized for their use in clothing for those with special needs only. Therefore, careful selection of appropriate clothing from the ready-to-wear can help with mainstreaming the styles for special markets. Even though the option of designing specifically for those with special needs is always there, it is relatively an expensive option in mass societies.
Functional clothing design for the active grey market

Friday 28 March (11.30 - 13.00) – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing
chaired by Prof Clare Johnston

Zhengxia Li
MA Performance Sportwear Design, University of Derby, UK

Abstract
The importance of creating garments for a wider range of potential customers is becoming a critical issue for designers, manufacturers and retailers of sports and performance wear. As a designer specialising in functional sportswear, the rising demand from an active and ageing population indicates a good opportunity for the sporting goods industry. However, there is still a limited response from the market when it comes to catering for this sector of the population – a sector that has increasing amounts of disposable income and leisure time.

The majority of sports brands cater for the younger age ranges, typically, those from 15 to 25, while the ‘grey market’ provides a potentially far bigger demographic. My research indicates that this sector of the market is highly demanding in terms of a garment’s quality, comfort, function and aesthetic elements – ironically, those same elements that are commonly attributable to the youth market.
Ageless and ageing: a survey of fashion designers and their conceptions of the target group

Friday 28 March [11.30 - 13.00] – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing chaired by Prof Clare Johnston

Sonja Iltanen
Future Home Graduate School, University of Art and Design, Helsinki, Finland

Abstract
This paper discusses the results of a survey of women’s fashion designers’ conceptions on the age of their target group. The average age range for a target group is 30–58 years. Designers claim that these ‘adult women’ are wealthy, active, ageless and youthful, and demand comfortable, easy-to-care and high quality clothes. Designers claim that modern and classic styles are suitable for adult women, and dressing oneself as too old or too young is inappropriate.

The data reflects contradictory conceptions of ageing women in Western societies. Designers see adult women as an important and interesting target group. On the other hand designers’ views can be considered ageist, and mirroring normative age-based rules of clothing.
Shift for new beauty concept; approach to an inclusive design fashion study

Friday 28 March (11.30 - 13.00) – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing
chaired by Prof Clare Johnston

Keiko Imai, Momoyo Terada and Yayoi Wada
Japan Universal Fashion Association, Japan

Abstract
Japan Universal Fashion Association (UNIFA) was founded in March 1999 as Non-commercial organisation and was approved in December 2001 as NPO by Tokyo City Office. Its aim is to create a universal oriented society that provides everyone with opportunities to enjoy the inclusive fashion freely. With this in view, we take part in various activities related to Universal Fashion, such as ‘research’, ‘development’, ‘market survey’ and ‘retail activities’. In other words, the ideal and aim of UNIFA is to create a new beauty standard for the 21st century and Fashion for all. These two phrases are our keywords.

We hope to contribute to customers and manufacturers by consulting and advising to make both parties satisfied in their respective ways. As the first step to try out our ideas, we have established UNIFA Apparel Recommendation Programme. The guideline sets a point system to evaluate each apparel. The purpose is to find out whether manufacturers are making efforts by taking considerations of the needs of customers, including customers who are aged and disabled (cf hand-out leaflet).

This presentation shows, firstly, UNIFA’s New Beauty Standard in inclusive fashion design concept by means of visual presentation. Secondly, we will introduce UNIFA Apparel Recommendation Programme, which has proved to be very effective in producing high quality inclusive apparels to the market. As a successful example, we will focus on one particular knitwear maker among our 87 manufacturers. This knit maker has taken up the challenge by UNIFA and have conducted their R&D following our UNIFA design-guideline. They have made good use of our actual evaluation system in their proposed knit items.
Innovative design solutions for women with severe physical disabilities

Friday 28 March (11.30 - 13.00) – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing
chaired by Prof Clare Johnston

Caterina Radvan
London College of Fashion, UK

Abstract
In this paper I am going to present a brief overview of the high profile disability enjoys today in society and especially in the arts and popular culture. Usually contemporary design, including fashion design, can be viewed as a reflection of a society at any given time. However, this high positive profile does not appear at present to have a significant impact on fashion design, so that not only is access to fashion denied to women with severe physical disabilities, but also fashion design itself is not being used as a vehicle to challenge society’s perception of disability or the unconventional female body.

