Staff exchanges underpinning academic / business partnerships – good practice for knowledge and technology transfer

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Impact Acceleration Accounts

Support for knowledge and technology transfer
   – and especially secondment for KTT

EPSRC IAA Knowledge Transfer Fellowships

... a study of effective practices at Cambridge

- Some limited evidence from companies seconding between their research units and their business Units
  - Many of the same issues
  - Difficult to quantify benefits and most don’t try
  - Business Units find secondment difficult to manage, both culturally and defending value for money
- Many of the findings from this work are consistent with good practice in University /Industry relationships in general
Staff exchanges, secondments and knowledge transfer

- Why?
- How does it work at its best?
- How to make it work?
- The successful secondee
- Blocks and barriers
- Questions?
The spectrum of knowledge exchanged

Tacit
- Technology knowledge and practice
  - Key issues and priorities
  - Culture, custom and practice

Explicit
- Documented technology
- Documented plans and priorities
- Manuals and handbooks

ENGAGEMENT

Secondment adds most value in understanding and disseminating the tacit
Staff exchanges – the spectrum and purpose

- Everything from ‘five-year secondment’ – to ‘visit for a few weeks’

- Why?
  - Capability and tacit knowledge
  - Access to non-core skills and facilities
  - Understanding context to better target research
  - Understanding wider applications of capability
  - Problem solutions, explicit knowledge, tools
  - and serendipity!

Company laboratory embedded in a university department as a special case

E.g. Johnson Matthey and Chem Eng

Industry to university

E.g. Centre for Smart Infrastructure and Construction
University to Industry: e.g. Rolls Royce

Explicit example: Low Carbon and Materials Processing Group person seconded to BP
Implicit example: Rolls Royce people working in the Whittle Lab

E.g. staff exchanges as an extension of the typical “workshops and meetings” approach – a low risk extension with very high added value
Staff exchanges – WHY?

**INDUSTRY**

- Acquiring and assimilating new capabilities
- Acquiring access to capabilities and facilities (non-core)
- Access to ‘different’ thinking
- Broader network of contacts, might open up new strategic options
- Benchmarking
- Career development for staff

**SECONDEE**

- “Seeing the ‘why’ of the research”.
- Providing impact examples
- Broadening the number of researchers involved
- Forming links with juniors who may later rise through the company to positions of influence
- Enabling salary top-ups
- Broadening skills / experience of the individual seconded
- Developing network of personal contacts likely to be useful in future
- Building transferable skills

**UNIVERSITY**

- “Seeing the ‘why’ of the research”.
- Access to real data
- Broadening contacts and hence research opportunities
- Staying close to ‘state of the art’
- Foresight
- Broader network of contacts, might open up new strategic options
- Benchmarking
- Career development for staff

- Explore new horizons
- Having two mentors of usefully different perspectives
- Differentiate oneself within the company
- Broaden career options
- Extended and “in-depth” interview
Understanding context delivers better solutions and better research

1a. Optimisation of aero engine compressor blades
1c. Design and manufacturing processes and practice
1b. Analysis, design and testing of compressor blades (leading edge profiles)

Problem as posed

Context

Academic / research capability

Apply to specific context

Solve problem as posed – at generic level

Enhance

Discern and explore

Research

Reframing

Solve

Short-term solution

Broader issue / opportunity

Broader / generic solution or corporate capability

Publication

Solve

5. Industrial implication is very valuable: “in the Trent 700 EP, Rolls Royce demonstrated a reduction in fuel burn of 1.3%”

3. “Compressor leading edge spikes”

4. ASME Best Paper Prize for Whittle Lab Research
   www.eng.cam.ac.uk/news/stories/2011/Prize_Whittle_Lab/

NB: The example quoted on this diagram is an approximation of a complex process, simplified for explanatory purposes
Staff exchanges and secondment – keys to success

- **Senior championship – both sides**
  - Strategic orientation, less focus on metrics, able to authorise the 'bit of slack' that enables breakthroughs
  - Academic seniors can help early-career researchers see the potential value – and provide essential support
  - Vital to negotiate shared objectives and ensure supportive context – for best outcomes for all

- **Skilled ‘middle management’ – both sides**
  - Pragmatic support – long/short trade-offs
  - Safety net / Enabler
  - Value for Money
  - Speed at minimum risk
  - Risk management
  - Motivation

- **Umbrella governance – present but invisible**
  - Governance that matures over time – written and unwritten. Coach secondees if necessary. Use NDAs to provide assurance for both sides. Value of “badges of membership” such as email addresses
  - Beware the short-termism of poorly targeted Management by Objectives!

- **Clear objectives – but informal metrics**
  - Provide briefings on history, objectives, rules (in practice as well as the written), access to networks, invitations to and introductions in meetings, social support

- **Orientation for secondees**
  - Task provides context and legitimacy, and a minimum deliverable. “Something to do – but not too much”

- **Defined tasks – but space for serendipity**
  - Secondees are likely to be outside the mainstream while they’re away – so highlight their successes – create publicity and recognition. Clarify by action that they’re valued

- **Cultural support**
Staff exchanges and secondment – the successful secondee

- Cultural sensitivity
  - New environment, new culture, new norms
  - Factions: threats and opportunities

- Tolerance for ambiguity
  - Evolving and multiple roles
  - Policy decision delays

- Competence
  - To gain acceptance
  - To manage the host’s risk
  - To get the quick wins that gain access to the interesting opportunities

- Staff exchanges and secondment – the successful secondee
  - Need to figure out how to fit in and add value – and it may need to be in new and unexpected ways
  - Everybody’s learning, including the administrators and policy-makers
  - So not too early in a career stage – make sure you know your field enough to be quickly useful
  - Don’t be too narrow – but don’t spread yourself too thinly
Staff exchanges – blocks and barriers

- The time required to do it properly...
  - Make it explicit strategy
  - Build it into the structure of the relationship
  - Build it into careers
  - Requires shared values, objectives and trust

- Safety net: Parallel relationships / channels of communication

- Bureaucracy
  - Legal
  - HR
  - Financial

- Mindset: The tyranny of the timecard and discerning value

Generally they’re trying to create a safety net for the problems that are unlikely but high-impact if they occur

Talk to them early enough to allow them to be helpful

Beware cultures that know the cost of everything but may not be able to recognise value