

How can University - Industry partnership solve global grand challenges?



Professor Werner Hofer
Dean of Research & Innovation
Newcastle University

Global Context

Sustainable Development Goals



4 QUALITY EDUCATION



4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

9.a Facilitate sustainable and resilient infrastructure development .
..

9.b Support domestic technology development, research and innovation . . .

9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet . . .

17 PARTNERSHIPS FOR THE GOALS



17.16 Enhance the global partnership for sustainable development, complemented by **multi-stakeholder partnerships** that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries

17.17 Encourage and promote **effective public, public-private and civil society partnerships**, building on the experience and resourcing strategies of partnerships

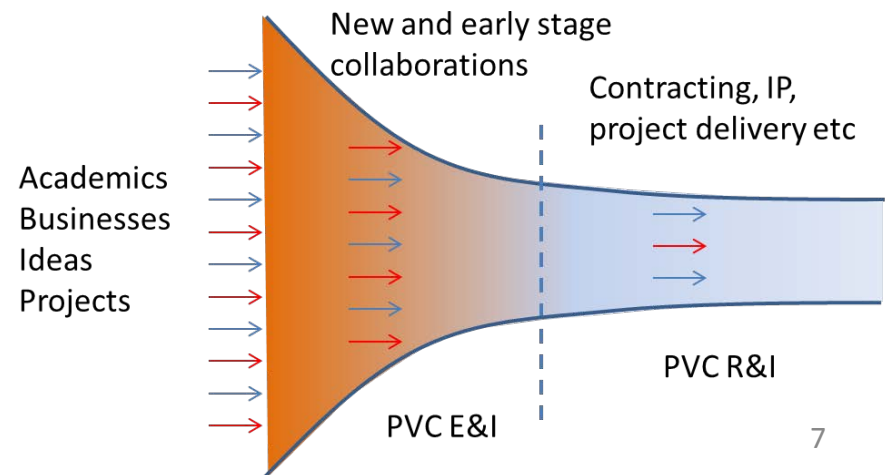
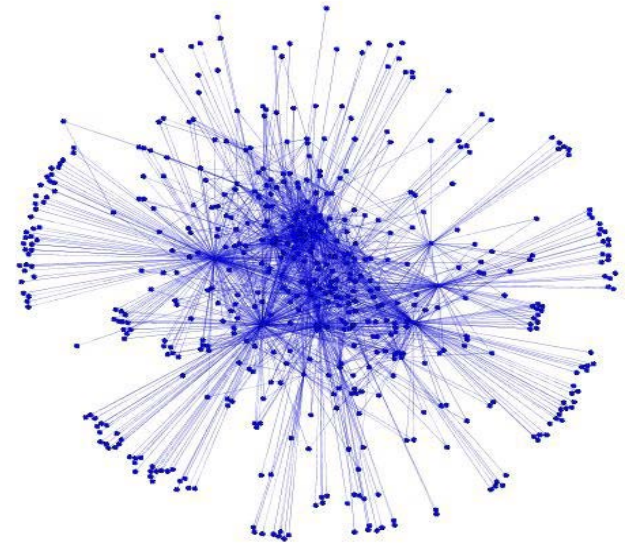
- *Just as castles provided the source of strength for medieval towns, and factories provided prosperity in the industrial age, universities are the source of strength in the knowledge-based economy of the twenty-first century.*