Having established this I will then go on to talk about my practice-based research which is registered as PhD research with the London Institute under this title. I will show you and talk about examples of my work and how I see it fitting into the area of inclusive design.
Smart wearables – a new frontier for inclusive design innovation

Friday 28 March [11.30 - 13.00] – Lecture Theatre One
Ready-to-wear – beyond mainstream fashion and clothing chaired by Prof Clare Johnston

Julia Cassim
Helen Hamlyn Research Centre, Royal College of Art, London, UK

Abstract
User involvement at all stages of project development is central to the inclusive design. Clothing is an area that has been unjustifiably neglected in the context of inclusive design yet is identified by young disabled people as being crucial to their feelings of self-esteem, relating as it does to the image they present to the world. The history of special needs clothing is that of the adaptation of existing styles for different medical conditions and body shapes with mixed results. However, the congruence of separate developments in international fashion, technical textiles, CAD/CAM/CIM production techniques, performance sportswear and extreme environment clothing and the possibility to embed nomadic communications technology in fabric promises the advent of a new generation of products termed ‘smart wearables’ by the author.

The products envisaged would combine mainstream fashion aesthetics with functional properties and act as interfaces in their own right, integrating the separate assistive devices currently used by disabled people for communication and mobility. This paper describes this new design arena, gives examples of wearable computing and ‘smart wearables’ from the mainstream design world and presents a conceptual model for future collaborative projects.
User capabilities and product demands

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Dr John Clarkson and Dr Simeon Keates
Engineering Design Centre, University of Cambridge, UK

Abstract
Currently, 1000 million of the world population have a noticeable degree of functional impairment. It is well established that impairments such as hearing, vision and reduced motor capability are of a degenerative nature and associated with increasing age. Legislation has forced organisations to consider designing products for impaired users. The declarative stipulations from the USA and the UK have been instrumental in encouraging an upsurge of initiatives in ‘universal design’ and ‘design for all’. However, better products will arise only if designers are able to evaluate them and characterise their target populations. To confirm the usability of a product, or product concept, it is necessary to verify that the target users for the product are able to use it. This verification can take the form of user trials, expert assessments or a systematic analysis of the product interface. The latter option is attractive since it offers a low-cost, quick evaluation. Better still, it would be ideal if the designer understood the capabilities of the target population prior to designing the product.

This paper will present the results of an analysis of data provided by the UK Department of Health and Social Security regarding the prevalence of disability in Great Britain. This data was originally collected to assist Government in estimating the need for care. However, it may also be used to show the range of capabilities of the UK adult population, thus providing insight into the characteristics of possible product target populations.
A framework for minimising design exclusion

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Dr P John Clarkson and Dr Simeon Keates
Engineering Design Centre, University of Cambridge, UK

Abstract
It is known that many products are not accessible to large sections of the population since designers instinctively focus on providing the necessary utility for someone matching their own physical and skill capabilities (Cooper, 1999). They are either unaware of the needs of users with different capabilities, or do not know how to accommodate their needs into the design cycle.

The aim of this paper is to present a framework for describing those excluded by design and to define measures for evaluating the extent of exclusion, thus allowing the effectiveness of different design approaches to be evaluated. A case study will identify the scale of exclusion and show how important it is to implement a structured approach to the design process. It will illustrate how design choices can exclude large numbers of the population. In addition, it will show that users may be excluded from using a product as a result of decisions made at all stages of the product design cycle.

