How can University - Industry partnership solve global grand challenges?

Professor Werner Hofer
Dean of Research & Innovation
Newcastle University
Global Context

Sustainable Development Goals

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals
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.
Global Context - Targets

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.
17.16 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.
Industry-University Partnership (UK)

• 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

**Enterprise / Academic Awareness**
- Careers Fairs
- Part-time courses
- Graduate Recruitment

**Involvement**
- Co-op Placement
- Course Advisors
- Company visits
- Short research projects

**Active Participation**
- Guest Speakers
- Extern Examiner
- Customised In-house courses
- Undergraduate projects

**Strategic Partnership**
- Forward planning and shared risks
- Long term mutual commitment
- Research and innovation collaboration
- Sponsorship
- Training and Development planning
- RPL and WBL mentoring and support

Partnership Continuum
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
Multinationals: insights

• 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
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.
University challenges

- Academics who engage?
- What are the metrics for engagement? Facilities? Hubs?
- Skills for the local environment? Smart-spec focused?
- 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)
**Case study: Science Central**

**Partnership** between Computing Science and Engineering and Newcastle University and 6 strategic Partners

**Aims:** A unique interdisciplinary environment for research, learning and engagement. Cutting-edge facilities working with expert practitioners to discover and demonstrate solutions.

Addressing global sustainability challenges

**Theme:** Digitally enabled urban sustainability

**Investment:** £59 Mi from the University alone

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**Professor Stephanie Glendinning**
A living laboratory

Digitally Enabled Urban Sustainability

CASE STUDY
NEWCASTLE UNIVERSITY AT SCIENCE CENTRAL
A ‘living laboratory’ for sustainability in the city centre
A living laboratory

MULTI-SCALE URBAN MONITORING

INFORMATION MANAGEMENT

EXPERIMENTATION URBAN MODELLING AND ANALYSIS

THE URBAN SYSTEM

Co-evolutionary human, engineering and natural systems

DECISION PROCESSES
Participative option generation
Evidence-based options appraisal

SUSTAINABLE URBAN DEMONSTRATORS
Sustainable technologies
Economic, social and political policies
The site as a living lab: demonstrators on site

- Sustainable Urban Drainage Lab and demonstrator
- EV Filling station
Sustainable cities in the 21st century

1970s......

2010......

2050?

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.
Case Study: National Institute for Smart Data Innovation

Engagement
Impact on Industry & Public Sector

National Institute for Smart Data Innovation
Events, engagement & partnerships

Cloud Innovation Centre

Innovation Cycle

Teaching
Specialist Skills & Knowledge

Research
World leading

World leading Research in Cloud Computing & Data Analytics

Centre for
Doctoral training in Cloud Computing for Big Data
Developing the next generation of leaders

Professor Paul Watson
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 breakout and product areas. The work settings for these 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 events at levels 2 and 3. The reception will be generous with sofas etc so that all constituencies/users can interface.
• 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

NISDI: educating the leaders
Case study: A world leading institute for ageing

How do we age?
Mechanisms
Causes

How can we age better?
Across the life-course
And with chronic illness

How do we meet the global ageing challenge?
Enabling systems
Economics

NIHR Biomedical Unit on LB Dementia
NIHR Biomedical Centre on Ageing
FUSE – National Centre for Public Health
MRC Centre for Ageing & Vitality
National Centre for Ageing Science and Innovation
“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
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.....
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
Initial problems

- 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
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
Discussion

How do we balance multi-nationals with SMEs?

How do we make access easier?

New ways to engage?

Targets/KPIs?

CRM?

How do we streamline?