Research Ethics: Planning your Trial and Securing Ethical Approval

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Connected Health Summer School

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ulster.ac.uk

Why do we need to consider ethics ?

As technology becomes ubiquitous and pervasive, our interaction with it becomes something of a symbiotic relationship. As we use more mobile applications (or apps) in our daily lives, the app in turn learns about our activities and preferences. Moreover, this information can be shared sometimes (often) beyond our intended use.

When the domain of interest extends to health and wellbeing then we need to ensure that privacy concerns are appropriately addressed. More and more of these ‘assisted living’ applications are being considered by Ethical Committees. The aims of such research is assistance and empowerment of the individual but it can also provide challenges of autonomy and protection of personal data, especially when used with vulnerable cohorts.

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Ethical Concerns in Pervasive Health

Pervasive computing is the third wave in IT, after the PC and the Internet and is based on the use of numerous “invisible”, omni-present, always-on, communicating computers embedded into everyday environments which gather personal information from people and deliver services to them. Whilst this technology promises great benefits, being invisible and autonomous and with its access to the most personal human behaviours, it raises significant new dangers for individuals, city dwellers, cultures and society as a whole. Perhaps the most significant issue is **privacy** - an individual’s right to control the collection and use of personal information - especially by external agencies such as companies, political, other institutions and other individuals.

Who should control access to personal information on the individual in their role as home occupant, worker, consumer and citizen?, How should such control be regulated at local, regional, national international and multi-national levels since it is likely that commercial interests will often outweigh national interests in the future.

Pervasive Computing and Urban Development Issues for the individual and society Jeannette Chin, Vic Callaghan, Graham Clarke, Hani Hagras, Martin Colley iieg@essex.ac.uk

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General Ethical Principles

Respect for persons: treat all individuals as autonomous humans beings and not to use people as a means to an end

Beneficence: reminds us to minimize harms and maximize benefits. This requires researchers to use the best possible research design to this end

Justice: treat people fairly and design research so that its burdens and benefits are shared equitably

Subjects are able to leave study at any time

Clear c**ommunication** and **collegiality**:

- Helping and collaborating with colleagues at other institutions
- Student and mentor should have open lines of communication. The student should feel comfortable discussing concerns with mentor. The mentor should be able to address those concerns.
- The mentor should explain clearly why it is in the student's interest to do this project: "I want you to do this because then you can learn/I can help you learn how to make an Ethics application, which is an important set of skills to have."

Trust

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Research Integrity

Research integrity requires researchers to be **honest** and **open** about their work, to abide by professional **codes of conduct**, to seek and adhere to **regulatory approval** and permissions, to **acknowledge the contributions of others** and to respond to queries and challenges in a constructive way.

The Singapore Statement on Research Integrity (World Conference on Research Integrity, July 2010, www.singaporestatement.org) sets out four principles of research integrity:

- **Honesty** – in all aspects of research
- **Accountability** – in the conduct of research
- Professional **courtesy** and **fairness** – in working with others
- Good **stewardship** – of research on behalf of others

Integrity in the conduct of research is essential to the reputation of individual researchers, research groups, institutes and the University as a whole. Once damaged, integrity is difficult to repair.

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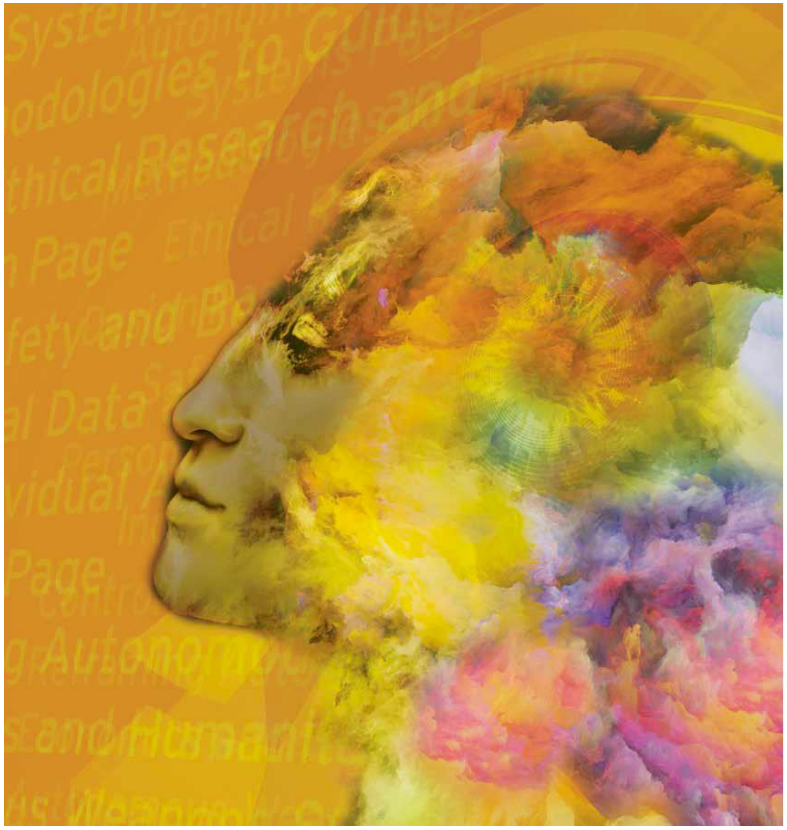
Ethically Aligned Design

A vision for Priotiyizing Human Well-being with Autonomous and Intelligent Systems



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II. Goals

The ethical design, development, and implementation of these technologies should be guided by the following General Principles:

- Human Rights: Ensure they do not infringe on internationally recognized human rights
- Well-being: Prioritize metrics of well-being in their design and use
- Accountability: Ensure that their designers and operators are responsible and accountable
- Transparency: Ensure they operate in a transparent manner
- Awareness of misuse: Minimize the risks of their misuse