Typical inclusive merit indices for a range of common products will also be presented. These will serve to encourage design improvements, particularly where actual products do not meet the potential of the ideal products.
Supporting the adoption of inclusive design practices

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Dr Simeon Keates and Dr John Clarkson
Engineering Design Centre, University of Cambridge, UK

Abstract
It is known that many people are being excluded unnecessarily from using products and services and that this exclusion often arises because the designers have not taken the end-users into account fully. There are clear knowledge gaps that need to be bridged. The first is that of knowledge of the end-users, and the second is how to use that knowledge of the users to develop more accessible and usable products and services.

While inclusive design and universal design are commonly accepted as good design aims, this paper discusses the merits of focusing on design exclusion. The concept of design exclusion is particularly powerful because identifying why and how users cannot use a product enables us to counter such exclusion. This paper explains how design exclusion arises and defines a series of measures of inclusive merit – how successful products are at being inclusive.
Understanding issues facing one-handed users

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Saeema Ahmed, Hua Dong and Dr John Clarkson
Engineering Design Centre, University of Cambridge, UK

Abstract
Statistics show that around three million users are potentially excluded from two-handed operations, for example, tying their shoelaces. A further three million users can only use one-hand to hold a mug of tea, or turn a water tap. These figures are based on users with long-term difficulties [Martin, 1988], in addition to these are those suffering temporary dexterity losses.

Although statistics highlight the severity of the problem, they do not provide an insight into how products can be improved. Therefore, users with difficulty of two-handed co-operation (long term or temporary) have been asked to record their experiences. These experiences have been analysed to understand the difficulties faced by the users; coping strategies developed and; how these can be transferred to aid the designer to address these difficulties.

This paper aims to discuss issues surrounding the problem faced by one-handed users, and how designers can learn from these problems. The research method is:

• To identify the problems faced by a long-term one-handed user.
• To identify the problems faced by a temporary one-handed user with design background.
• An assessment of products for suitability for one-handed users.
UK and US industrial perspectives on inclusive design

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Hua Dong, Dr Simeon Keates and Dr John Clarkson
Engineering Design Centre, University of Cambridge, UK

Abstract
Inclusive design and its US counterpart universal design present opportunities and challenges to industry. However, despite the motivations for adoption of more inclusive design practices, industry has been slow to adopt them (Keates and Clarkson, 2002).

This research aims to provide an understanding of why and how companies adopt inclusive design practices and what are the barriers when implementing them. Based on a series of interviews with UK design consultancies and a similar review in the US, a comparison of issues raised by UK and US companies regarding inclusive/universal design is made.
Identifying design exclusion: a review of assessment methods

Friday 28 March (11.30 - 13.00) – Lecture Theatre Two
Cambridge papers – combating design exclusion
chaired by Prof Peter Lansley

Carlos Cardoso, Dr Simeon Keates and Dr John Clarkson
Engineering Design Centre, University of Cambridge, UK

Abstract
It is often the case that informal and intuitive approaches to usability evaluation produce designs that overlook the needs, wants and aspirations of a wide range of consumers across diverse populations. The result is people of all ages being disadvantaged or even prevented from using everyday products and services (Coleman, 2001). This incompatibility between a wide range of products and services and an increasing number of dissatisfied ‘non-mainstream’ consumers, brings commercial and legislative disadvantages for industry, along with an unacceptable social divide. Consequently, there is a need to adopt more formal, effective and solid approaches for evaluating the mismatch between the qualitative performance of a design solution and the human characteristics of all the users who could potentially use such a design.

This paper highlights the differences between a range of assessment methods and discusses their usefulness in the evaluation of ease of use (with special emphasis on interface accessibility) throughout the design process.
Incorporating inclusive design at a major international corporation

Friday 28 March [14.00 - 15.30] – Lecture Theatre One
Companies and clients – inclusive design in mainstream practice chaired by Dr Patrick Jordan

Jari Jarvinen
Motorola, USA

Stephen B Wilcox
Design Science, USA

Abstract
At the previous Include Conference, we presented a system that we developed for incorporating inclusive design principles into the product development efforts of Motorola. The system consisted of a video database of interviews with people with various disabilities, a CD-based searchable information tool, and a “hard-copy” quick-reference guide. This is a follow-up to that presentation – a summary of how the system that we developed has been incorporated into Motorola’s methods for developing products. We discuss how the system is being used and how it is not being used—how it has changed the way that products are developed at Motorola and how it has encountered various barriers.