Lord Dearing, September 2002

- Wilson Report

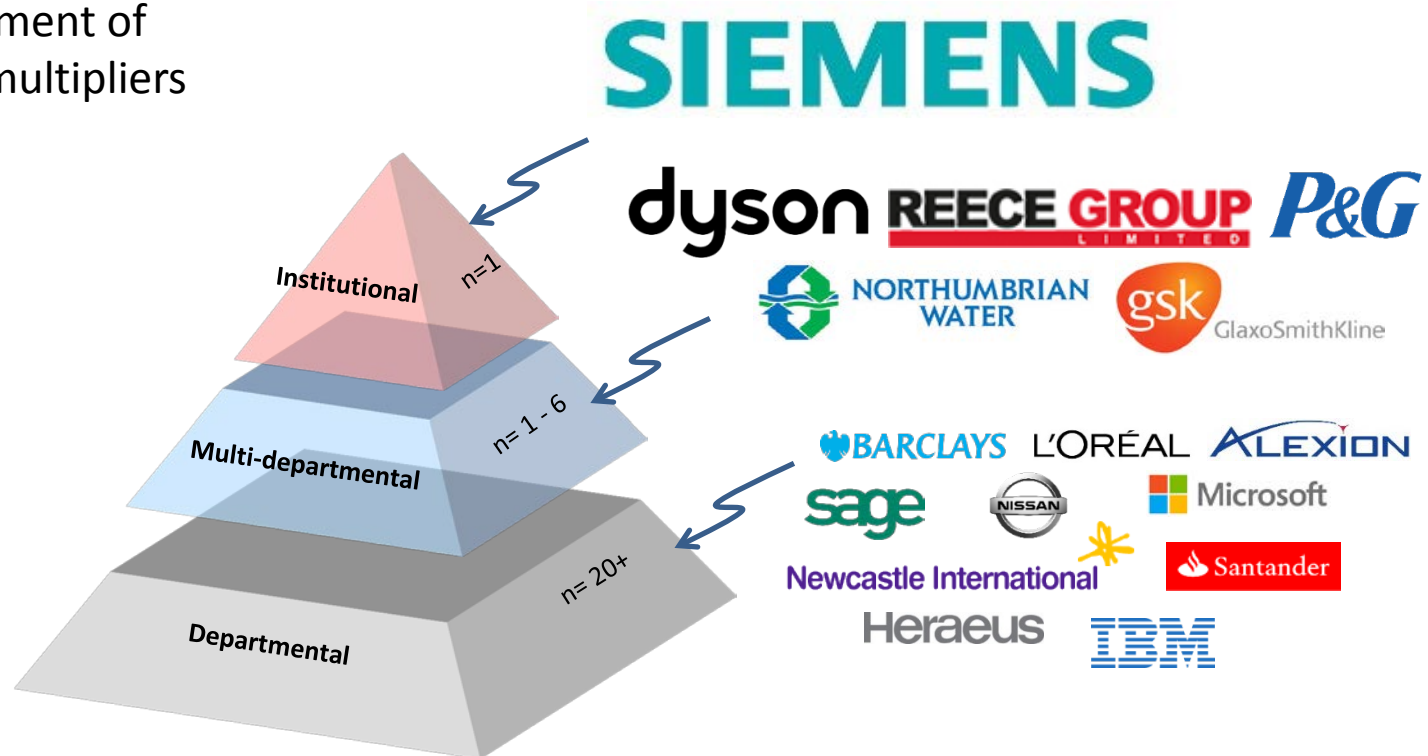
Existing Landscape of Engagement

- Interactions, projects and relationships between University and businesses are often ad hoc in nature and scope
- Opportunity to move from point-to-point interactions to sustainable, long-term relationships (provided there is strategic fit and academic interest)
- Strategic approach to business engagement which translates and supports existing delivery structures

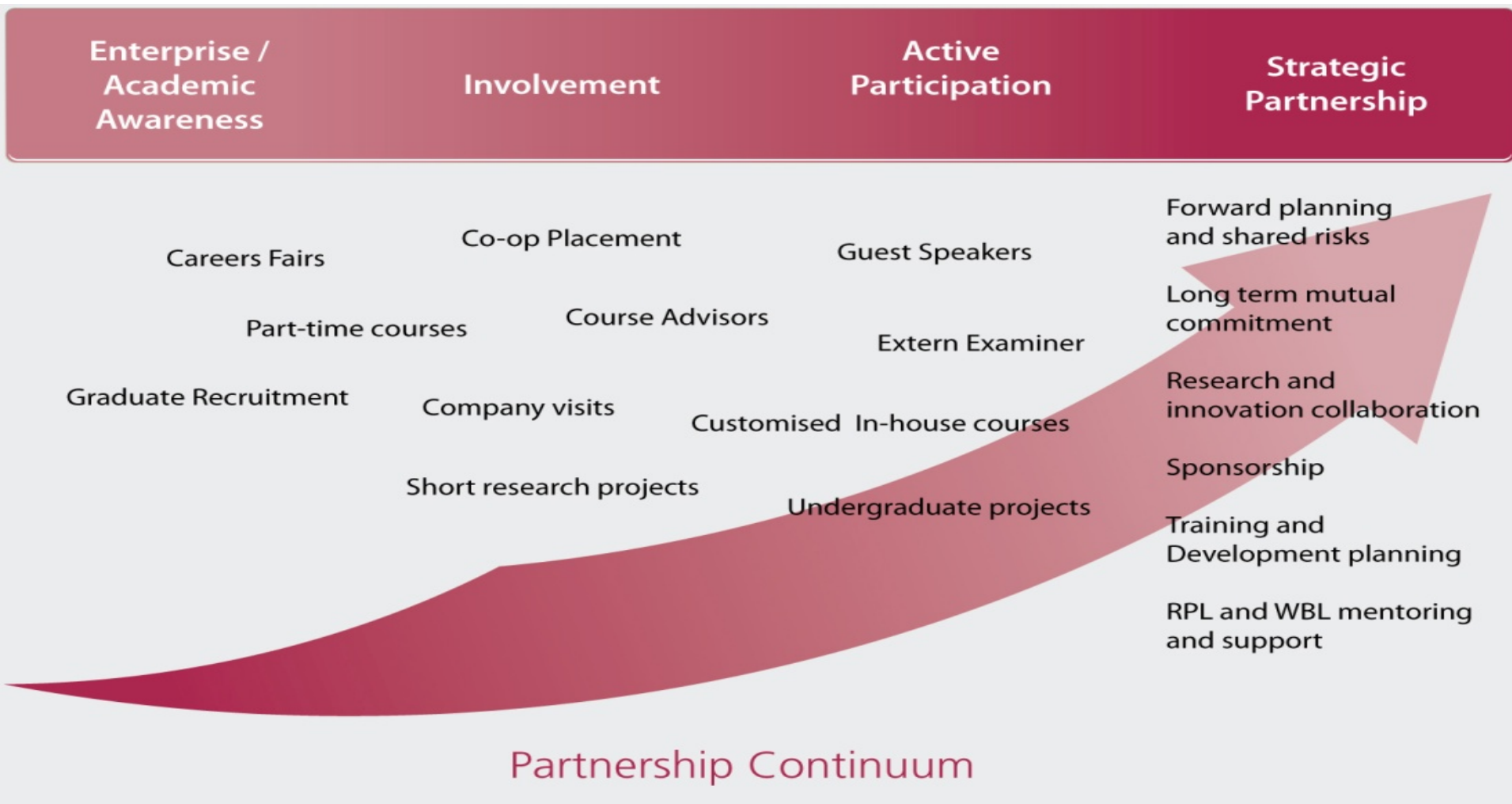


Tiered Partnerships

- Business Account Facilitation Programme which manages companies which are or have potential to be of strategic value
- Proactive management of important business multipliers



