



Professor Ian Walsh

DESIGN FOR HEALTH



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Swansea
College of Art
Founded 1853

ATIC
ASSISTIVE TECHNOLOGIES INNOVATION CENTRE



1st award class



You're obviously doing something right down in Swansea.

What's your secret?



Jamie Owen
BBC Wales

Speaking at the
WDA Innovation
Awards in 1997

1997 The Genesis of a Journey

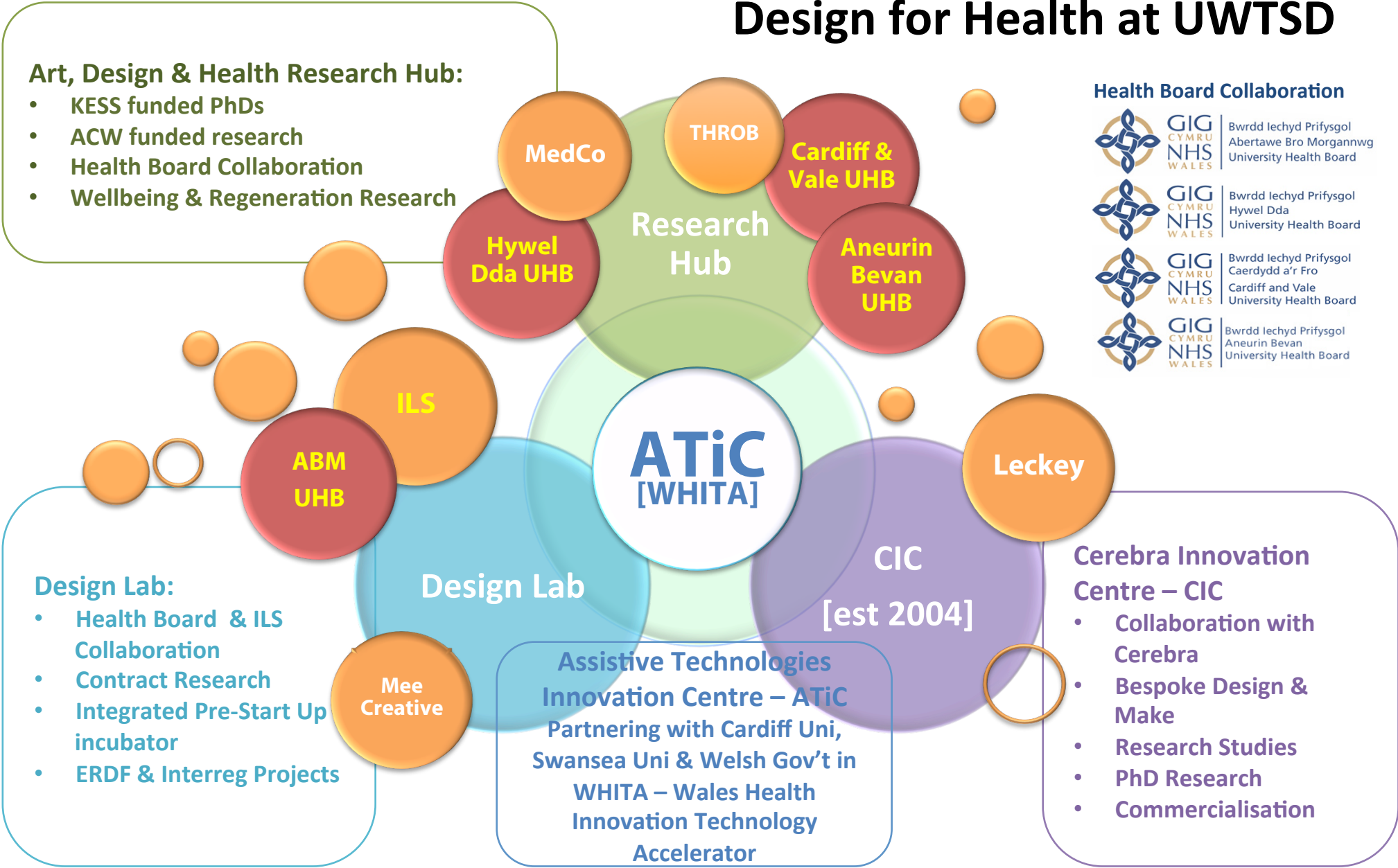
- What constitutes innovation?
- Do we know how to stimulate, incubate and nurture innovation?
- What are the factors that give rise to an innovative mindset?