Finally, we discuss strategies for overcoming such barriers. They include specific actions that can be taken and different ways that information can be presented.
Design innovation for mainstream markets through ‘critical’ user involvement’ – the DBA Design Challenge example

Friday 28 March (14.00 - 15.30) – Lecture Theatre One
Companies and clients – inclusive design in mainstream practice chaired by Dr Patrick Jordan

Julia Cassim
Helen Hamlyn Research Centre, Royal College of Art, London, UK

Abstract
User involvement at all stages of project development is central to the inclusive design process. While this can be achieved through a variety of methods used alone or in combination, focus groups or user forums are an effective way of ensuring this. A common feature of many projects in the commercial design world, focus groups are nevertheless different in intention and structure and can be limited in their impact as a result. In the commercial world, the client’s definition of the brief, their reliance on external market research companies for focus group selection, and the designers’ ‘fly on the wall status’, means that the information gleaned can be contradictory and narrow in focus in demographic and design terms.

As a result, a design tool with powerful potential as a driver of design innovation is stripped of much of its effectiveness. In contrast, the design teams who have taken part in the DBA Design Challenge for the past three years ranked the experience of working with ‘critical’ users – (i.e. those with sensory, cognitive and learning disabilities) – highest in terms of usefulness as a design tool. This paper centres on the role of the ‘critical’ user in promoting innovative thinking among designers. Examples from the three DBA Design Challenges to date will be given and the historical context for innovation in the care and disability sector described.
Designing technologies to bridge the digital divide

Friday 28 March (14.00 - 15.30) – Lecture Theatre One
Companies and clients – inclusive design in mainstream practice
chaired by Dr Patrick Jordan

Wendy Olphert and L Damodaran
Loughborough University, UK

Abstract
Emerging digital technologies offer the prospect of enhanced quality of life through remote delivery of services, access to information, education, health expertise and entertainment. In the UK, interactive digital television (iDTV) is a technology which offers the potential for easy public access to a wide range of services through the television set in the home. However, evidence shows that early adopters tend to be affluent professionals who already enjoy PC connection to the internet and related benefits of connection. Those (such as the elderly and low income groups) who may have most to gain are the least likely to take it up.

An inclusive design approach which both identifies requirements and engages stakeholders at risk of exclusion is crucial if these new digital technologies are to fulfil their potential to reduce the ‘digital divide’ in society. The nature and scale of stakeholder participation required poses significant challenges to existing inclusive design methods. This paper identifies the critical success factors for effective and dynamic stakeholder engagement to enrich the inclusive design process.
How can designers constructively work with users within the design process and does this method really carry benefits for business?

Friday 28 March (14.00 - 15.30) – Lecture Theatre One
Companies and clients – inclusive design in mainstream practice chaired by Dr Patrick Jordan

Rama Gheerawo
Helen Hamlyn Research Centre, Royal College of Art, London, UK

Abstract
This paper focuses on applied design research projects run by the Helen Hamlyn Research Centre (HHRC) at the Royal College of Art (RCA) where an empathic approach is taken to the design process. The paper is a description of the practical manner in which this method can be used and the emphasis is on how this and other user-centred design research methods can bring business benefits to the design process.

The main vehicle for this is the Research Associates (RA) Programme where new Royal College of Art (RCA) graduates collaborate with industry and voluntary sector partners on year-long design research projects. Each project addresses an area of interest for the research partner, where an inclusive design approach can be practically implemented within a ‘real world’ business context.