http://standards.ieee.org/develop/indconn/ec/autonomous_systems.html

Self + Environment

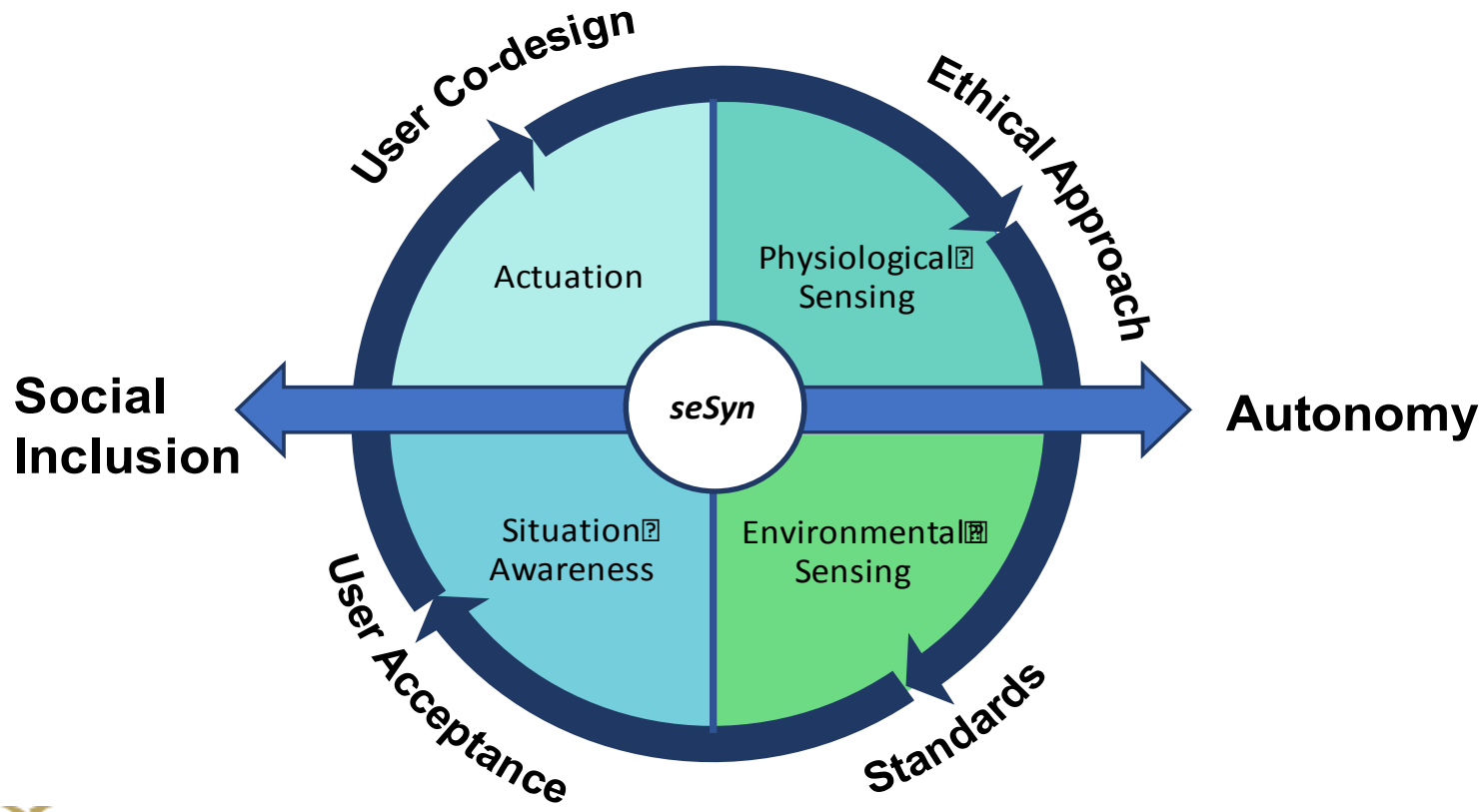

Figure 1: Overview of seSynergy

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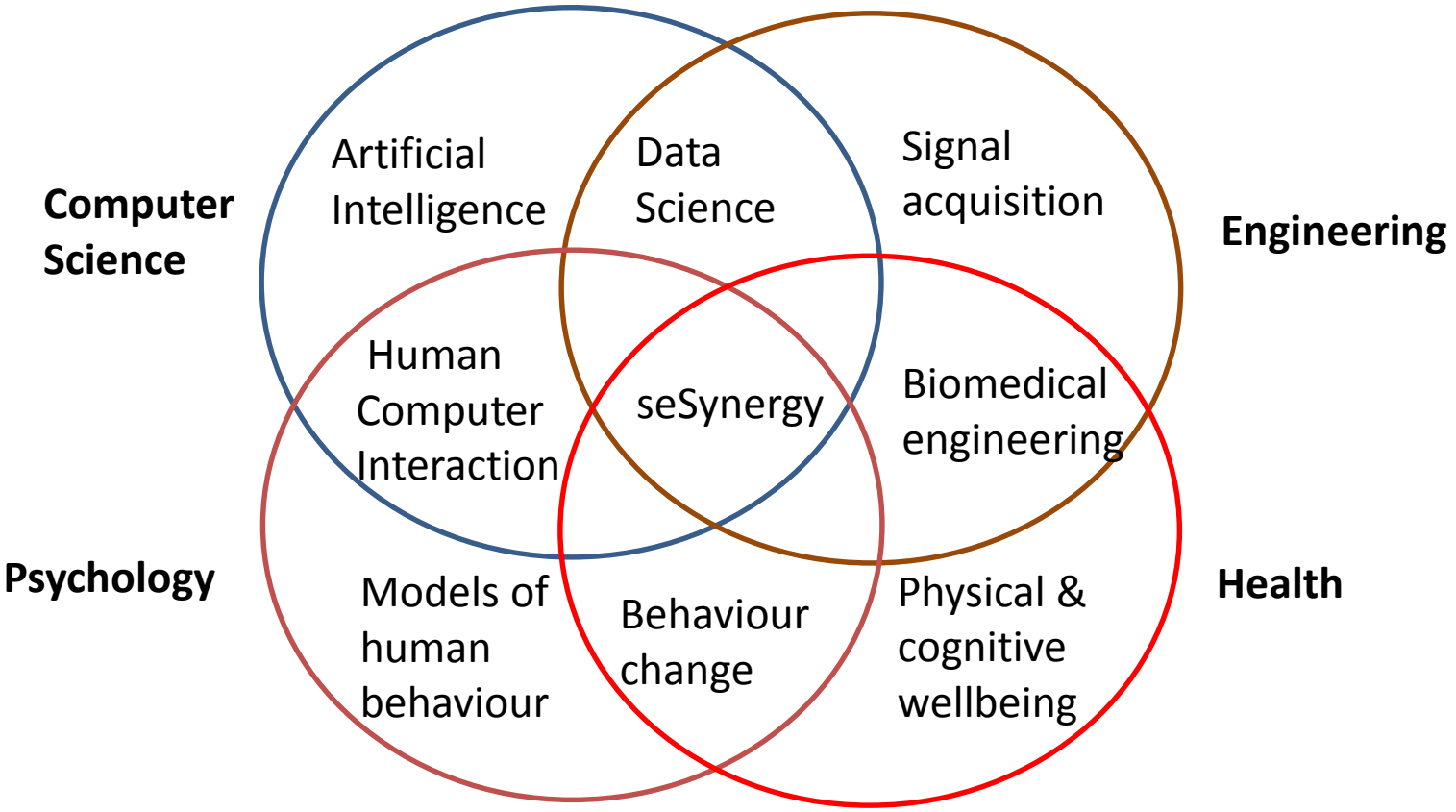
Multi-disciplinary research



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General Data Protection Regulation

25th May 2018

Consent must be clear and distinguishable from other matters and provided in an intelligible and easily accessible form, using clear and plain language. It must be as easy to withdraw consent as it is to give it.

Data Subject Rights

- **Breach Notification**
- **Right to Access**
- **Right to be Forgotten** .
- **Data Portability** GDPR introduces data portability - the right for a data subject to receive the personal data concerning them, which they have previously provided in a '*commonly use and machine readable format*' and have the right to transmit that data to another controller.
- **Privacy by Design** Article 23 calls for controllers to hold and process only the data absolutely necessary for the completion of its duties (data minimisation), as well as limiting the access to personal data to those needing to act out the processing.

GDPR UK

- EU all data collected in EU projects can be used for research
- For vulnerable people assent cannot be assumed and it must be given by a clinician looking after the care of a patient

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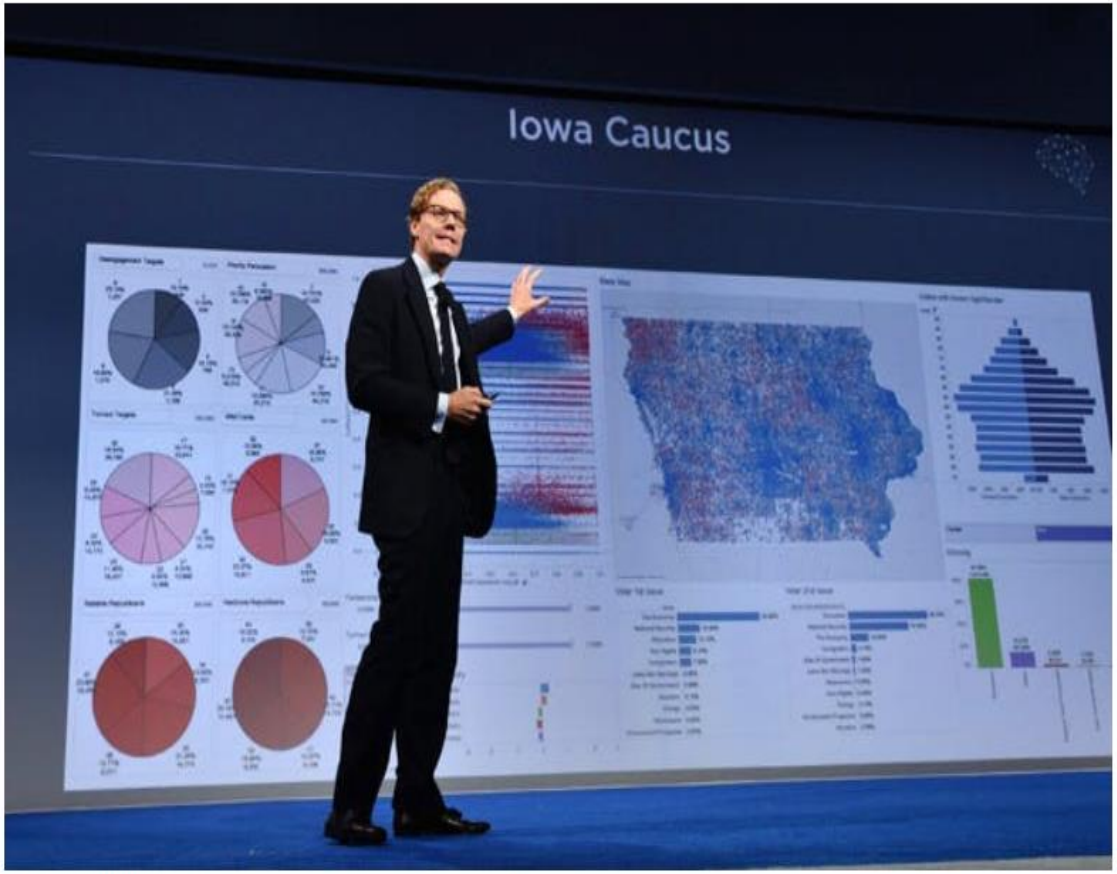
Are Cambridge Analytica brilliant scientists or snake-oil salesmen?

Paul Wood



CEO of Cambridge Analytica Alexander Nix (Photo: Getty)

It's the Brits wot won it. That is, the US presidential election was won for Donald Trump with the help of a bunch of British nerds — data scientists from a company called Cambridge Analytica. This was the claim, at least, made by the company in a press release a couple

Paul Wood

3 December 2016

9:00 AM

Overview

1. Research Governance and Ethics
2. Issues to Address when Planning your Trial
3. Ethics Review Process

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Why Research Governance?

Safeguarding the public / researchers

- by enhancing ethical and scientific quality
- promoting good practice
- reducing adverse incidents
- ensuring that lessons are learned
- preventing poor performance and misconduct

Many **funding** organisations have also implemented policies on research ethics

Increasingly, **journals** will accept papers in areas of human research only if evidence can be shown that the research has been assessed by an ethics committee or equivalent

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In Practice …

The climate in human subjects research has become more restrictive

- Recent European legislation places tight controls on the conduct of clinical trials of Investigative Medicinal Products (IMPs)
- This and similar legislation has effects on research in all areas of health care and, by association, social care

Any research involving patients or clients of the Health and Social Care sector must go through detailed and sometimes lengthy review and approval processes

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Research Governance

Process

Research Governance is:

- the regulation, monitoring and quality assurance of research on human beings
  - and includes appropriate legislation and procedures that impact upon:
    - universities, the Health Services and other bodies

There are increasing demands from funding bodies and others upon researchers to be able to demonstrate that their research is subjected to appropriate scrutiny and monitoring

- **So we need to familiarise ourselves with this environment**

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Research: Design and Conduct

Research governance mechanisms are used for managing certain parts of the research process

- helps to ensure that each research project:
  - has been **well designed** and
  - is **properly conducted** in terms of its:
    - viability
    - science
    - ethics
    - recruitment
    - reporting

❖**Try to adopt a holistic approach to research governance**

Source: The Design and Conduct of Meaningful Experiments involving Human Participants (R. Barker Bausell)

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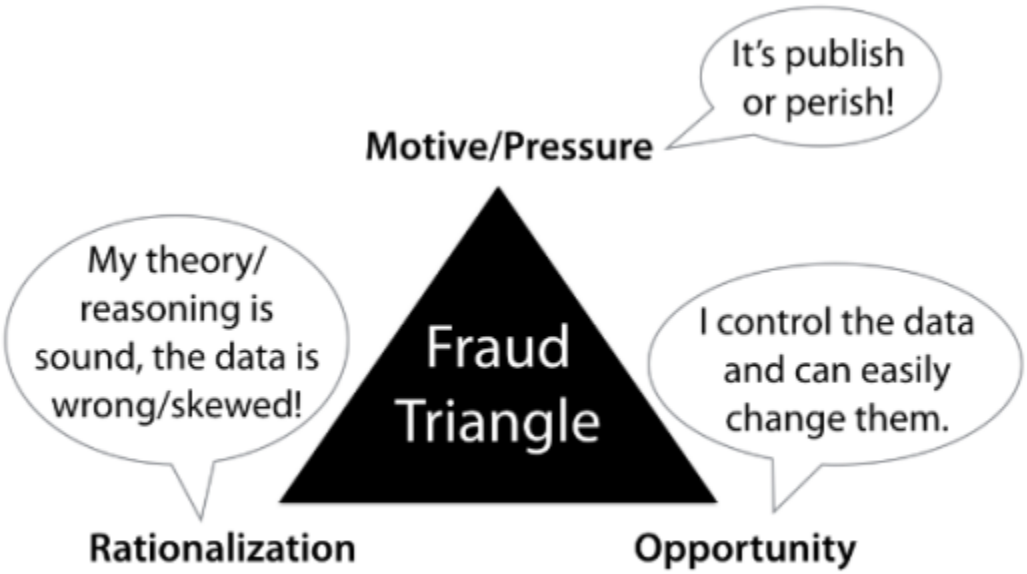
When things go wrong …

Litigation and damages claims have a higher profile than ever before

- impacts on reputation
- and future insurance provision

Research misconduct may result

- **we need to follow policies on good research conduct and integrity**



Fraud Triangle (by Donald R. Cressey) adapted to Scientific Misconduct

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Policy

Research involving human participants must be reviewed through the filter and ethics committee process as appropriate.