Partnership activities



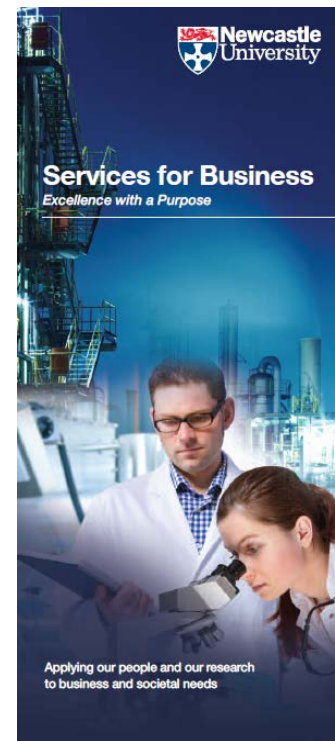
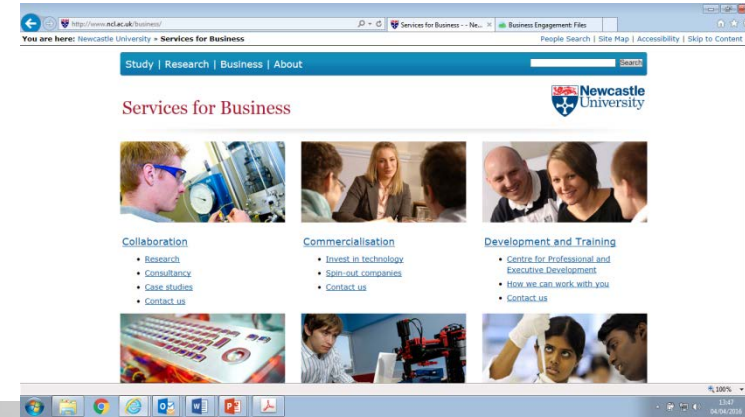
Single Point of Entry

- Simplify 'front door' for businesses – particularly for SMEs - by establishing central email address and telephone number
- Enquiries triaged from the point of entry into academic units



Integrated Marketing and Communications

- Production of institutional-wide marketing materials for business engagement, including a visual identity toolkit for staff
- University business events programme and 'soft' business engagement activities e.g. business lunch, private dinners



How do we innovate?

matching what's **possible** with what's **needed**
to create economic value or social good or both.....



Strategic imperatives

Be very clear on what you are good at.... generalised industrial themes are hopeless. We need laser focus on specific R&D leadership areas or where there are gaps in global R&D clustering.

Develop innovation hubs for commercial problem-solving.

Get the region working as a region in the innovation space. Optimise our systems and networks. Develop partnerships better.

Create a regional innovation voice for national and international engagement with key corporate innovation leaders. This is not trade, it is innovation dialogue.

Small and Medium size Enterprises (SMEs): insights

- Many are **not ready to innovate...no time/money**
- Those that are (or need to) have **no systems** in place
- SMEs have **limited networks**, usually within their supply-chain
- They have very **short-term** issues & want **simplicity of engagement**
- They often have a **dim view of Universities**
- They are **wary of dialogue with corporates**
- They worry about **funding complexities**



- They want **simplicity of engagement**
- Spacially agnostic....but can be loyal.....
- They can support **long-term examination of opportunity**
- They are slow decision-makers...especially on big commitments
- They are **strategically driven**

TECH | 11/29/2012 @ 2:13PM | 156 views

GE Uses Crowdsourcing To Solve Air Travel Delays and Healthcare

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GE is a large company that creates and builds a wide range of products, but the industrial giant is now looking for a little outside help. The company is looking for some Silicon Valley-style innovation, launching two developer crowdsourced "Quests" that challenge scientists to create new ways to solve longstanding air travel and healthcare problems.



10

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What does an engaged university look like?

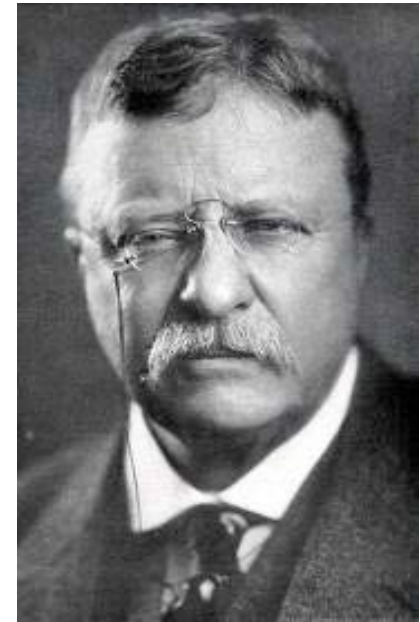
- Makes business engagement critical to University mission
- Acts as the key regional resource for innovation challenge problem-solving.
- Encourages academics & students to solve **regional challenges**. Rewards them. Exposes them to entrepreneurship.
- **Builds strategic relationships & understands the rhythm of small business.**
- **Builds major strategic relationships.**
- Creates strong networks across regional Universities.
Make collaboration a default option.
- Creates strong networks with all businesses. Invites them.


-
- **Academics** who engage ?
 - What are the **metrics** for engagement ? Facilities ? Hubs ?
 - **Skills** for the local environment ? Smart-spec focussed ?
 - **Placements** ? Teaching that meets SME needs ?
 - **Girls** in technology ?
 - **Start-up** developments ? IP precious ?
 - **Regional collaboration** between Universities ?
 - **Leadership** of innovation environments ?

Finally, finally, its never easy

- “It is far better to dare mighty things, to win glorious triumphs, even though checkered by failure... than to be one of those poor spirits who neither enjoy nor suffer much, because they live in a gray twilight that knows not victory nor defeat.”