The paper explores case studies from the RA programme and describes the business impact on the research partner.
Enabling design: the research, process and the practice of treating audience as client

Friday 28 March (14.00 - 15.30) – Lecture Theatre One
Companies and clients – inclusive design in mainstream practice chaired by Dr Patrick Jordan

Sean Donahue
Research Centred Design, USA

Abstract
However beneficial the notion of reaching the widest possible audience with a single product may be, it alone is not sufficient. Universal print guidelines and human-centered design have certainly given products and markets the opportunity to reach larger demographics. What they have not done is identify the unique qualities of each of these communities. To be inclusive there must be a willingness to embrace diversity by addressing the specifics of markets. Doing so will not only provide the individual attention needed to address specific characteristics but will more appropriately allow their inclusion to general products on a whole. Doing so however requires that design itself fully explore all that the discipline has to offer. This requires a fundamental shift in the perception of and practice of design. Moving from the designer singularly as a reactive problem solver to a proactive design leader able to identify areas of contribution through design research. However minor this shift may seem, its result is a fundamental change in the use, perception of, and practice of design in every capacity.

A shift required before effective communications, products or contributions that speak not only to a broader audience but also to non-traditional or mainstream audiences could be achieved. However diverse ‘we’ perceive an audience to be growing the reality is that it is design’s practice that is expanding. Many of the audiences being discussed have always existed; they have not however been a consideration of the design practitioner or commercial entity. Engaging with this expanded practice and ‘audience’ is requiring the designer to learn entirely new methods of interacting and perceiving. Making it the responsibility of the design practitioner to work past there own misconceptions of a ‘community’, not an object, in order to create effective design contributions that speak to the specific characteristics of a particular audience. This paper will discuss, through two example projects the methods, language, use and role that design encounters when making its ‘practice’ inclusive.
Computing: a family affair

Friday 28 March (14.00 - 15.30) – Lecture Theatre Two
Guidelines and resources – practical demonstration through case studies
chaired by Dr John Clarkson

Jennifer Hann and James Pryor
Coventry School of Art and Design, Coventry University, UK

Abstract
Home computing is now a family affair. Growth in home computer ownership and use, since the arrival of affordable PCs in the 1970s, has been enormous. A significant percentage of older people, and very young children, are now regular users of home computers. An increased focus on IT in the national curriculum encourages shared computer use by parent and child. Whilst there is extensive published research and recommendations regarding appropriate ergonomics for adult users of computer hardware, little attention has been paid to the ergonomics and usability challenges emerging from the shared, simultaneous use of computers by adults and children.

This paper describes a design research project conducted in Coventry University in which the shared use of computers and computer peripherals by adults, by children and between adults and children in the home was examined. The use of computers in ten households was observed and systematically recorded in two. It was found that the differing needs of individual household members were insufficiently accommodated and that the specific needs of some users, for example a left-handed child in a right-handed household, were not addressed. The researcher also recorded evidence of difficulties in relation to the shared use of computers in schools.

A number of examples will be given illustrating the inadequacy of current solutions for shared computer use. The ways that people adapt both hardware and environments to create workable solutions is also discussed. Improvements to computers and peripherals to make them more suitable for shared use are proposed as well as a more radical examination of how computers could be better integrated with family life. A proposal for one possible hardware solution that addresses the differing needs of household members is described and discussed.
Re-engineering for inclusivity – engineering workshops and classrooms

Friday 28 March (14.00 - 15.30) – Lecture Theatre Two
Guidelines and resources – practical demonstration through case studies chaired by Dr John Clarkson

Eoin O’Herlihy and William Gaughran
University of Limerick, Ireland

Abstract
Re-engineering can be described as: ‘the fundamental rethinking and radical redesign of operations, manufacturing and business processes, in order to achieve significant improvements in performance, quality and accessibility (Gaughran, 2002). Designing inclusive environments for wheelchair users has concentrated mainly on accessible housing, office facilities and public buildings. In engineering workshops and in engineering and technology classrooms, little effort has been made to establish design standards, which are fully inclusive. Recent research at the University of Limerick has set out to determine guidelines for wheelchair user inclusivity in these facilities (a) relating to access and operational ergonomics in the general environment and in relation to machine and bench access and usability.