In many cases, review is a legal or regulatory as well as policy **requirement** (for example, research involving HSC/NHS patients and others in care, and research which requires the use of human cellular material) and in others it reflects accepted **best practice** (for example, research involving those aged **under 18** and other potentially **vulnerable people**).

Increasingly, in many disciplines, evidence of ethical review is required by editors before they will accept a paper for **publication**.

Studies covered by the University's policy include **interview, questionnaire and focus group** research as well as research involving **interventions** of any kind.

There are several reasons for this, including:

- reducing risk of harm;
- protection of participants, researchers and the reputation of the University;
- maintenance of insurance cover/indemnity;
- providing assurance to collaborating organisations, funders and publishers;
- maintaining and improving quality and standards; and
- demonstrating adherence to research integrity requirements

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Research involving human participants

- Should not have intent or obvious capacity to cause injury or other harm (psychological, emotional)
- People should not be coerced into taking part
- Consent must be obtained before using individuals personal details or tissues
- All relevant information including any risks or disadvantages should be made clear in advance to potential participants

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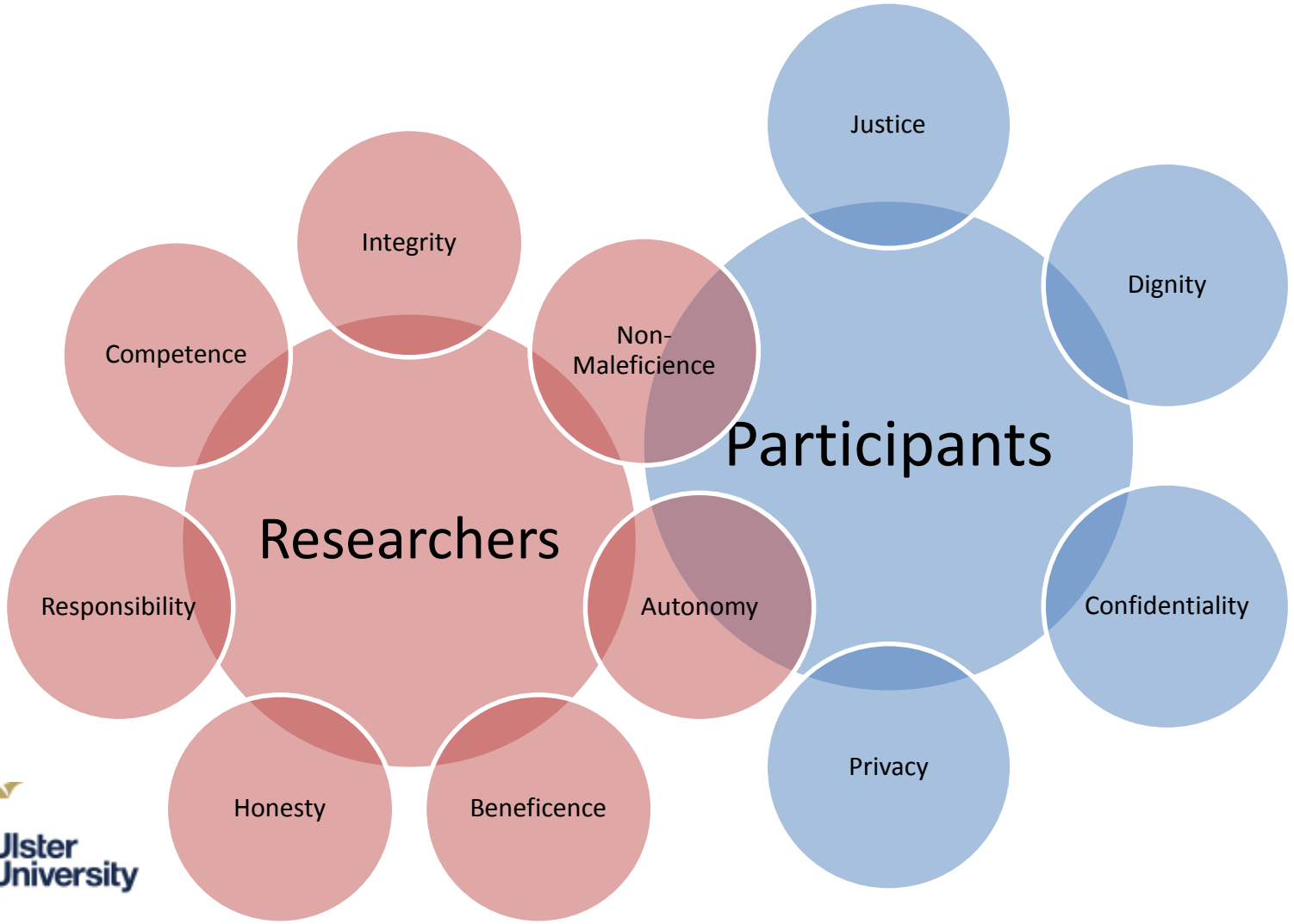
Principles and Considerations



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Planning your Project

Background & Rationale

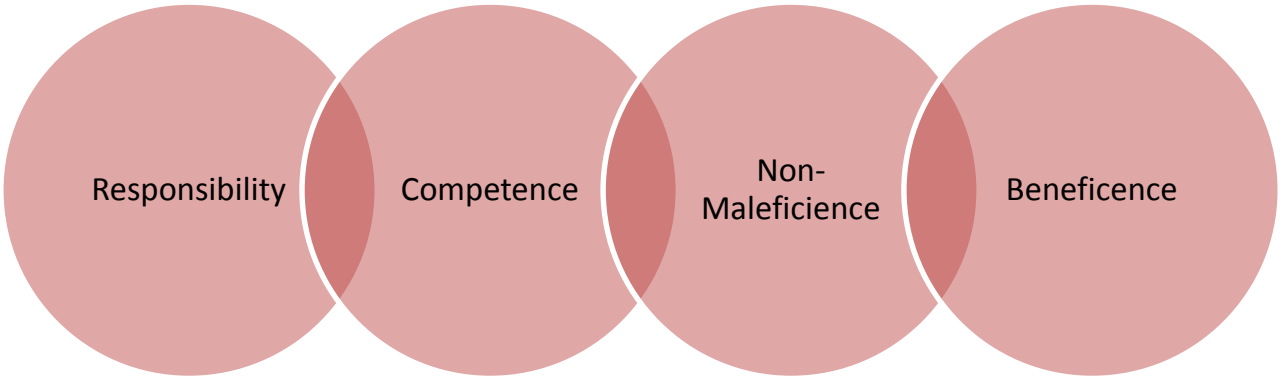
Is your research aimed at addressing a significant problem where the investigation will benefit others?

Is it worth spending public/funder's money?

Have you completed a thorough literature review to ensure that the work has not been done already by other studies?

Is it ethical to carry out a study if very similar work has been done before?

- *you may be confirming, extending ,or refuting previous findings*



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Planning your Project

Risks & Purpose

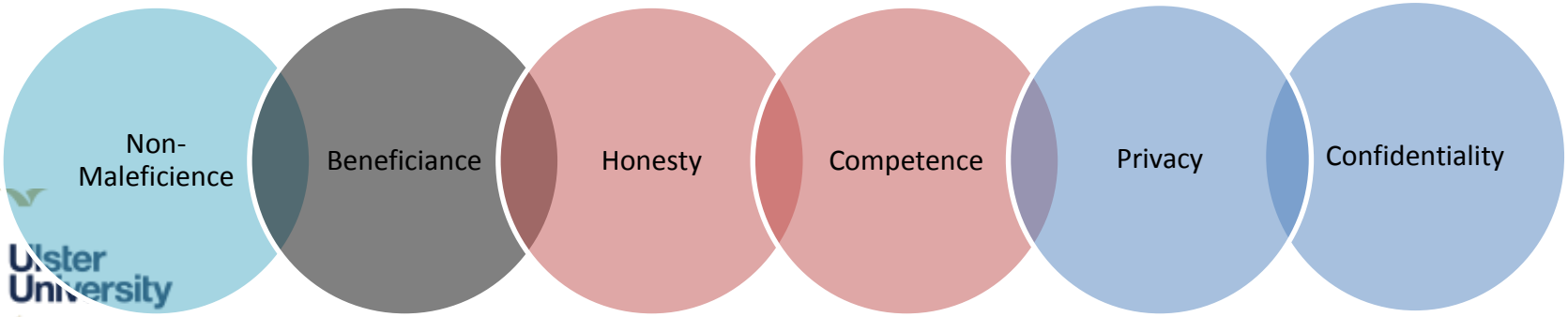
Could your project expose the participants to an unacceptable risk, invasion of privacy, or loss of dignity?

- harm could be physical, psychological, social, economic, legal

Can you explain the purpose of the study clearly to participants?

Do you have the expertise to conduct your project?

- Would a pilot study be advisable?



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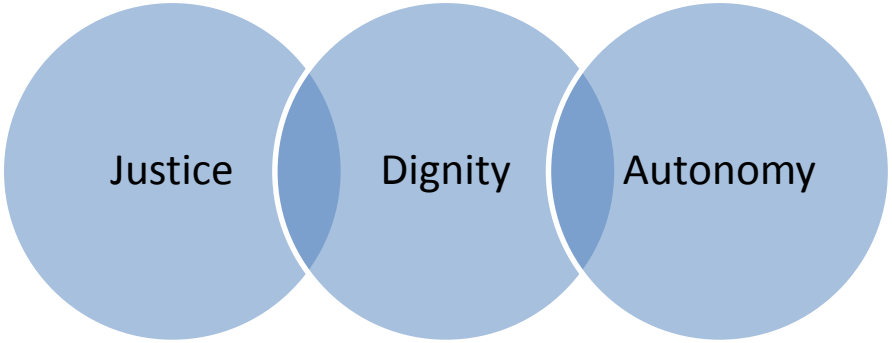
Planning your Project

Recruitment

Will any of your participants be from a vulnerable group?

- Children / Adolescents
- The elderly
- People in a subordinate position to the researchers
- People with impairments
- Dependents



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Planning your Project

Informed Consent

Who are the researchers? (also provide their contact information)

Who is sponsoring the research?

- Is there a commercial interest/beneficiary?