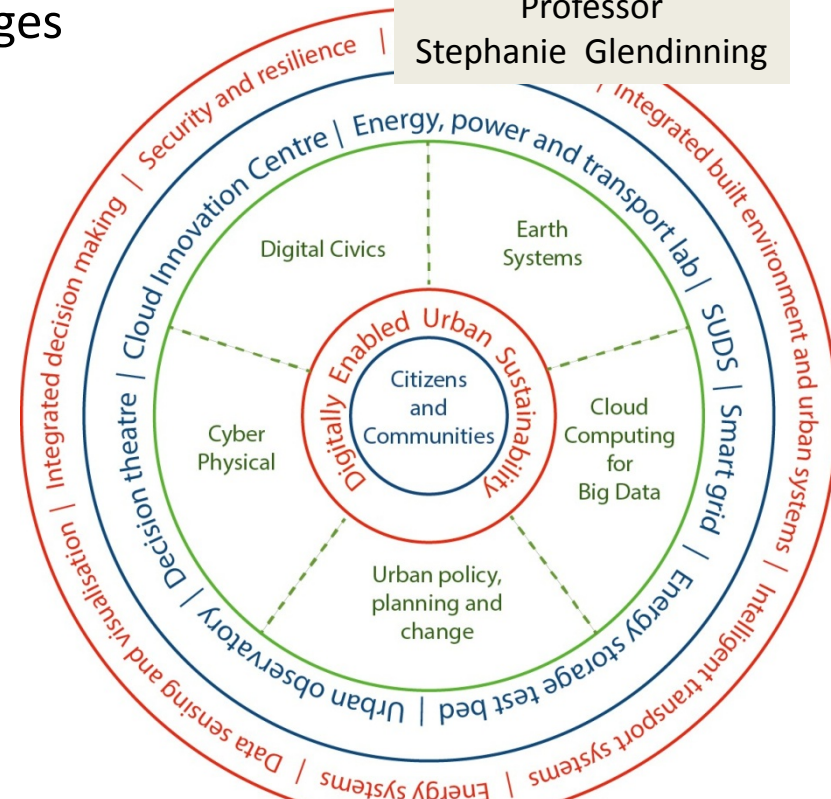
Theodore Roosevelt (1858-1919)