Design for Health at UWTSD

Art, Design & Health Research Hub:

- KESS funded PhDs
- ACW funded research
- Health Board Collaboration
- Wellbeing & Regeneration Research

Health Board Collaboration



Design Lab:

- Health Board & ILS Collaboration
- Contract Research
- Integrated Pre-Start Up incubator
- ERDF & Interreg Projects

Assistive Technologies Innovation Centre – ATiC
 Partnering with Cardiff Uni, Swansea Uni & Welsh Gov't in WHITA – Wales Health Innovation Technology Accelerator

Cerebra Innovation Centre – CIC

- Collaboration with Cerebra
- Bespoke Design & Make
- Research Studies
- PhD Research
- Commercialisation

Research Excellence in Art & Design

- For '**impact**' we are **joint 1st in the UK** with our WIRAD* partners.
- For '**environment**' we were **also joint 1st**.
- For '**Outputs**' our combined 'World Leading' and 'Internationally Excellent' scores of 75% puts us in joint **14th place in the UK** in UoA 34.
- **Equal** with **Loughborough** and **Oxford** and only one below the **RCA**.
- **Above** Dundee, Brighton, Leeds, Brunel, Bristol and Glasgow School of Art

- Art & Design attracts **£158,608** in QR funding to the University per year.

*Art & Design at UWTSD is a member of WIRAD – the Wales Institute for Research in Art & Design

Partnerships in Design for Health





- ATIC is a collaborative research institute providing a catalyst for **innovation in Life Science**.
 - Assistive Technologies R&I
 - Service Development and Innovation
 - Human Factors Research
- Businesses support by a team of expert staff to provide a conduit for R&I flows to and from UWTSU.
- Research and knowledge transfer results in the development of new products, processes and services.
- Support will be provided to support **innovation in Health and Social Care**.
- **Innovation Development**
 - Collaborate on R&I to support businesses in NPD.
- **Innovation Research**
 - Collaboration with industry to stimulate applied research

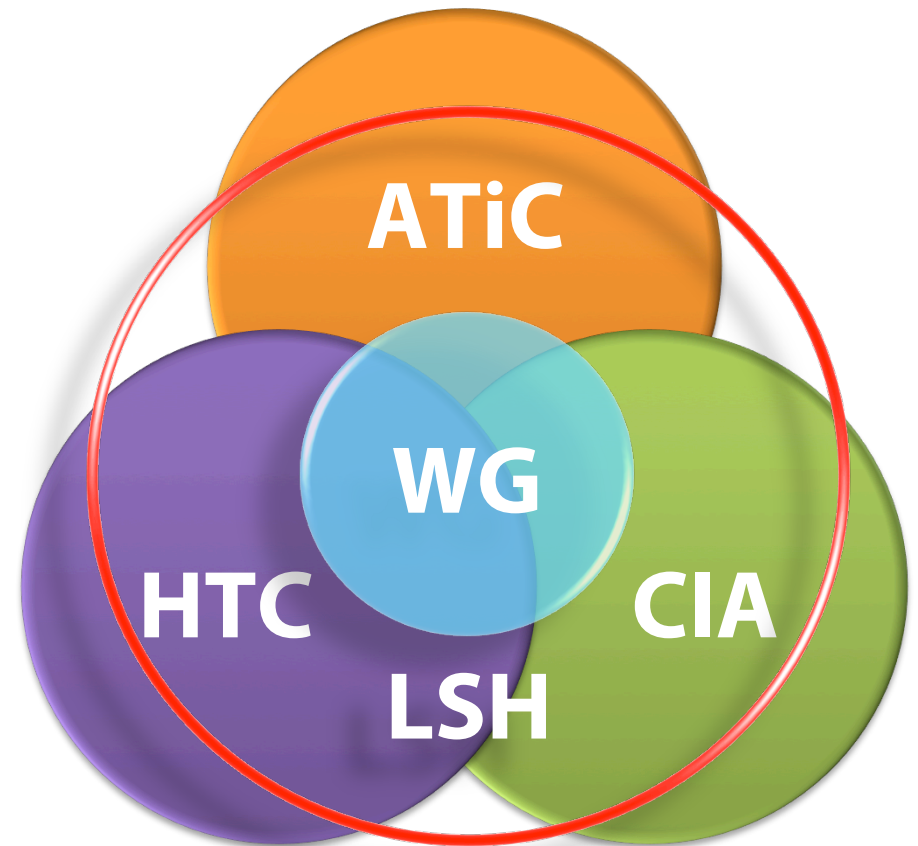
WHITA – Wales Health Innovation Technology Accelerator