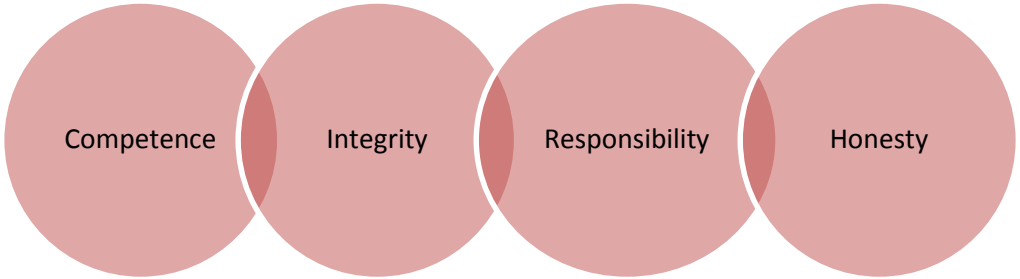
How were the participants selected?

Can you give assurance that their participation is voluntary?

Can they withdraw from the study at any time?

What is the extent and nature of the participants' involvement?

How will you ensure participant confidentiality?



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Planning your Project

Data Collection, Analysis & Dissemination

How will you monitor the collection of data and management of information?

How will you protect the anonymity of participants?

How will you analyse the data?

- Do you have the experience/expertise?

For how long will you keep the data once analysed?

Where and how will you store the data securely?

When and where will you publish your research findings?

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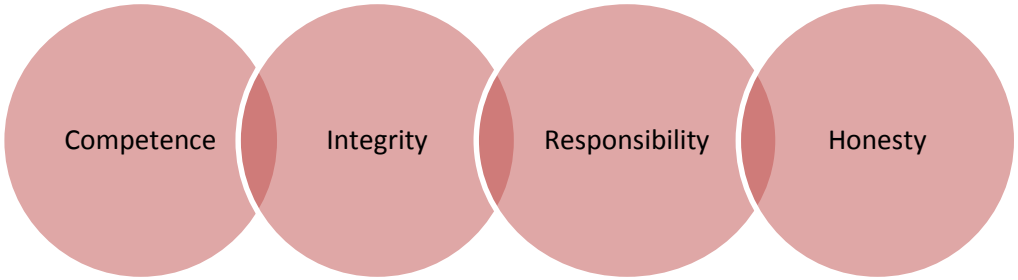
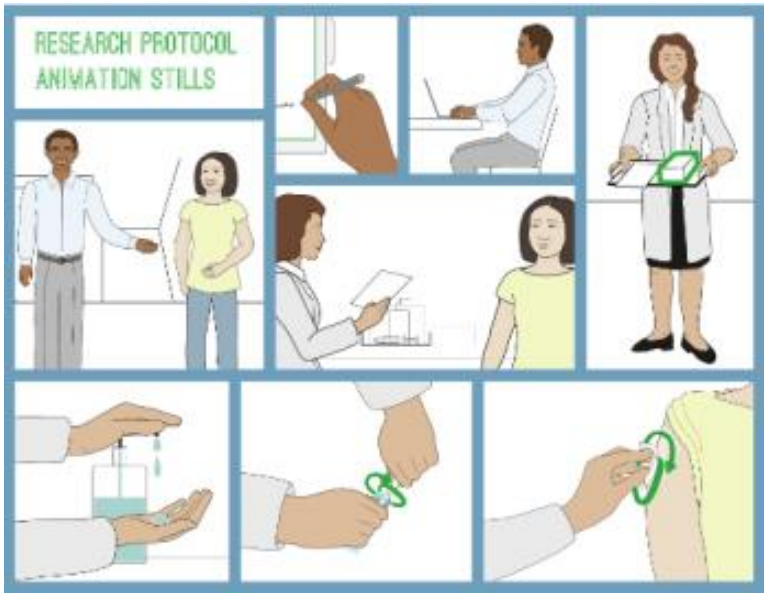


Providing a Research Protocol

Main Research Question
Project Background
Aim & Objectives
Design
Methods

- Sample size
- Recruitment and Consent
- Inclusion / exclusion Criteria
- Data Collection
- Data Protection & Security
- Data Analysis



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Ethical Review

Process

Ethical review is a central part of research governance structures in national health services, the health and social care sector, and universities and research institutions

Ethical review is usually conducted initially by the institution carrying out the research

- this usually involves research ethics committees (e.g., at departmental and institutional levels)

Further assessment may be needed by a statutory ethics committee outside the institution

- e.g., the research involves patients of a national health service

Research Ethics Committees are convened to provide independent advice to participants, researchers, funders, sponsors, employers, care organisations and professionals on the extent to which proposals for research studies comply with recognised ethical standards

(Central Office for Research Ethics Committees (COREC) - www.corec.ac.uk)

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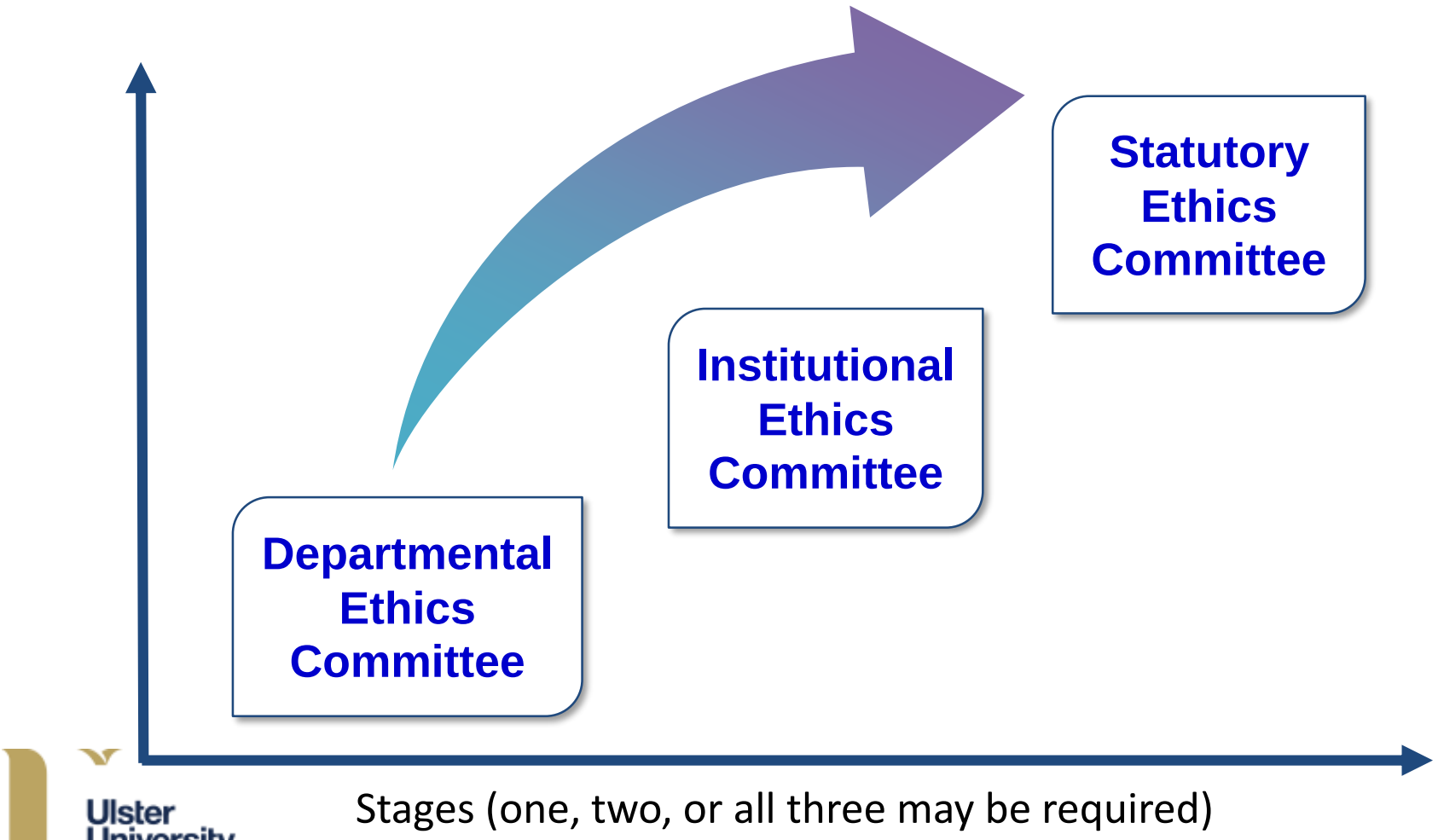
Ethics Committee Hierarchy



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Research Categories

Category A

No HSC/NHS involvement
Conducted by staff or students
Excludes clinical trials of IMPs*
Excludes new methodologies
Excludes vulnerable populations
Excludes therapeutic interventions
No significant risk to volunteers or researchers

Category B

No HSC/NHS involvement
Conducted by staff or students
Excludes clinical trials of IMPs*
Might use new methodologies
Might include vulnerable populations
Might include therapeutic interventions
Might pose significant risk to volunteers or researchers

Research Categories

Category C

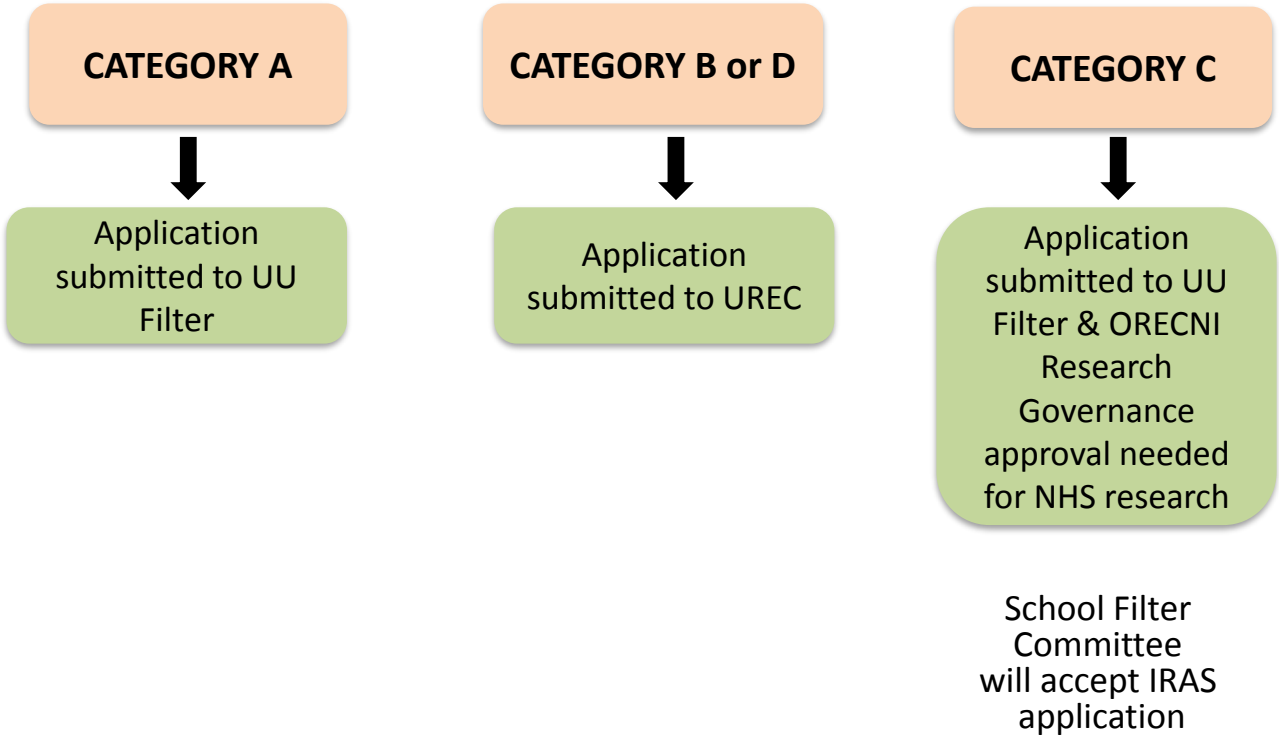
HSC/NHS involvement
Conducted by staff or students
Excludes clinical trials of IMPs*