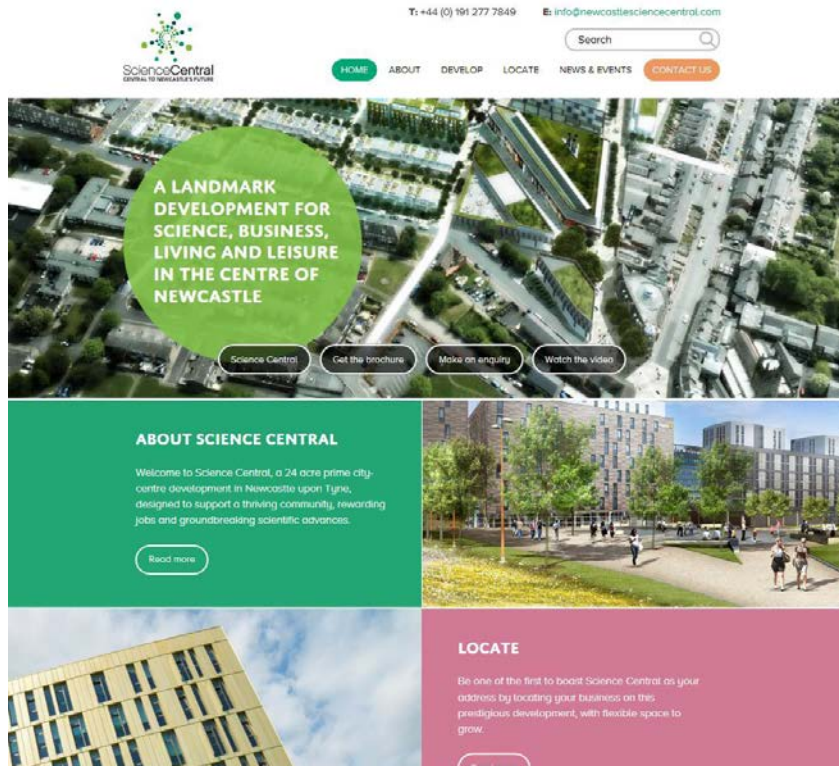


Professor
Stephanie Glendinning

Investment: £59 Mi from the University alone



A living laboratory



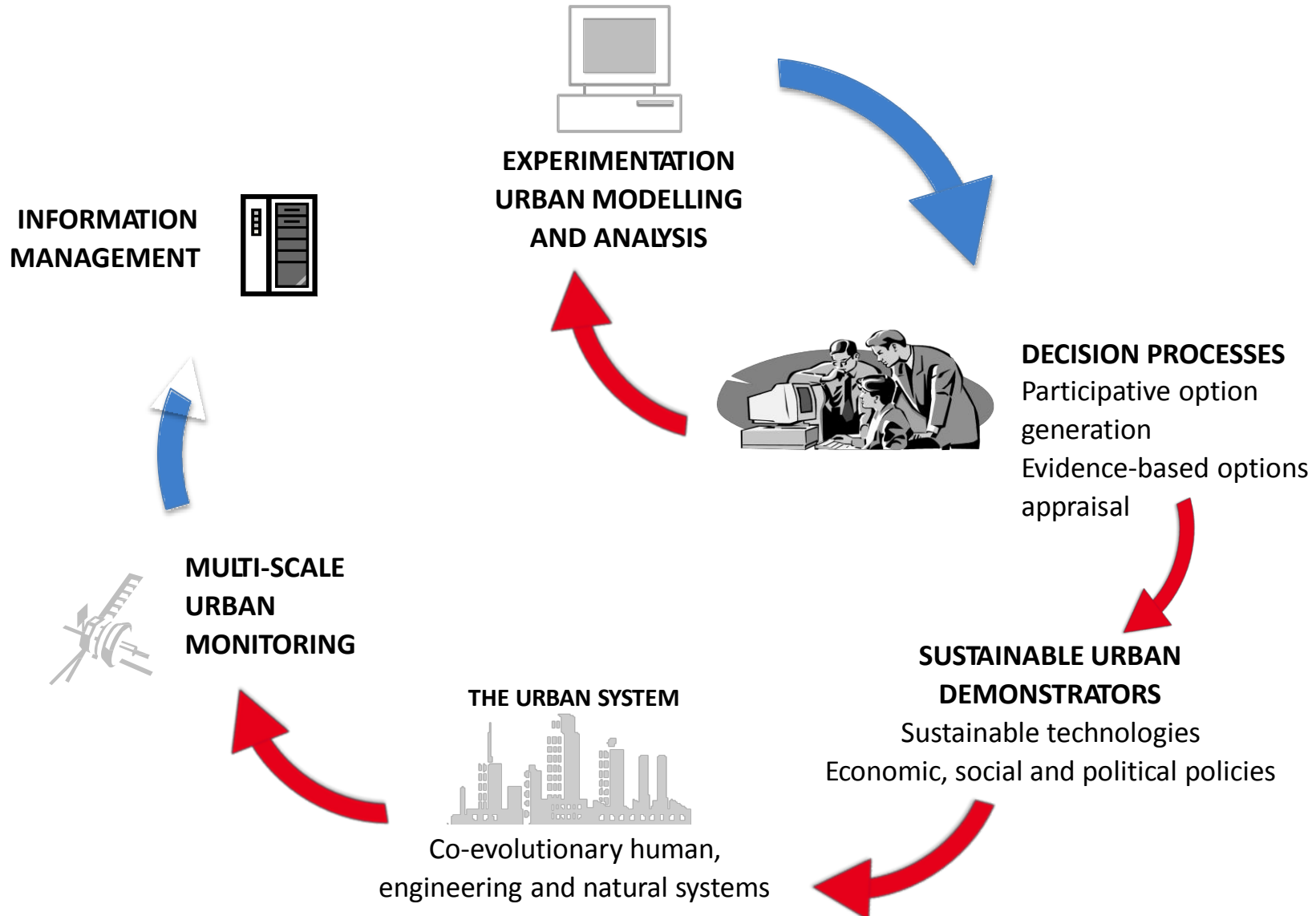
Digitally Enabled Urban Sustainability

CASE STUDY 3

NEWCASTLE UNIVERSITY AT SCIENCE CENTRAL

A 'living laboratory' for
sustainability in the city centre

A living laboratory



The site as a living lab: demonstrators on site

Science Central Masterplan

Residential
Office / Mixed use
Newcastle University

Energy storage test bed

Geothermal borehole

Smartgrid Electrical Infrastructure (11kV/400V)



1) Urban Sciences Building
Completion date: Autumn 2017



2) Learning & Teaching Centre
Completion date: Autumn 2017



3) The Key
Completed: February 2016



4) The Core
Completed: November 2014



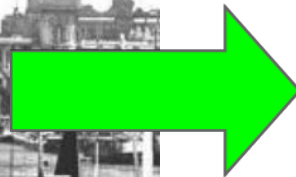
5) Newcastle Laboratory
Completion date: Spring 2018

Sustainable Urban Drainage Lab and demonstrator

EV Filling station

Sustainable cities in the 21st century

1970s.....



2010.....



Newcastle 'greenest' British city

Newcastle upon Tyne has been named as Britain's greenest city in a think tank's annual study.

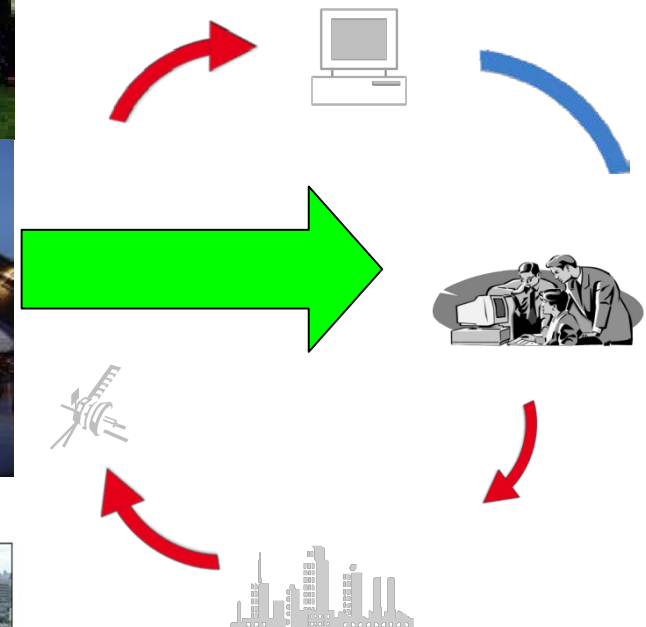
Forum for the Future looked at the sustainability of the 20 biggest cities, measuring factors such as air quality, wildlife and quality of life.

As well as greenest city, Newcastle was the overall most sustainable, beating 2008 winner Bristol into second.