£22m ERDF Project

Commencing January 2018

Partners:

- **Life Science Hub Wales - LSH**
- **UWTSD - ATiC**
- **Cardiff - CIA**
- **Swansea – HTC**
- **Welsh Government - WG**



Defining Design

“Design is the **purposive application of creativity** to all the activities necessary to bring ideas into use either as product (service) or process innovations.”

(Bessant 2005).



“All art is autobiographical
The pearl is the oyster’s autobiography”

Federico Fellini

Defining Innovation

“The intentional introduction and application within a role, group or organisation of ideas, processes, products or procedures, **new to the relevant unit of adoption**, designed to significantly benefit the individual, the group, organisation or wider society.”

(West and Farr 1990).

A Good Designer

“A good designer has to be part artist, part engineer, psychologist, sociologist, planner, marketing man and communicator: **part everything and part nothing!**”

(Roberto Pezzetta)

*Traditional View of Technology
Transfer in Health & Life*

Science:

- **A**cademia
- **B**usiness
- **C**linicians

A&D Adds:

- **D**esign
- **E**mpathic Innovation

Challenging Tradition



Empathic Innovation

“You never really understand a person until you consider things from his point of view, until you **climb inside of his skin** and walk around in it.”

Atticus Finch in *To Kill a Mockingbird* (1962)