Category D

No HSC/NHS involvement
University research regulated by the Human Tissue Act 2004
Conducted by staff or students
Excludes clinical trials of IMPs*

Approvals needed

Process



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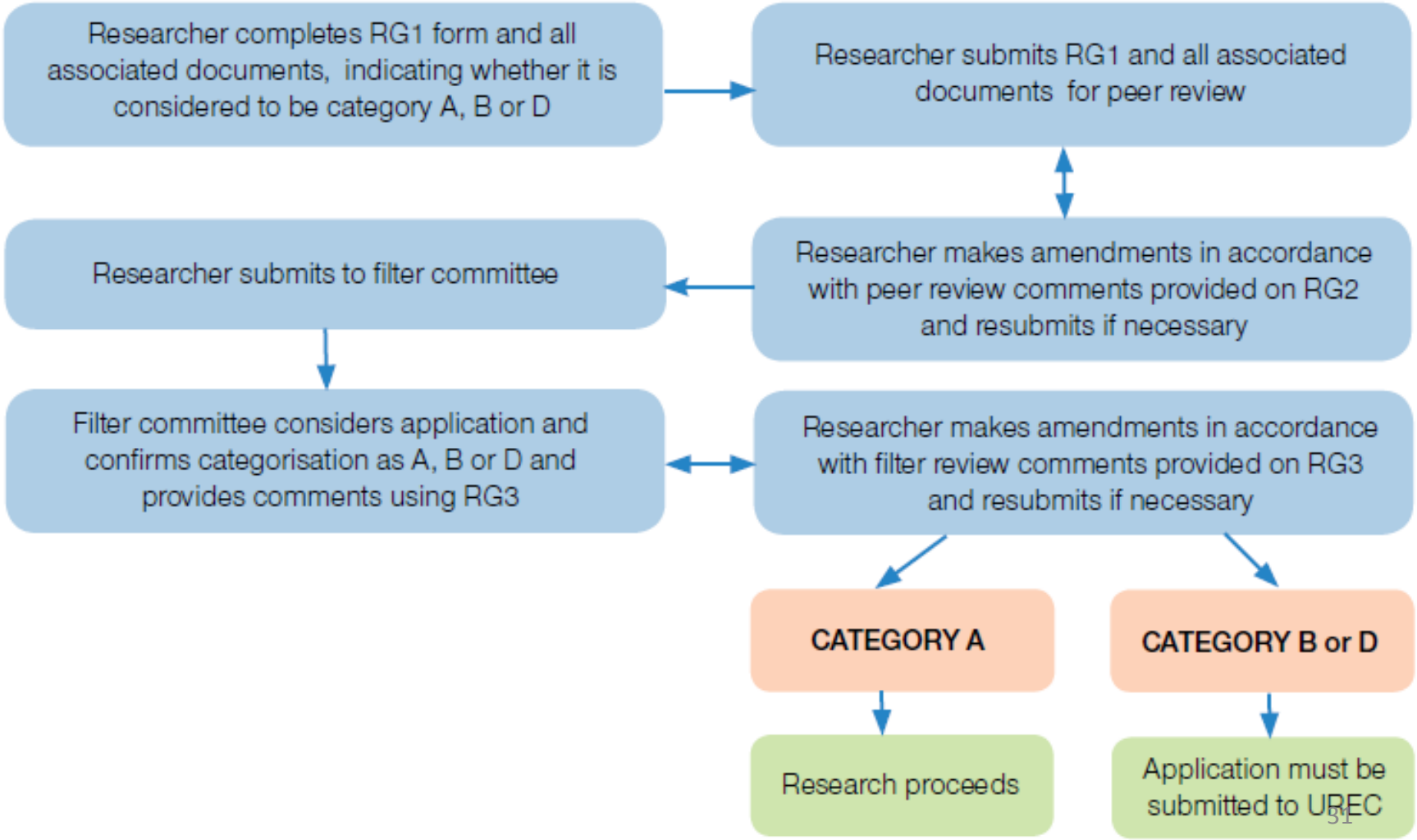
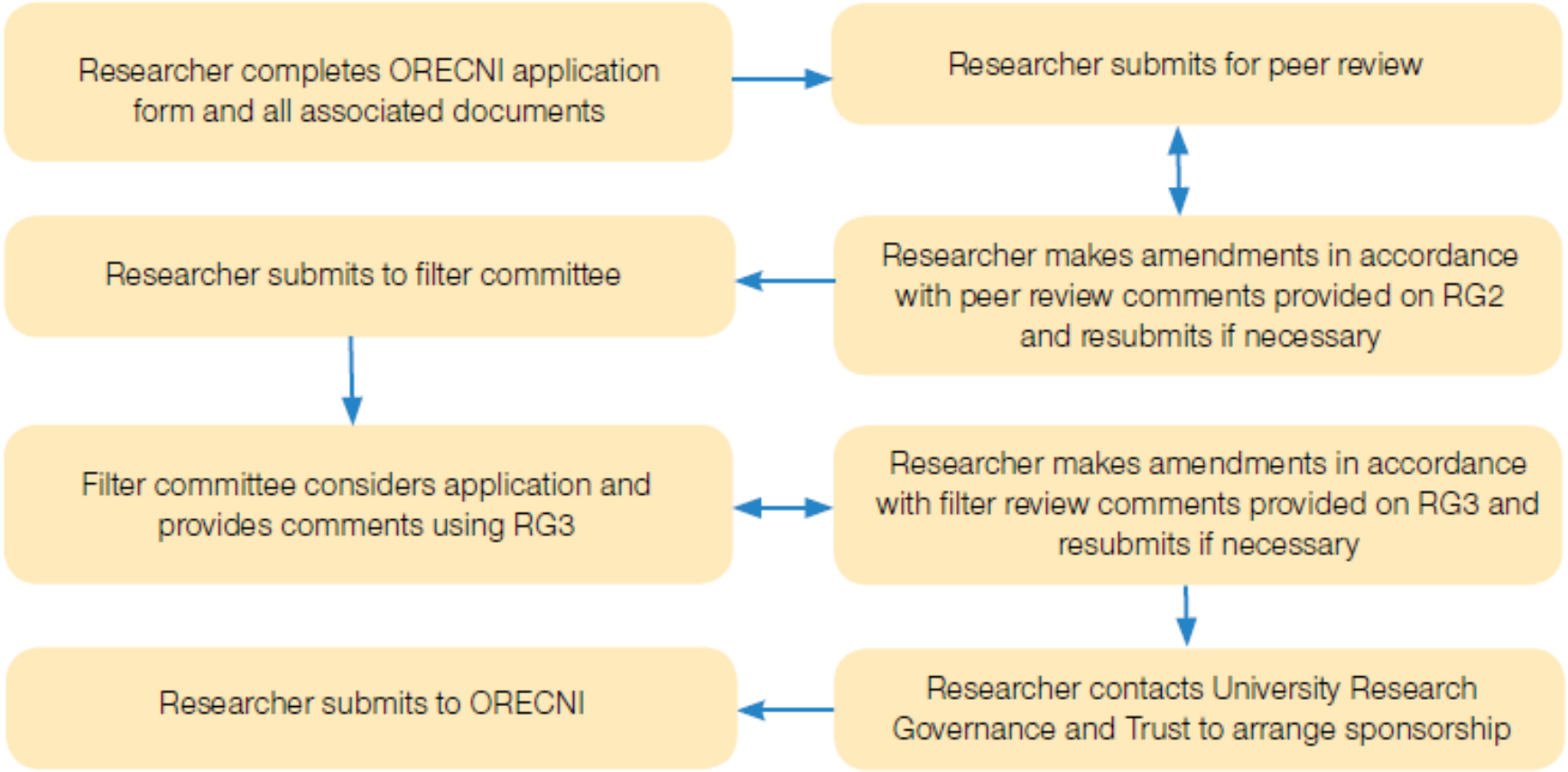
Ethical Review Processes

Category A, B and D research:



Ethical Review Processes

Category C research:



When is Ethical Approval Not Required?

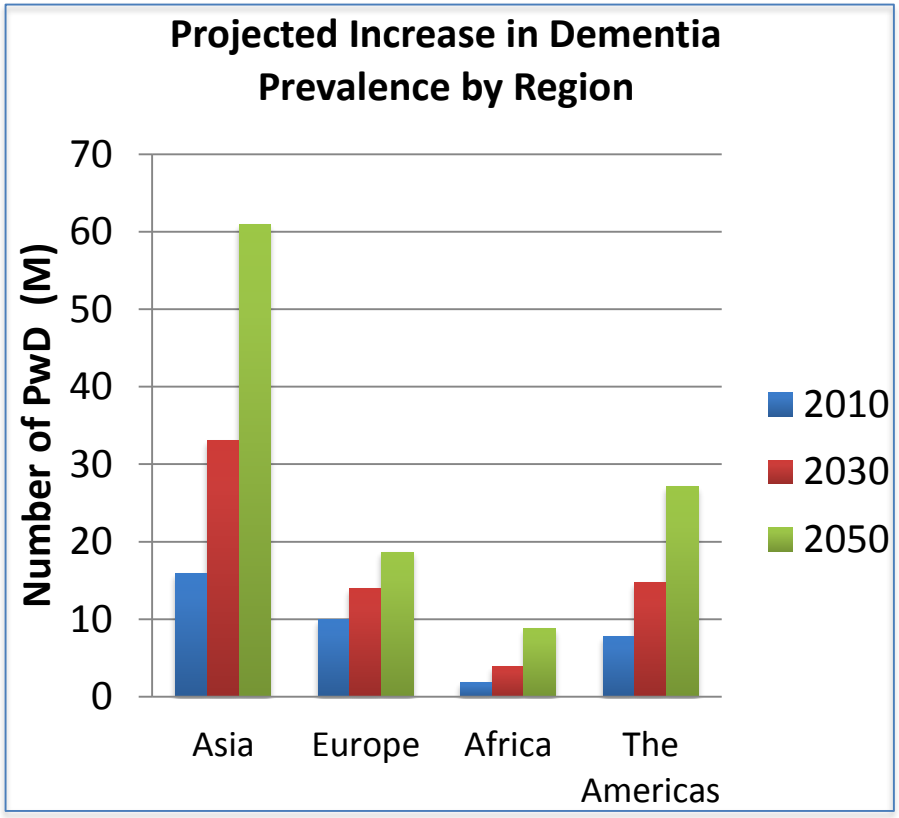
- Market research
- Low impact questionnaire surveys
  - e.g., opinion polls
- Management studies or organisational surveys
  - e.g., in a retail environment
- Analysis of some types of existing anonymised data
  - e.g., audit
- Analysis of certain information for which consent has already been given
  - e.g., edited electoral roll