In providing guidelines for comfortable and safe working/learning conditions for the wheelchair user, it emerges that conditions for safety and comfort are improved for all users. Several areas are discussed: preliminary findings, safety, general access and operational ergonomics, bench access, usability and working heights. While some elements require serious re-design many are capable of immediate intervention with minimal cost. The findings should encourage providers to improve facilities and wheelchair users to embark on studies and careers, which might be perceived as being outside their present scope.
An integrated approach to the design of medical products for operating rooms

Friday 28 March (14.00 - 15.30) – Lecture Theatre Two
Guidelines and resources – practical demonstration through case studies chaired by Dr John Clarkson

Dr Robert A Young, Dr Simon Smith and Rosemary Mockford
Centre for Design Research, Northumbria University, UK

Abstract
This paper is based on the findings of a research project funded by the EPSRC to develop an integrated design resource for medical products for use in hospital operating rooms. The research aimed to improve integration and usability of operating room equipment for healthcare providers whilst rationalising the process of its development for manufacturers. The findings are of interest both to companies developing products for the operating room environment and the healthcare providers using them. Exploratory research used multiple case studies involving organisations developing equipment for use in the operating room.

Qualitative data was gathered from semi-structured interviews using a typical product example to facilitate discussion about product development. Thirteen examples were discussed, from operating tables to surgical instruments. Findings draw on data from 18 interviews held with design and management personnel and indicate three categories of conclusion. Improving the coherence of the design approach by bringing company values and human-centred issues inside the business protocol exerts a greater impact on the design process and resultant products. The importance of first-hand operating room experience for designers was recognised but not frequently implemented.

Formal methods for communication of the design approach, design brief, clinician meetings and operating room experience are often not present or well used by the design team and would help the clinician to identify his/her role in design. Consultation between design teams and surgeons is common but the value of a more inclusive approach with patients, other users, clinicians, and specialists is needed. The paper will conclude by describing further research underway to investigate these issues from the perspective of healthcare providers, also, the plan to develop an integrated, human-centred design resource to assist improvements in operating room product development.
Abstract
The paper focuses on the ethnographic (commercial) techniques used when researching people’s everyday life. Particular focus is given to understanding in home behaviour. How can the researcher blend in to the surroundings to help them get a closer look at what peoples realities really look like?

The paper offers the reader an understanding of the how these different techniques can be used at different stages of the fieldwork research process; and how this helps designers/fieldworkers arrive at better designs based on understandings that reflect peoples real needs.
**Design for all in the working environment: inventory of workspace adaptations**

Friday 28 March (14.00 - 15.30) – Lecture Theatre Two  
Guidelines and resources – practical demonstration through case studies chaired by Dr John Clarkson

Reino Veenstra and Prof dr Johan FM Molenbroek,  
Section Applied Ergonomics and Design, Delft University of Technology,  
The Netherlands

**Abstract**

In July 2001, a report titled Design for All in the Working Environment was published. The research project was initiated by the Ministry of Social Affairs and Employment. It discussed a research project on the application of Design for All in the working area. The aim was to find further areas of research for the application of Design for All in policy making on working conditions. Beforehand it was necessary to give general information about the status of Design for All. For the more specific part of the research project, 20 case studies were conducted among employees in a variety of working areas. At the end of the research project, we came to a number of general conclusions for every party possibly involved: the policy makers, the designers and architects, the employers and the employees, and the consumers.