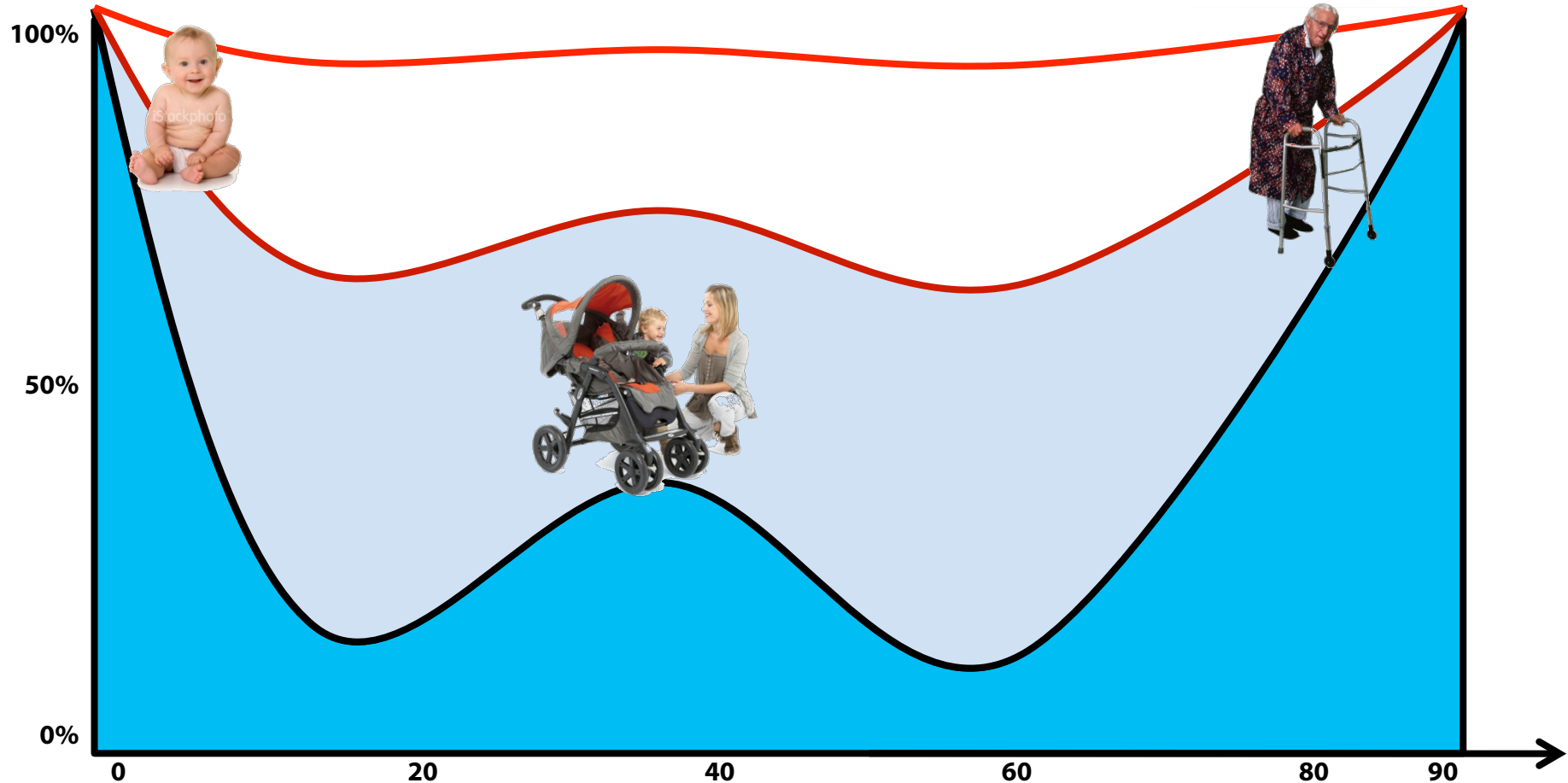
Empathy Modeling



Empathy Modeling



Recognising our Shared Dependency



The Demographic Imperative

- Longer **life expectancies** and a reduced **birth rate** has resulted in an increased proportion of older people within the population.
- The **Potential Support Ratio** (PSR) is the number of people aged 15-64 who could support one person aged over 65.
 - In 1950 the worldwide PSR was 12:1
 - In 2000 the PSR was 9:1
 - by 2050 it will be 4:1 globally and 2:1 in the developed world
- Maintaining **quality of life and independent living** for an ageing population is increasingly important and will soon be **an absolute necessity** for all countries, both developed and developing.

Data: <http://www.inclusivedesigntoolkit.com>

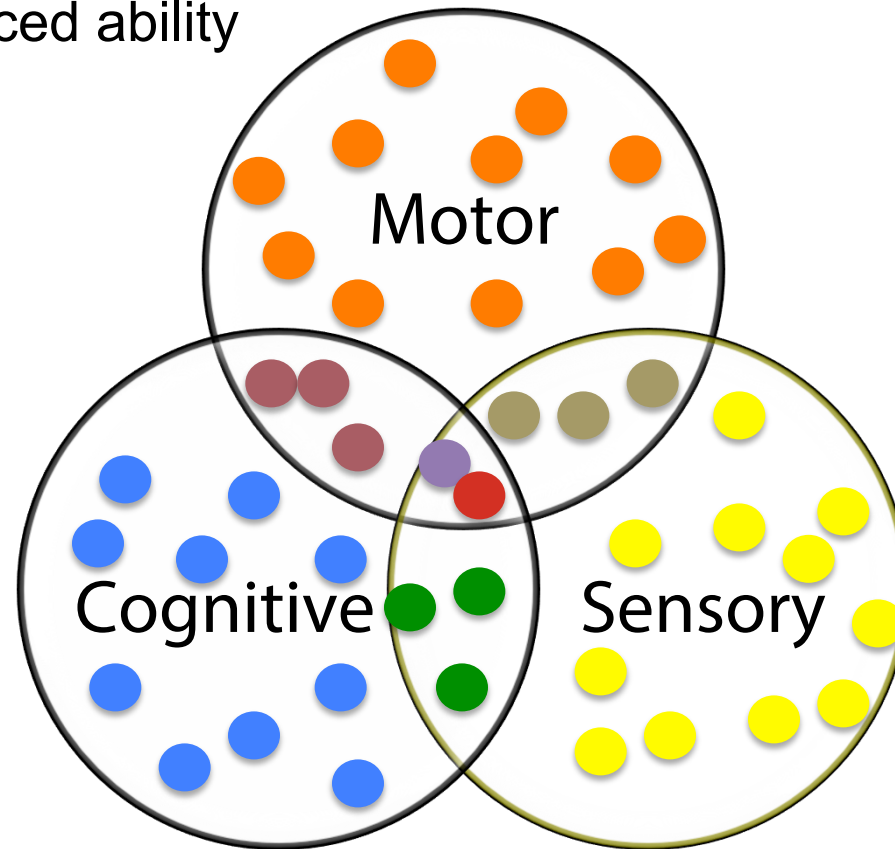
Wales' Ticking 'Time-bomb'

- Wales' population is predicted to grow from 3.17m to 3.37m, with the over-65s the fastest growing group.
- The number of over 65s currently stands at 558,000 but is projected to reach more than 860,000 by 2035.
- Although births will outnumber deaths, the main cause of population growth is expected to be in-migration.
- About 10,000 people a year move into Wales - 7,000 of whom will come from other parts of the UK – the majority are elderly.