CASE STUDY KeepWell: A Generic Platform for the Self-Management of Chronic Conditions

Introduction

Chronic Conditions

- The number of persons with chronic conditions such as dementia will continue to increase
- This increase will lead to:
  - Increased health care expenditure
  - Social disconnectedness amongst sufferers and their carers



Projected increase in dementia prevalence from 2010-2015 by region (Data from [1])

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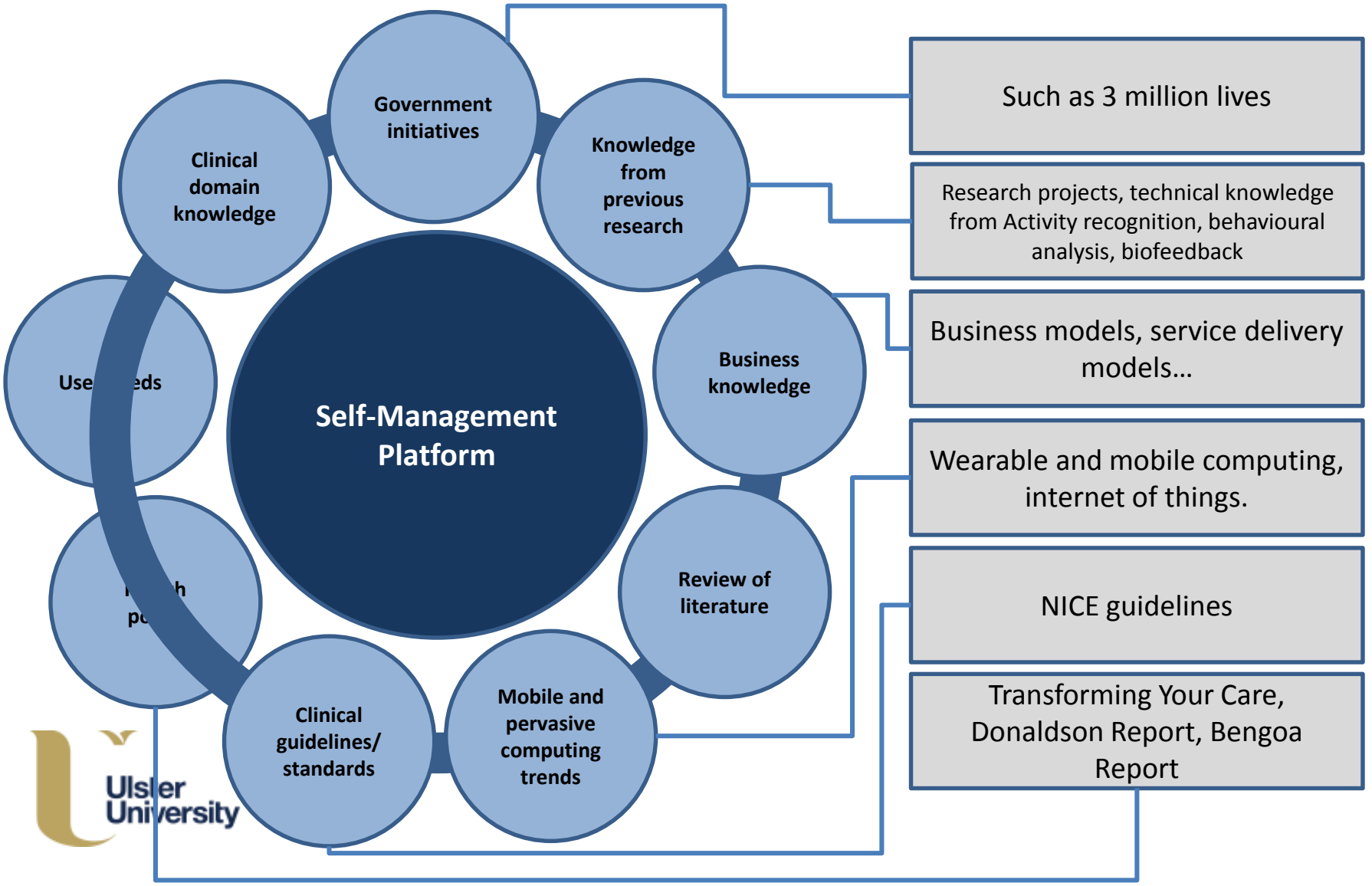
Building upon previous works

Evidence base



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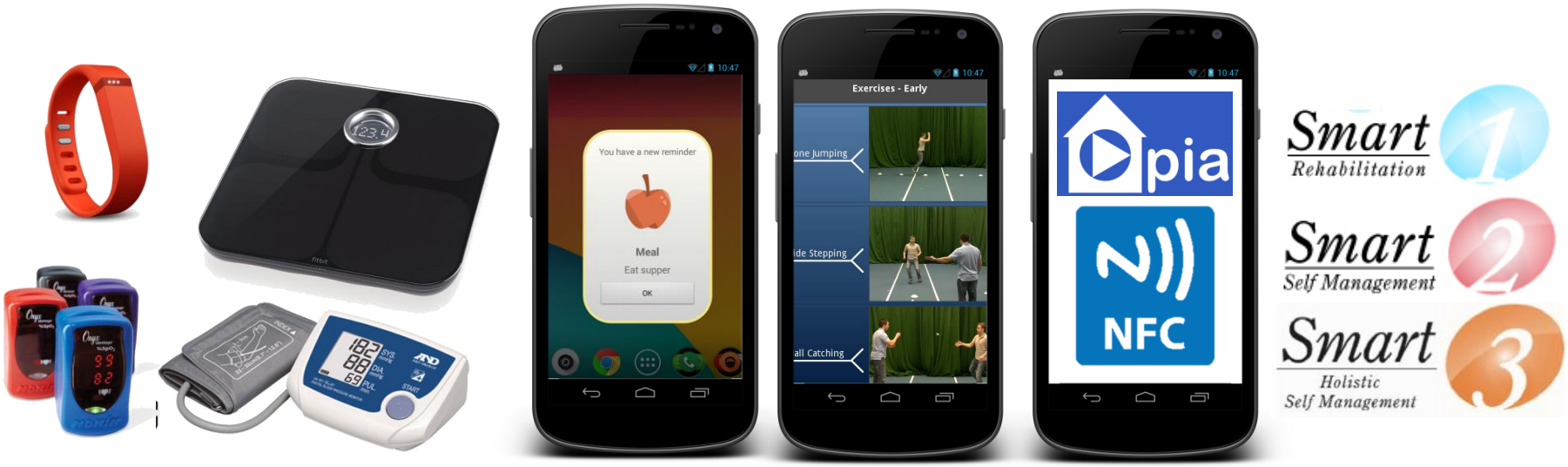
Utilising existing technology

- Many of the technologies utilised to support self-management are now reaching maturity.



- Technical challenges remain in the integration, extensibility and scalability of such systems.
- Develop and evaluate an extensible system which can support self-management a range of chronic conditions.

Introduction

Self-Management

- Self management of chronic conditions aims to empower individuals to manage their own conditions and thus has the potential to alleviate, to some extent these socio-economic burdens. Advantages include:
  - Increased motivation for the patient to engage with healthcare process, e.g. collaborative goal setting
  - Use of collected data (personal, e.g. health measurements and environmental, e.g. weather) to predict events, e.g. Chronic Obstructive Pulmonary Disease (COPD) exacerbations
  - Facilitate home-based care, e.g. for dementia
    - Higher quality of life
    - Lower cost

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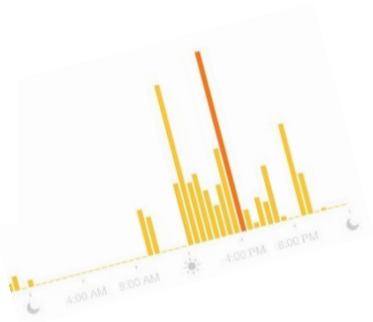
Aim

The Self-Management Project

- To develop a generic and readily extensible self-management solution. Validated with three exemplar conditions:
  - COPD (Preventative)
  - Dementia (Accommodative)
  - Stroke (Restorative)



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Objectives

The Self-Management Project

1. Define contemporary views of self-management for each intervention model.
2. Identify functional requirements for each condition.
3. Identify common functionality for a generic self-management platform.
4. Create a system architecture which can facilitate this functionality.
5. Identify and procure existing technologies where possible.
6. Develop and implement the generic platform.
7. Tailor this for each condition, Stroke, dementia and COPD.
8. Evaluate the solution with a target cohort, HSC trusts, non-profit.
9. Assess the extensibility and scalability of the solution.

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Self-management- Stroke

NICE guidelines highlight a number of areas for self-management post stroke. These include:

1. Encouraging people with neglect to attend to the neglected side.
2. Encouraging people with arm weakness to incorporate both arms.
3. Establishing a dressing routine for people with difficulties such as poor concentration, neglect or dyspraxia which make dressing problematic.
4. Provide information about local resources.
5. Rehabilitation through physical activity, strength training, fitness training, walking therapies and mobility exercises.
6. Tips on eating well, safe exercise, setting goals and effective problem solving

Self-management- Dementia

- Self-management tasks may include adherence to medication, engaging in activities to maintain cognitive function, remembering scheduled appointments, emotional expression, and adjustment to illness to maintain a positive perspective.
- Many of these tasks are traditionally seen as out of reach for many people with dementia/MCI
- Self-management for people living with dementia was conceptualised as covering five targets.
    1. Relationship with family
    2. Maintaining an active lifestyle
    3. Psychological wellbeing
    4. Techniques to cope with memory changes,
    5. Information about dementia
- In this case self-management is more focused on managing the person's life with the condition than managing the condition itself.

Involving people with Dementia

People with *Dementia* make a significant contribution to society

Valued and have equal right to participate

Research “with” them - this reflects changing perceptions within society about people with dementia and the practice of social inclusion.