The report has provided the Ministry with sufficient information to link the topic Design for All to existing policy and future policy making, and to initiate further research. The biggest challenge now is to develop a programme for the public and for the managers, but also to develop tools for designers to apply Design for All.
Empowerment game: implementation of 'participatory design' in Hong Kong

Friday 28 March (14.00 - 15.30) – Lecture Theatre Two
Guidelines and resources – practical demonstration through case studies chaired by Dr John Clarkson

Yan Ki Lee
Hong Kong Polytechnic University, China

Abstract
This is a position paper outlining a preliminary development of a doctoral design research project. User involvement, community participation and user-oriented design are key issues.

The paper is divided into five parts:
1. Introduction of the intended research format and research questions.
2. General discussion of terminology regarding related concepts and an attempt to define the particular research field.
3. Analytical diagrams of user involvement activities that aim to position the research within the defined field.
4. Description of an ongoing experimental project in Hong Kong as a practical demonstration.
5. Conclusions expressing expected contribution to knowledge.
FORTHCOMING EVENTS

12 - 14 June 2003
Mobility RoadShow
Donington Park Race Circuit, Castle Donington, Derbyshire, UK
The world’s largest motor show for disabled people. The Mobility Roadshow aims to give anyone with a mobility problem – drivers, passengers, adults or children – the chance to see what is available to help solve that problem and most importantly to try out and evaluate the options in a ‘no pressure’ environment.
www.justmobility.co.uk/roadshow

27 June - 6 July 2003
Royal College of Art Summer Show Part 2
Royal College of Art, London, UK
The internationally renowned annual summer show by graduating students at the Royal College of Art (RCA) that also showcases the Design for Our Future Selves competition open to graduating students at the RCA. The competition aims to encourage and reward projects that draw together creative design and social need through interaction with the user.
www.rca.ac.uk / www.hhrc.rca.ac.uk

8 - 16 October 2003
Helen Hamlyn Research Associates Show
Royal College of Art, London, UK
The Helen Hamlyn Research Associates Programme addresses specific user needs related to socially inclusive design, via a programme in which new Royal College of Art (RCA) graduates undertake one-year design research and development projects within the RCA studios. Research Associates are funded jointly by external partners, who set briefs and participate in projects, and by the Centre, which manages the programme. The Programme runs from October to October each year. It is woven into the RCA’s studio-based work and into the RCA’s academic cycle, with a spring work-in-progress seminar and this final symposium and exhibition in the RCA galleries in.
(Symposium 7 October, by invite only)
www.hhrc.rca.ac.uk
The following listings are by kind permission of Elaine Ostroff, Director, Global Universal Design Education Network, Editor and Publisher

Saturday 29 March 2003 – Sunday 30 March 2003

Structures for Inclusion 3
Structures for Inclusion 3 seeks to illustrate the potential for achieving quality, innovative design serving clients who would not otherwise have access to affordable architecture services. Organised by the Design Corps and the University of Virginia School of Architecture, the conference will be held at the U of Virginia in Charlottesville, VA, USA. This conference will draw together students, young designers and professionals in a forum to examine current work, as well as to illustrate opportunities and methods for pursuing alternative community-based design strategies.
www.designcorps.org/index10.html

Tuesday 8 April 2003 - Wednesday 9 April 2003

Reverse Mortgage Educational Forum
As the demand for reverse mortgages has increased over the past year, so has the number of inquiries from originators – including brokers, mortgage lenders and bank branches – over how the programme works. In response, the National Reverse Mortgage Lenders Association is hosting the Reverse Mortgage Educational Forum, April 8-9 in Miami Beach, FL. NRMLA is the authoritative resource for the resource mortgage business. Our expert speakers will provide you with the information you need to become successfully involved with reverse mortgages.
Contact: lhampton@dvorbell.com
www.reversemortgage.org/conferences/educational_forum/announcement.htm