<http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2010-based-projections/stb-2010-based-npp-principal-and-key-variants.html>

Complex Needs

The Domains of reduced ability



Design Simplicity

"When you start looking at a problem and it seems really simple, - you don't really understand the complexity of the problem...."

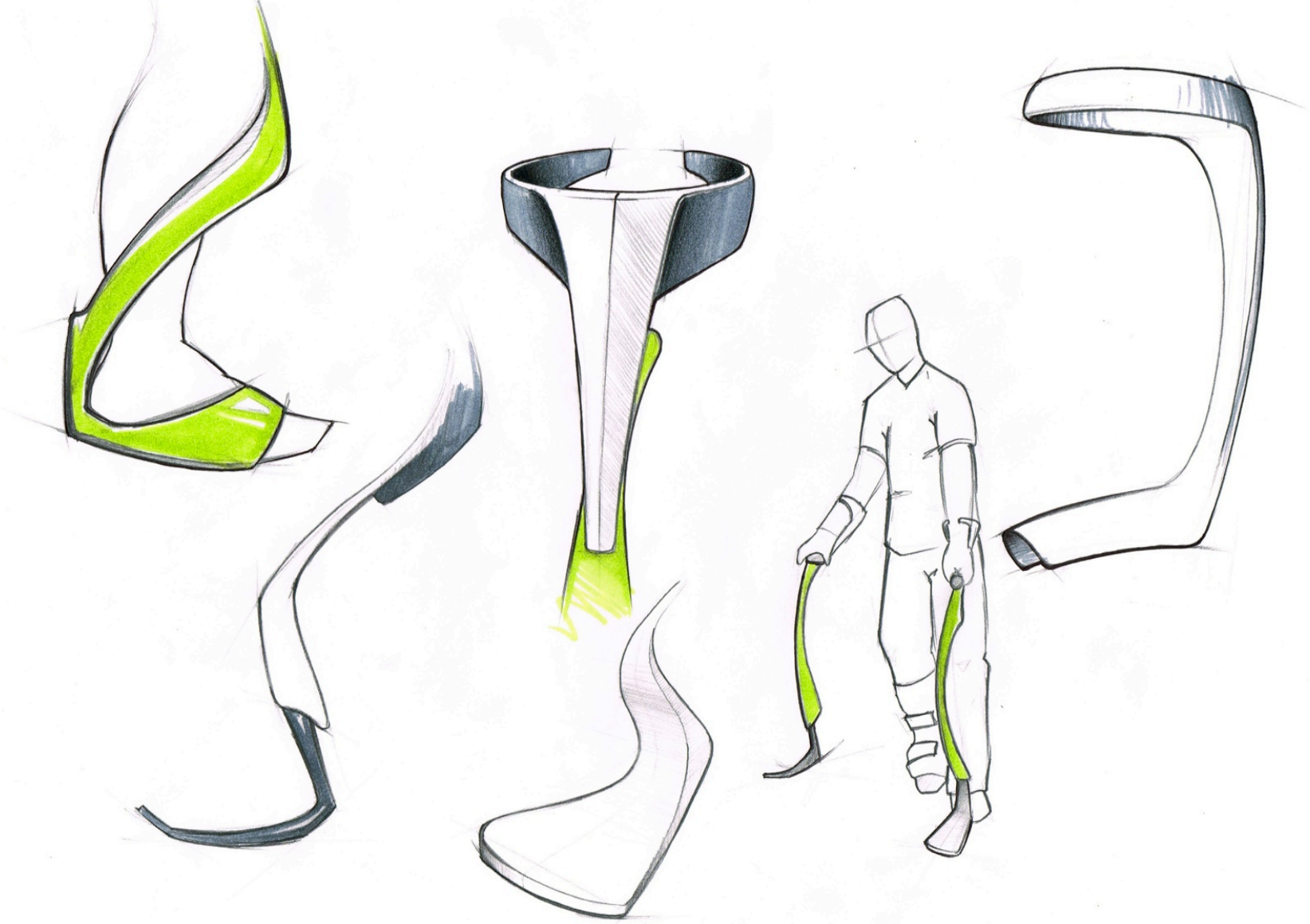
".....Then you get into the problem, and you see that it's really complicated, and you come up with all these convoluted solutions. That's sort of the middle, and that's where most people stop..."