Newcastle was praised for emerging from its industrial past to go green

2050?



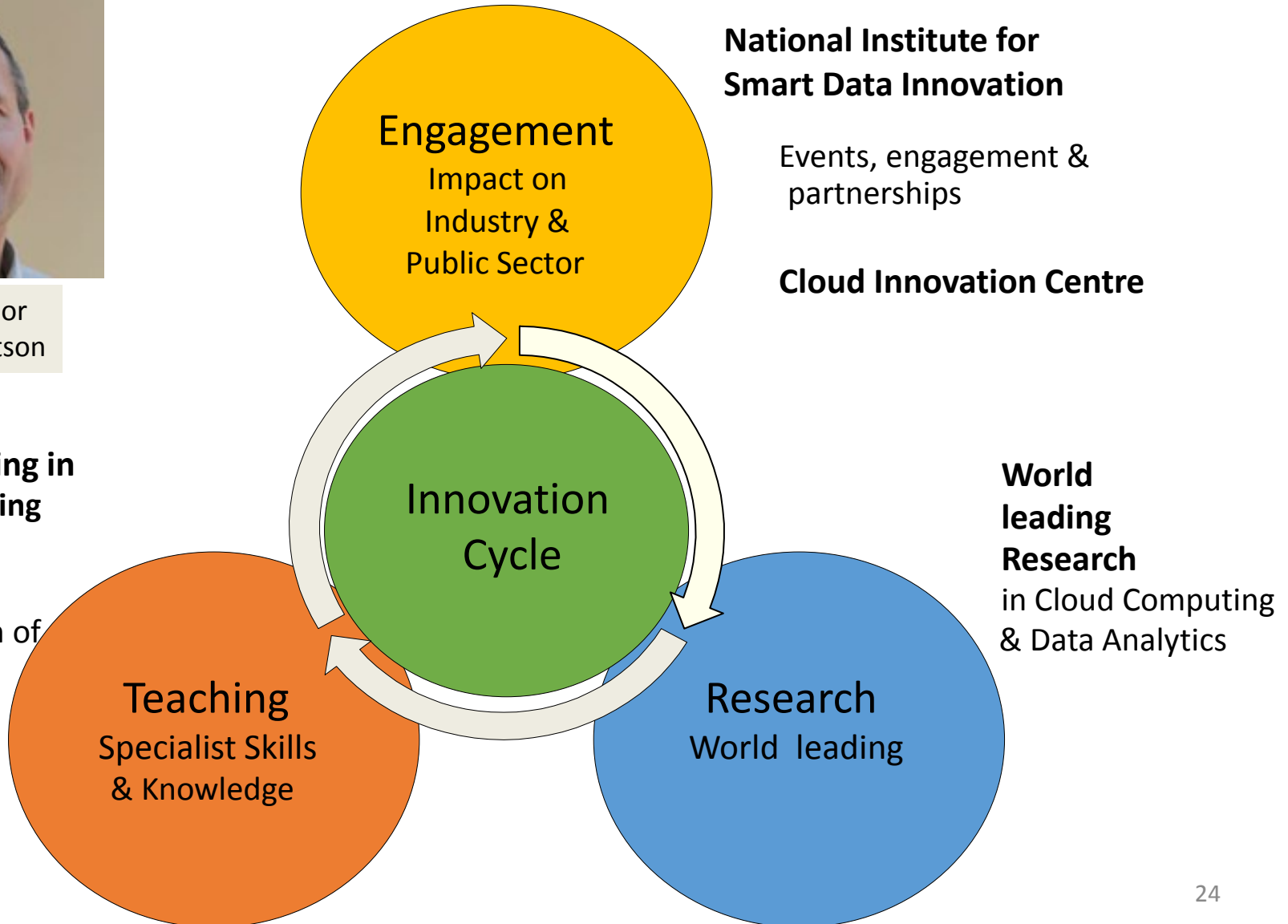
Case Study: National Institute for Smart Data Innovation