Each person is different (e.g. might be a public transport user, go shopping, be an ecologist, enjoy skiing etc.) and has something to contribute towards society.

Not a homogenous group, mainly older people, from different cultural groups and social classes and with different levels of education etc.

Most people who have dementia are over the age of 65. Both prevalence rates and the incidence of Alzheimer’s disease increase dramatically with age, particularly in the 75+ age group.

On the other hand, there are many people with dementia under the age of 65.

- may increase with early diagnosis
- ageing of groups with a relatively high risk of dementia such as those with intellectual difficulties (especially Down’s syndrome) and those with head injuries.

http://www.alzheimer-europe.org/Ethics/Ethical-issues-in-practice/2011-Ethics-of-dementia-research/Involving-people-with-dementia

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Self-management- COPD

- The main aim of self-management for COPD is to prevent exacerbations by life style adaption and to allow patients to acquire the skills to treat their exacerbation at an early stage.

- The Nice Guidelines for self-management of COPD suggest ;

  Patients should be encouraged to respond promptly to symptoms of an exacerbation by:

  1. Starting oral corticosteroid.
  2. Starting antibiotic therapy.
  3. Adjusting bronchodilator to control symptoms.
  4. Appropriate use of tablets should be monitored.
  5. Contact healthcare professional if they do not improve.
  6. Level of Activity exercise capacity, BMI, spirometric tests, BODE index.
  7. Specific educational packages should be developed for patients with COPD.

Generic Requirements

Identified generic requirements of a self-management platform

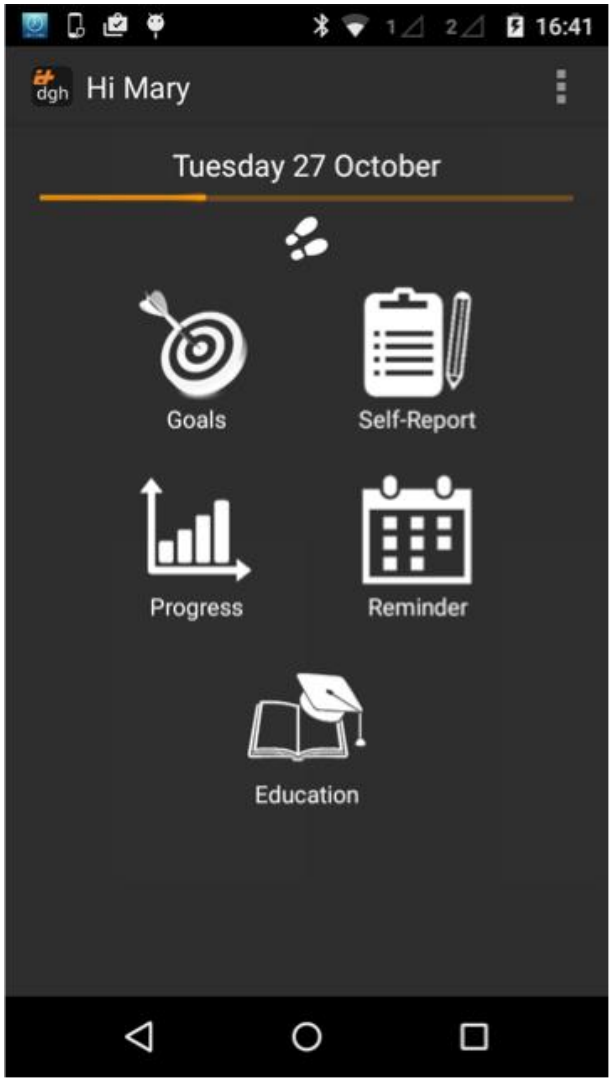
Stroke	Dem	COPD	Requirement description
SFR-1	DFR-1	CFR-1	Activity planning and goal setting features (calendar view)
SFR-2	-	CFR-2	Ability to record users symptoms via self-report
SFR-3	DFR-3	CFR-3	Measurement and feedback/ goals
SFR-4	DFR-4	CFR-4	Educational information/ factoids delivered via push notifications. Sign positing the user to relevant information tailored to them.
SFR-5		CFR-5	Measurement of Activity (some other parameters)
SFR-6	DFR-6	CFR-6	Ability to play back video content relating to exercises and instructional material
SFR-7	DFR-7	CFR-7	Online social network to provide enhanced social connections with friends, family, carers and patients in a similar position to provide support and further educational information

The KeepWell Platform

Overview

- Requirements based on:
  - Engagement with clinicians
  - Academic Literature
  - Previous experience

- Developed Android app has five core areas of functionality



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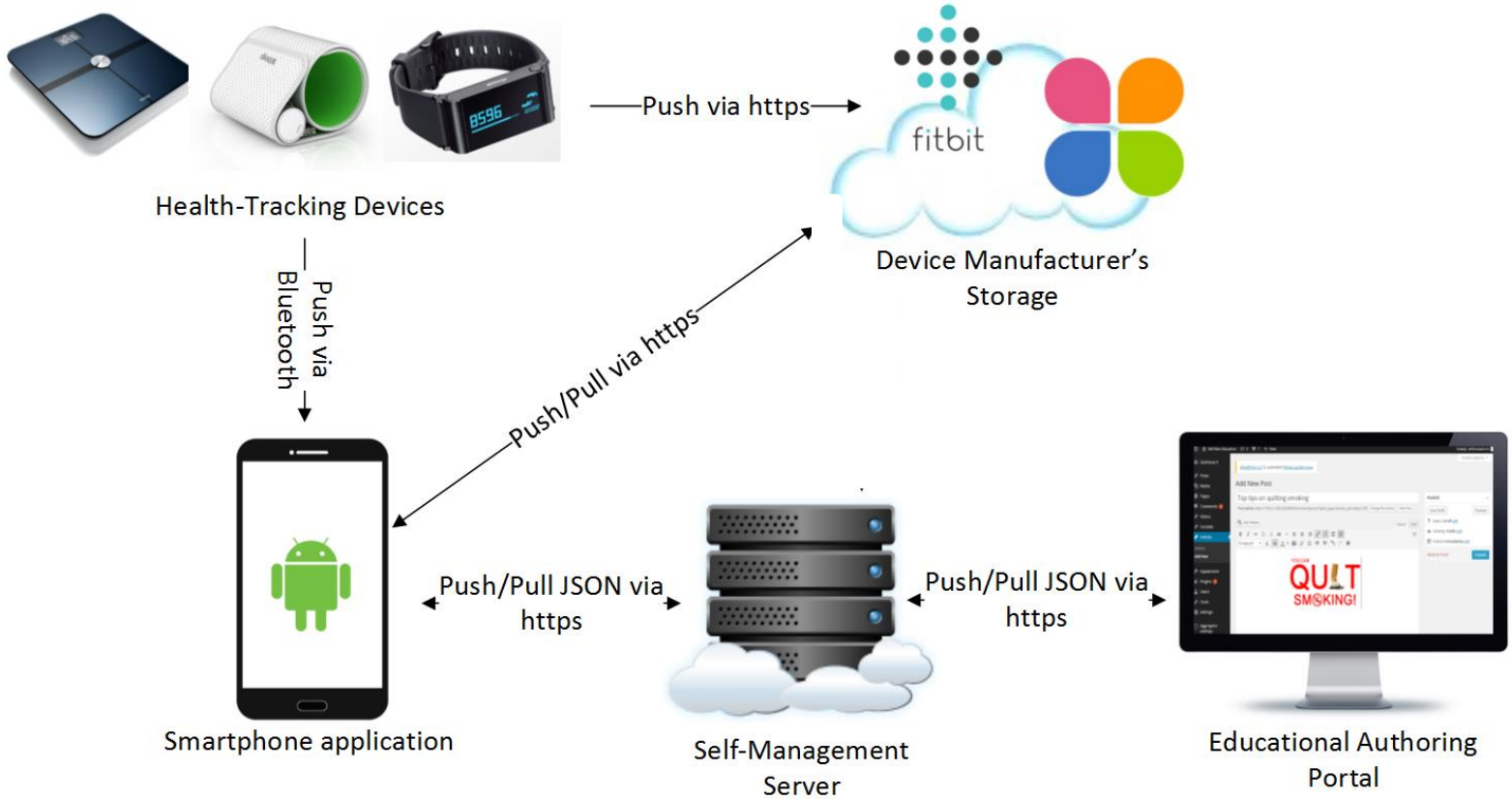
The KeepWell Platform

System Components

- Utilises Commercial Off-The-Shelf Technology



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The KeepWell Platform

Devices

Currently using a suite of Withings devices
Downloads via Application Programmer Interface (limit of 60 per minute per developer key – can be increased)

1) Blood pressure monitor (≈£90)
   - Systolic/Diastolic Blood pressure
   - Heart rate

2) Pulse Ox (≈£70)
   - Steps, distance, elevation, calories burned, light, moderate, intense activity
   - Light sleep, deep sleep, number of times awake
   - SPO2, heart rate

3) Smart Body Analyser (≈£110)
   - Weight, body fat
   - Heart rate
   - CO2

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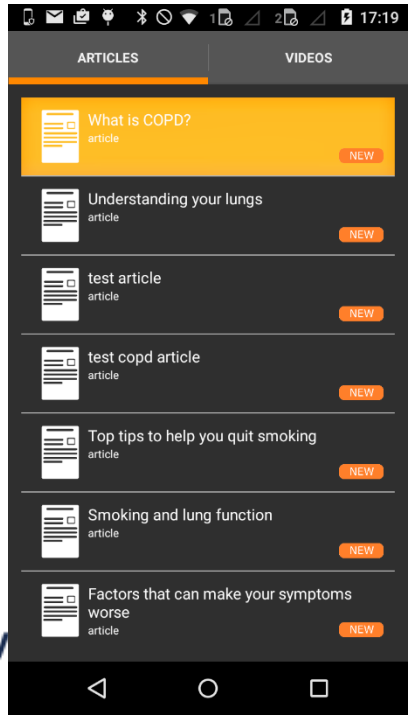
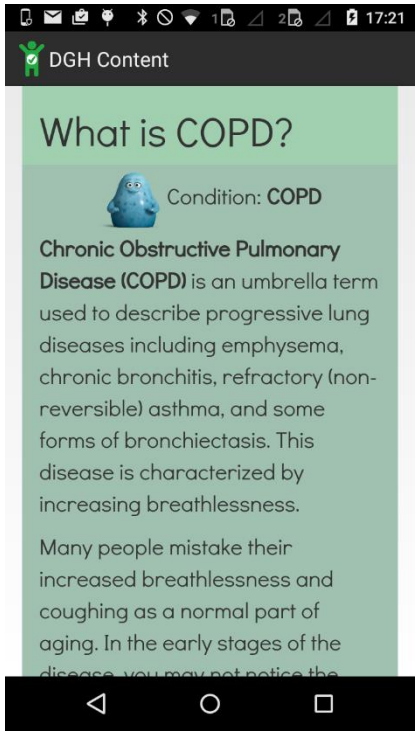
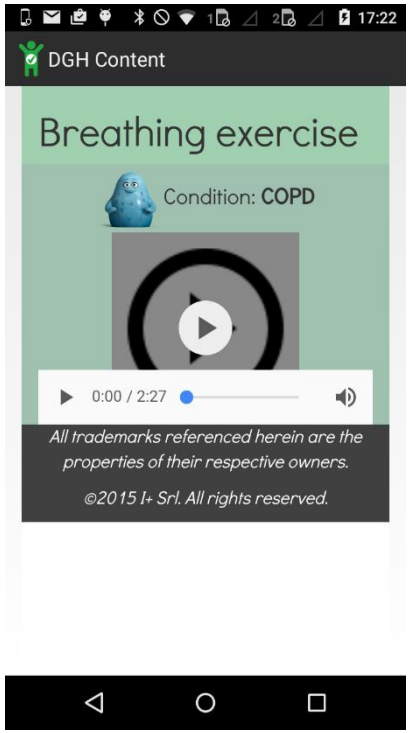
The KeepWell Platform: Education