“..... But the really great person will keep on going and find the key, the underlying principle of the problem — and come up with an elegant, really beautiful solution that works.”

Steve Jobs – Apple Founder

James Leckey - Whoosh Chair







CARBON FIBRE BODY CONSTRUCTION PROVIDES STRENGTH, DURABILITY & LOW WEIGHT PLUS A CONTEMPORARY AESTHETIC.

GRIPPED HANDLE

COUNTER SINK ALIGN KEY BOLTS.

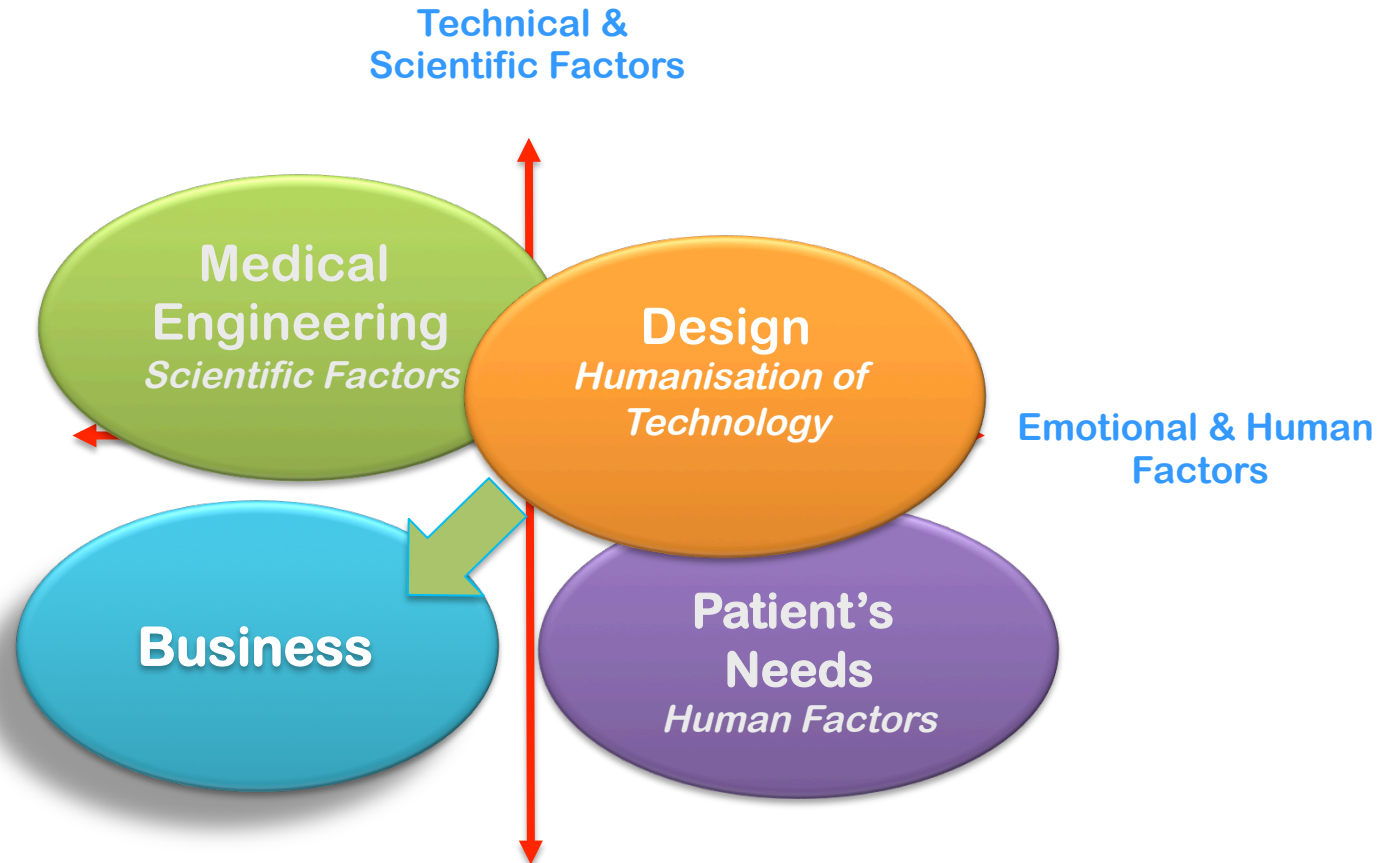
GRIPPED HANDLE



Spin-off Research Projects

- Examining the efficacy of a dedicated 'Design Toolkit' in optimising the design process for **user centred design interventions** for children with neurological conditions. [with Cerebra & KESS]
- An Investigation into the efficacy of **Service Design Models** in Healthcare Service Innovation. [with MedCo Europe & KESS]
- An evaluation of **Metamorphopsia** diagnostics. [with DSA]
- Investigating the use of **3D scanning and printing** technologies for the development of **respiratory products** for the healthcare industry. [with Hywel Dda & KESS II]
- Plus 5 further KESS II PhD projects in **Arts & Health Humanities**

Bridging the Innovation Gap





Case Study in Empathic Innovation

CEREBRA INNOVATION CENTRE AT SWANSEA COLLEGE OF ART



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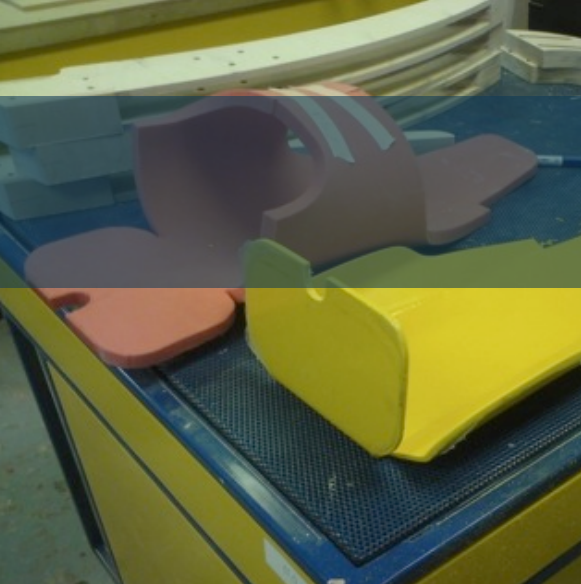


CIC - Cerebra Innovation Centre

- Initial collaboration between a design student and Cerebra in 2004
- Relocation of Cerebra 'in-house' R&D team to UWTSD Swansea in 2005
- CIC managed by Dr Ross Head with Prof Ian Walsh as PI
- Support from **DSA & ISD** Projects
 - Development of research strategy
 - Sponsorship of PhD (**KESS**), MPhil & Master's projects
 - Support for Internships
- Support and partnership with **CIRIC/ATiC**