Sunday 25 May 2003 - Thursday 29 May 2003

IFLA (International Federation of Landscape Architects)
World Congress 2003
The Canadian Society of Landscape Architects (CSLA) invites landscape architects from around the world to join us in Calgary for a celebration of our profession. Hosted jointly with the Alberta Association of Landscape Architects (AALA), this gathering, the first of its kind to be held in North America, offers to be as exciting as it is stimulating. This conference is about landscapes on the edge. Edge, in the sense of places on the edge of territorial transformation as well exemplar solutions that are on the cutting edge of theory, practice and technology, at a range of scales. This conference will bring together leading practitioners and theorists to consider ways of providing new or proven processes and solutions to today’s design and planning issues.
Tuesday 8 July 2003 - Saturday 12 July 2003

AHEAD 2003 Conference
Advancing Our Profession: Refining Our Vision is the 26th Annual Conference of AHEAD. It will be held at The Hyatt Regency Dallas at Reunion in Dallas Texas, USA. Registration opens March 15, 2003 on the website.
www.ahead.org/conference/index.html

Sunday 12 October 2003 - Wednesday 15 October 2003

11th International Conference — Greening of Industry Network
The Greening of Industry Network provides a platform for people from diverse backgrounds to share ideas and experiences and to strengthen relationships, visions and practices for sustainability. Features of the Network conference include keynote speeches, plenary debates, breakout sessions, research paper workshops and ad hoc or poster presentations. The GIN2003 conference venue will be the Hotel Nikko San Francisco.
Contact: GIN2003@greeningofindustry.org
Website: http://www.greeningofindustry.org/

Thursday 4 December 2003 - Saturday 6 December 2003

International Conference on Aging, Disability and Independence
The International Conference on Aging, Disability and Independence will focus on issues relating to aging, independence, and quality of life. The conference will include sessions related to research and development, practice, products and services, and policy. The goal is to bring together researchers, practitioners, business leaders, and people involved in aging policy to focus on issues related to maintaining independence in the later years of our lives. It will be held at the Hyatt Regency Crystal City, Arlington, VA.
http://www.asaging.org/icadi/03/index.cfm

Adding your information, questions to the Global Universal Design Education Network Online News:
Send e-mail to elaineos@ici.net by the 20th of each month for the next month’s mailing. Articles should be limited to 600 words. If the issue is too full to include, and the timeliness of the article allows it, the publishers may hold the item until the following month.
Helen Hamlyn Research Centre
The Helen Hamlyn Research Centre at the Royal College of Art investigates the practical design implications of key social developments through academic study and practice with industry.

Launched in January 1999 with core funding from the Helen Hamlyn Foundation, the Centre investigates the design effects of four major social-change trends:

> ageing populations
> changing patterns for work
> growing demand for greater mobility
> the movement to integrate disabled people into the mainstream of society.

The Centre works with three design ‘communities’ – students, new graduates and professionals in business and industry – to promote a more socially inclusive and user-centred approach to designing.
Laura Ashley Foundation
The Laura Ashley Foundation is the principal sponsor of Include 2003. The Foundation aims to encourage individuals with truly innovative and workable ideas to bring those ideas to fruition, in fields as diverse as design, engineering and physics.
www.laf.uk.net

Design Council
The Design Council of England is sponsoring publication of Inclusive Design: design for the whole population. Launched at Include 2003, this 625 page book is a key outcome of the i~design programme.
www.design-council-org.uk

Ritsumeikan University
Publication of the conference proceedings has been made possible by a donation from the Discovery Research Laboratory of the Center for Global Education and Research at Ritsumeikan University, Kyoto, Japan.
www.ritsumei.ac.jp

i~design
i~design is a three year EPSRC-funded research collaboration between the Helen Hamlyn Research Centre (Royal College of Art), the Engineering Design Centre (University of Cambridge), Design for Ability (Central St Martins College of Art and Design) and the Design Council.
www.hhrc.rca.ac.uk/programmes/designage/i~design
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Prof Jeremy Myerson (Co-director)
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David Whittle (Website and IT support)

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DBA Challenge exhibition
Julia Cassim Helen Hamlyn Research Centre (Curator)

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