Field	Type	Example
Condition	Condition	COPD
Name	String	“Quit Smoking”
Description	String	“How to stop smoking!”
URL of content	String	“http://bit.ly/1LHPRgAl”
Type	Enum	Article







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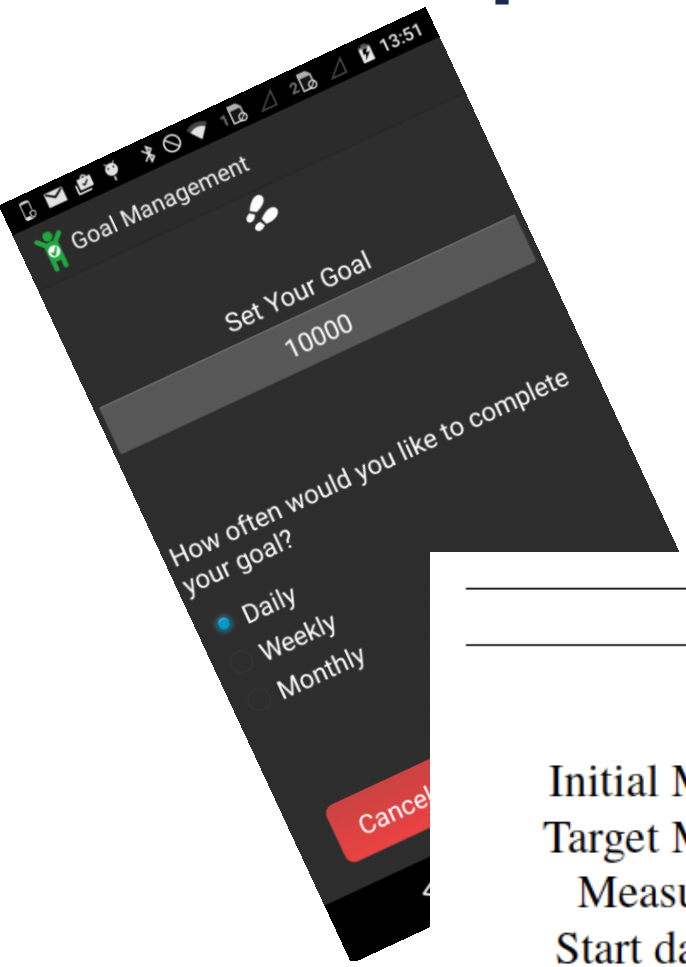
The KeepWell Platform: Goal Setting



Field	Type	Example
Name	String	"Steps"
Description	String	"Keep walking!"
Initial Measurement	Double	0
Target Measurement	Double	10000
Measurement Unit	Enum	Steps
Start date / end date	Date	2015-08-27T12:55
Frequency	Enum	Daily
Notification Frequency	Enum	Daily
Importance	Int	1
Status	Enum	Active

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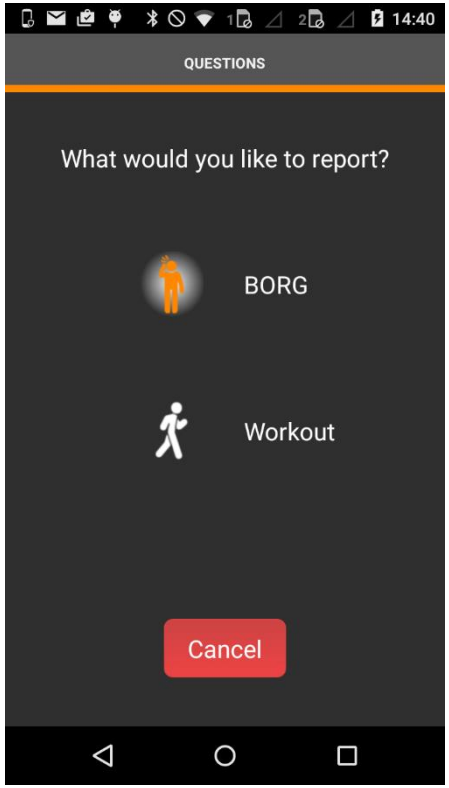
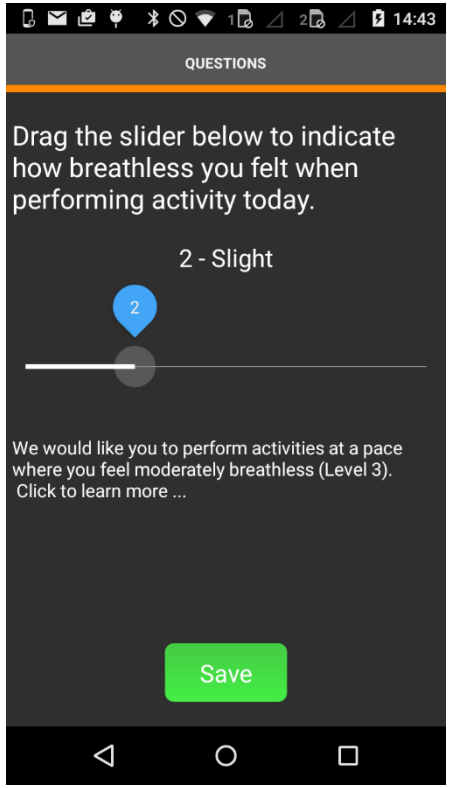
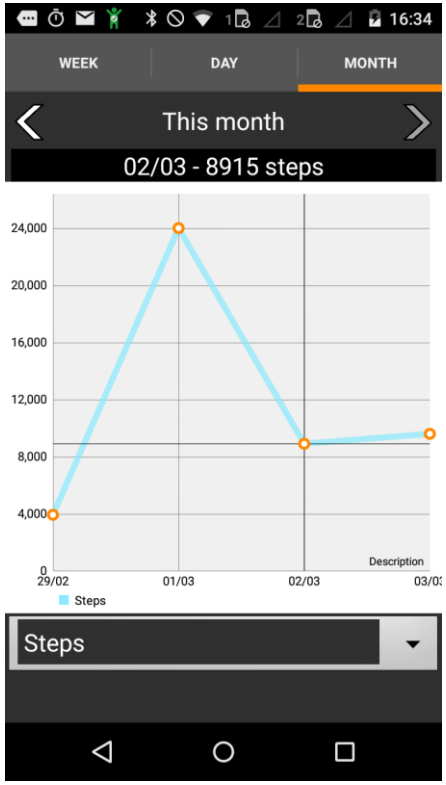
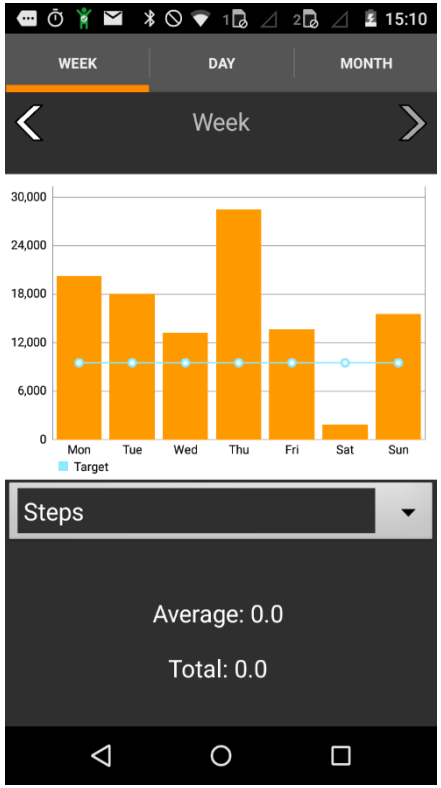
The KeepWell Platform: Measurement of Health Metrics

- Measurement of health metrics can be either via a Commercial Off The Shelf device, e.g. Withings Pulse Ox or, Self-Reported, e.g. BORG measure of perceived breathlessness









Where Ethics fits in KeepWell

Development:

A team of experienced Principle Investigators (PIs) guided developers in **scientific, technical and ethical issues**, and overseen these. The technology to be developed will aim to improve the wellbeing of older people. This manual indicates the ethical issues that the ESRs may face and provides guidelines for dealing with these.

Use:

HCPs must work under the direction of PIs and adhere to 'good clinical practice' in gaining **consent from patients**, protecting **privacy** and ensuring the **security of data**.

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Ethical principles in KeepWell

Risk Assessment - Guarantee comfort and safety of participants and/or healthcare professionals, ESRs, supervisors

Address security of data (on preferences, profile, medical data and localisation, activity) acquired during evaluations

Take account of privacy and anonymity

Sensitive data! (e.g. Early Stage Dementia categorization)

Data retention (e.g. Data Protection Act compliance)

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Some specific issues

- Moving from a Wellness App to a Health App
  - Regulatory approval, MHRA approval
- Dealing with cognitive impairment, deficits due to Stroke and COPD
- Monitoring of daily living activities support, health and wellbeing
- Location data, tracking of individuals
- Promoting behaviour change and self-management

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Information on Research Ethics

U.S. Department of Health & Human Services (updated January 2017):
The Common Rule, governing studies with Human Subjects

- http://ori.hhs.gov/education/products/ucla/chapter2/page04b.htm

National Science Foundation (NSF):
Responsible Conduct of Research

- http://www.nsf.gov/bfa/dias/policy/rcr.jsp

World Health Organisation (WHO):
Ethical standards and procedures for research with human beings

- http://www.who.int/ethics/research/en/

British Psychological Society:
Code of Human Research Ethics

http://www.bps.org.uk/sites/default/files/documents/code_of_human_research_ethics.pdf

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