 - Development of Full Commercialisation strategy



Prototype Development



Batch Manufacture



Full Commercialisation



Research Led Design



How structured surfing courses supported by volunteers impacted on the emotional health of 100 vulnerable young people in Cornwall and Devon.

EVALUATION REPORT
April 2014

Report by Cath Godfrey and Dr H. Devine-Wright

Professional and research

The positive impact of structured surfing courses on the wellbeing of vulnerable young people

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Consultant, Cath Godfrey Evaluations

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Director, PaveWise Ltd

JOE TAYLOR Founder and CEO, Wave Project

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ABSTRACT
Involvement in positive leisure activities is a key way for young people to develop resilience and social and emotional skills. This paper outlines the evaluation of a six-week surfing intervention, the Wave Project, which aimed to boost wellbeing and confidence among 84 young people aged eight to 18, all of whom faced mental health issues or social exclusion. The intervention resulted in a significant and sustained increase in wellbeing. One year later, 70% of clients regularly attend a surf club and many have become trained as session volunteers. Parents and referees noted an increase in positive attitude and better communication, as well as improved self-management and behaviour at both home and school. It is concluded that the Wave Project provides a demonstrable and cost-effective way to deliver mental health care, mentoring and social integration of young people. Further service evaluation of accessibility and long-term outcomes is also recommended.