Professor
Paul Watson

**Centre for
Doctoral training in
Cloud Computing
for Big Data**

Developing the
next generation of
leaders



NISDI: Innovation target areas



Health care



Smart Cities



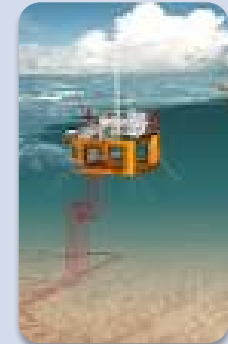
Automotive



BIM



Manufacturing



Others e.g.
Subsea

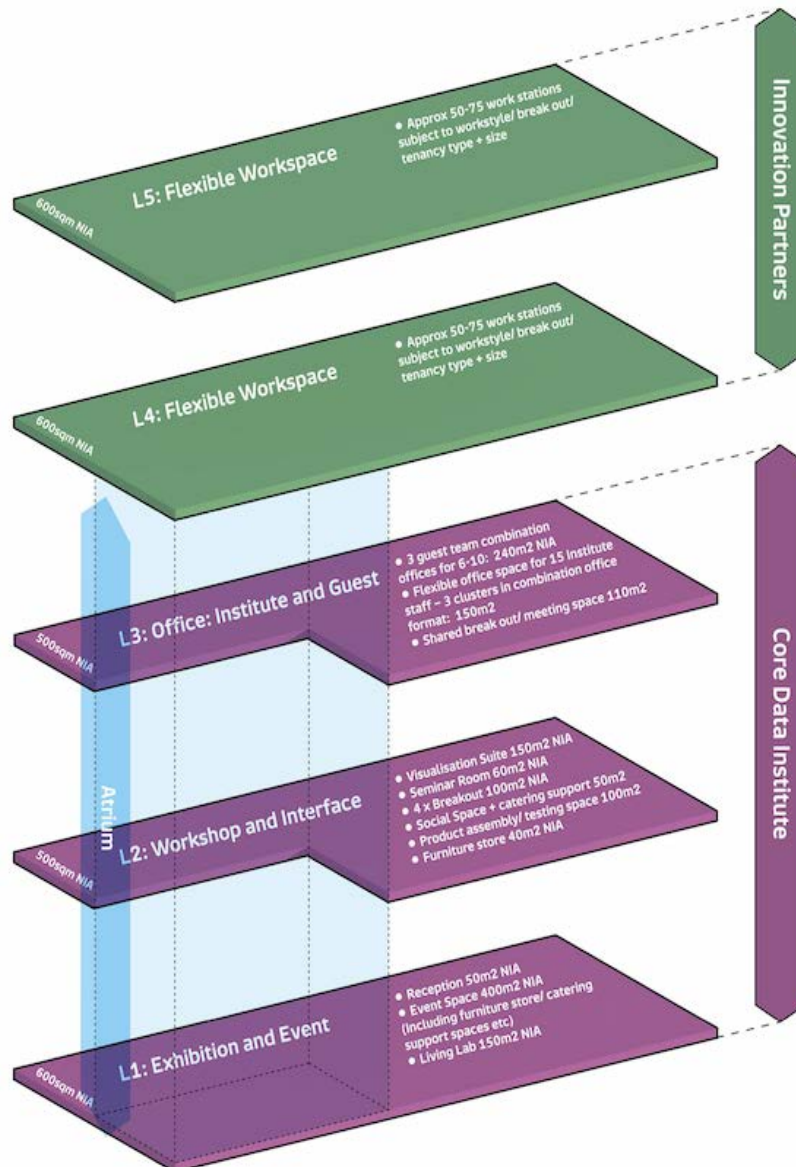
Internet of Things

Data Analytics & Visualisation

Cloud Computing

Other technologies – e.g. cyber security

NISDI: the building



L4 and L5: Flexible Workspace

Flexible workspace for fit out by Smart Data focused SMEs, alongside seconded teams from established national and international companies. A mix of cellular, combination office units and free flowing open plan work settings are envisioned.



L3: Office: Institute and Guest

On this level a suite of combination offices for project clusters will be sited in free flowing break out and product areas. The work settings for three dedicated "guest" organisations of teams of 6-10 and permanent institute members organised in three units of 5 are assumed, though all settings will be flexible allowing for a variety of layouts.



L2: Workshop and Interface

On this floor visitors attending workshops or participating in projects will find spaces and resources to interface with the Institute. This space will also be available as a resource for the commercial space tenants and for their interface with Institute staff. This level will have the main social area, with coffee/ vend, accessible to all institute staff, tenants and "signed in" visitors but not the general public. However for some events this level can act as a mezzanine for the Living Lab/ event space as exhibition/ catering overflow.



L1: Exhibition and Event

On this floor members of the public will explore the Living Lab, a series of installations exploring the role of Smart Data in business and society. Guests will use the event space which can be set up in a number of presentation formats - including a 200 seat theatre - and a reception will orientate visitors who may be part of workshops or projects on levels 2 and 3. The reception will be generous with sofas etc so that all constituencies/ users can interface.

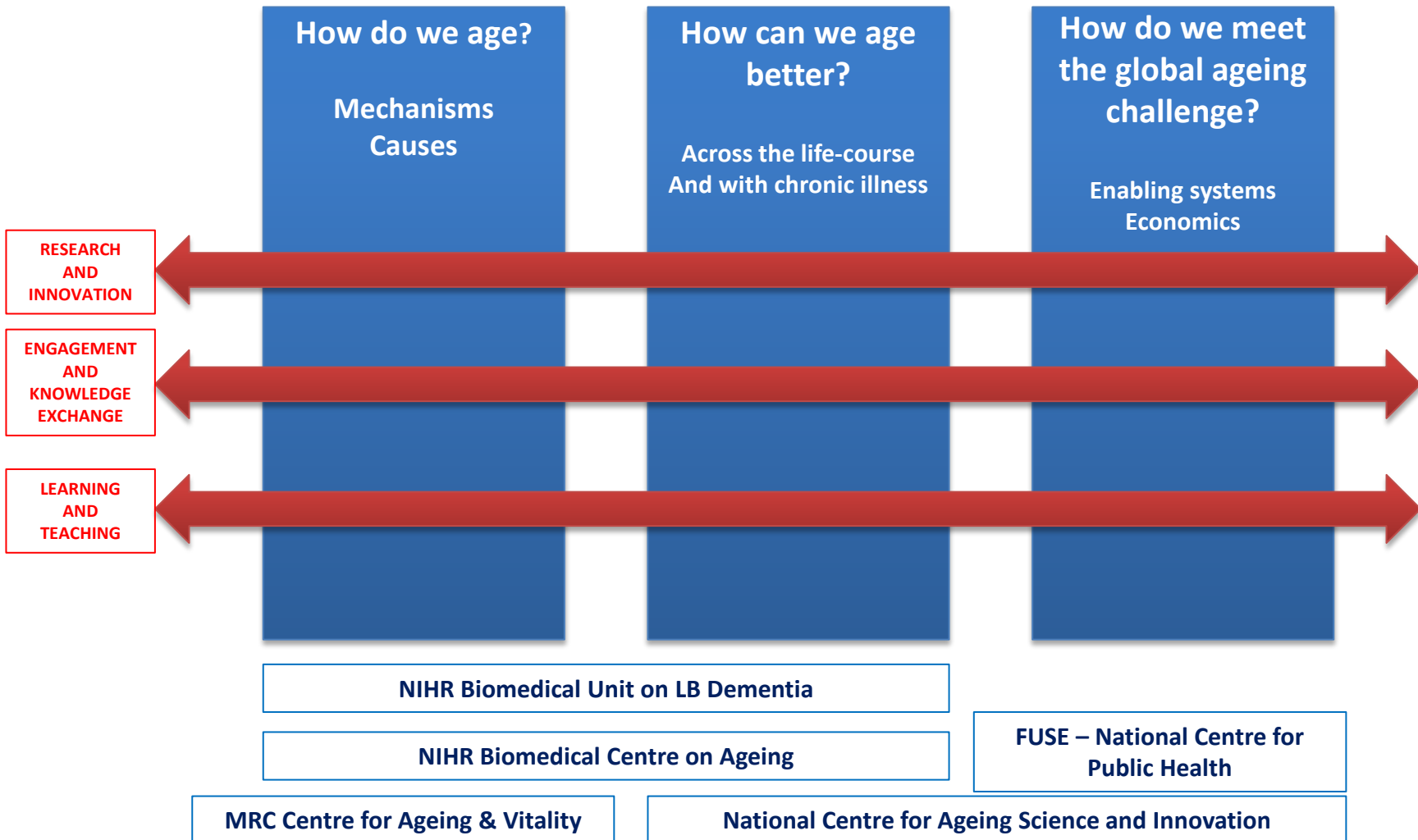


NISDI: educating the leaders

- All students take individual and/or group project with industry
 - as in Cloud Computing for Big Data CDT
- All students take data analytics module
 - as in Berkeley, Cal Tech, Johns Hopkins
- All students take business modelling module
 - as in Cloud Computing for Big Data CDT



Case study: A world leading institute for ageing



pur·pose

/'pəpəs/

Noun

The reason for which something is done or created
or for which something exists.

“To facilitate commercialisation of key products, services & technologies that increase & enhance healthy life years”

“To support productive ageing”

“To secure value from the silver economy for the UK by delivering a critical mass of expertise around the needs and opportunities of the rapidly growing older consumer market.”

All our work will be tested against these objectives.



Professor
Roy Sandbach

NASI: Thematic areas

We need to recognise that ageing needs & opportunities are broad and there are threads through all aspects of life:

- Housing & home design
- Finance
- Daily Consumer Products/Services/Packaging
- Health
- Well-being
- Transport & mobility
- Entertainment
- Social & community engagement

Overall concept

Innovation centres feel different to research facilities.

A greater sense of looking outwards, of openness and delivery and celebration of delivery. They provide an environment where prototyping is more visible than science/technology

An overt problem-solving feel, with great stress on environments where people can meet casually to discuss and debate opportunity.

NASI does not have a unique technical focus.....

Case study: working with a multinational

Siemens: some key dates

- **1993** - The first recorded project
- **Oct 2011** – Formal contact with Paul Beasley at the outset of the UK University programme. University nominate individual as SIEMENS Relationship Manager.
- **Mar 2012** – Paul Beasley briefing to senior staff on the SIEMENS University partnerships programme
- **Jun 2012** – First formal assessment of the extent of Siemens/ Newcastle University interaction.
- **Oct 2012** – Newcastle awarded UK Partner University status
- **2013** – Academic Lead on the partnership Formalised
- **2014** – PVC Research & Innovations Chair of Steering Committee
- **Sept 2014** – Opening of the SIEMENS sponsored Smart Grid Laboratory
- **Sept 2014** – SIEMENS Technology Day at Newcastle University
- **Jun 2015** – Newcastle University awarded Global Principal Partner University status



Dr Paul Beasley



- Limited institutional awareness of the extent of interactions in both organisations
- Limited appreciation of needs and capabilities
- Ad hoc interactions Engineering related
- Some established relationships between particular researchers and SIEMENS units e.g. Rail
- No strategic element to engagement
- Systems for recoding projects made identification of interactions difficult at the time – now know less than 10 active projects engaged with SIEMENS and the largest with SIEMENS in Germany- high overall value in excess of £17m
- University Nominate SIEMENS relationship Manager



Dr Trevor Bedford

Creating a partnership

- Lead Academic for Partnership.
- PVC Research and Innovation chairs Steering Group
- Increasing awareness of SIEMENS partnership and activity – SIEMENS Technology Day Sept 2014
- Siemens Smart Grid Laboratory opened – Sept 2014
- Increasing level of activity exploring needs and collaboration opportunities
- SIEMENS UK Partner University status
- Increasing recognition of the importance of Industrial Partnerships at Institutional level
- By April 2014, 11 active projects engaging with a value over £28m



Professor
Phil Taylor



Current status

- Global Principal Partner since June 2015
- Relationship extends across all faculties and with Links to University VC and SIEMENS CEO UK
- University has adopted the partnership as its model for engagement across the University
- Engaging with SIEMENS on Nearly 50 active projects with a total value of over £57m
- An Innovation network which will represent a value adding asset to the business
- Global awareness of Newcastle University within SIEMENS
- The relationship led to partnership in other areas e.g. links with other partners
- Extensive range of interactions across both institutions
- Engagement on a more strategic basis
- Interactions from Talent Acquisition and Development through to Large research collaborations across a wider range of disciplines and across all Faculties



How do we
balance multi-
nationals with
SMEs?

How do we make
access easier?

Targets/KPIs?

New ways
to engage?



CRM?

How do we
streamline?