KEY WORDS
Wellbeing, evaluation, young people, activity, health
Community Practitioner, 2015; 88(1): 26-29
No conflict of interest declared

26 Community Practitioner January 2015

INTRODUCTION

One in 10 young people aged five to 15 suffer from a mental health problem (Mental Health Foundation, 2013). Recognition of preventive initiatives for mental ill health is recommended to reduce the cost of mental health services for these young people (King's Fund, 2008). The average cost of mental health service for young people is £265 per person, per year and prevention savings for school-based emotional learning programmes are calculated at £3,206 per child over a 10-year period (Knapp et al, 2011).

The Wave Project is a surfing intervention that promotes confidence through surfing and the sea. It provides a six-week course of one-to-one surfing support for clients aged eight to 21, in a group setting. A follow-on surf club enables clients to continue their surfing and progress to becoming volunteer helpers and surf-mentors. Specific targets for achievement are not set and it is a chance to forget rather than focus on problems. The ethos and course delivery are constructed to provide fun, friendship and positive challenge with implicit objectives around developing the core life skills of confidence, self-reliance, self-management and social skills.

Demonstrating the value of this intervention through evaluation is important for service users, practitioners and commissioners, all of whom share an interest in promoting the wellbeing of young people. The Wave Project is rapidly expanding. It started in 2010 as a project for 20 young people run by volunteers. Now it is implemented in 20 locations across eight counties in the UK, each run by a local co-ordinator using teams of local volunteers.

Funding for these projects has come from grant funders such as the Big Lottery Fund and the BBC's Children in Need, along with the NHS and local authorities. Since the project began, over 400 young people have benefited, some of whom now volunteer helping others on their local Wave Projects.

It has been argued that wellbeing may form a separate dimension to mental illness rather

than be at the opposite end of a continuum (McDowell, 2010). Wellbeing is seen as multifaceted, comprising autonomy, personal growth, self-acceptance, life purpose, mastery and positive relatedness (Lytt and Keyes, 1993).

In a systematic review, Adi et al (2007) report that the effects of good health and psychological functioning for young people may be extensive and include protection from emotional and behavioural problems, violence and crime, teenage pregnancy and misuse of drugs and alcohol. There is convincing evidence to show that exposure to the natural environment positively influences health and wellbeing (Royal Society for the Protection of Birds (RSPB), 2010; O'Brien and Morris, 2013).

At the Wave Project, wellbeing is conceptualised and measured according to the New Economic Foundation (NEF) suggestion that wellbeing consists of 'positive functioning', resilience and self-esteem, emotional wellbeing, social wellbeing, vitality and a satisfying life (NEF, 2012). NEF emphasises the importance of 'personal development' aspects over 'life satisfaction' and notes that this is directly related to physical health (NEF, 2012). Accordingly, the Wave Project uses wellbeing indicators with a fitness and activity element rather than life satisfaction.

MEASURING WELLBEING AND EVALUATING OUTCOMES

As public health projects are designed and measured in various ways, there is a lack of comparable evaluation data. Using a combination of standard measures and validated questions enables partial comparison. There is also a lack of measures for children that span all NEF aspects of wellbeing. The Striving Children's Wellbeing Scale (SCWB) is a positively worded measure with two sub-scales - 'positive outlook' and 'positive affect' (plus a social desirability sub-scale) useful for younger children. The SCWB measures emotional and psychological wellbeing, and has been validated with children aged eight upwards (Liddle and Carter, 2010).



From Positive Outcomes to Lasting Impact

An independent evaluation of The Wave Project's impact on vulnerable young people over 3 Years from 2013-2015



Authors: Dr Hannah Devine-Wright, Cath Godfrey MSc

September 2015

CIC Tandem Surf board

- Tandem surf board
- First of its kind in Europe
- Unique design concept from CIC and Roger Cooper Surfboards (Port Talbot)
- 3.6m long, 0.8m wide 150mm thick
- Racing car bucket seat
- Stainless steel custom made bracket
- Can surf with 2 full grown adult males in 2 meter waves!

CIC Tandem Surfboard



CIC Tandem Surfboard



Royalties into Research

- Sales have generated over £95k in royalties since January 2015
- Royalties are shared 50/50 by Cerebra and UWTSD and fed back in to support CIC



LECKEY[®]

TESCO

Sainsbury's

ASDA



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*Trawsnewid Addysg; Trawsnewid Bywydau
Transforming Education; Transforming Lives*

ATIC
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Real Value – Priceless!





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