Knowledge Transfer
– a non academic perspective

CES Seminar, Surrey University
David-Huw Owen – October 2011
Typical KT paradigm

based on an assumption that Universities are ‘primary’ & ‘vital source for accessing external ideas’
Alternative KT terminology ... ?

- Action Research
- Applied Dissemination
- Applied Health Research
- Capacity Building
- Change Implementation
- Clinical and Translational Science
- Co-operation
- Co-optation
- Collaborative Development
- Complex Interventions
- Complexity Science
- Continuing Education
- Diffusion
- Diffusion of Innovations
- Dissemination
- Effective Dissemination
- Effectiveness Research
- Evaluation Research
- Feedback and Audit
- Gap Analysis
- Guideline Implementation
- Impact
- Implementation
- Implementation Research
- Implementation Science
- Information Dissemination & Utilization
- Innovation Adaptation
- Innovation Adoption
- Integrated KT
- Know-Do Gap
- Knowledge Adoption
- Knowledge Brokering
- Knowledge Communication
- Knowledge Cycle
- Knowledge Development and Application
- Knowledge Diffusion
- Knowledge Dissemination
- Knowledge Exchange
- Knowledge Management
- Knowledge Mobilization
- Knowledge Synthesis
- Knowledge Transfer
- Knowledge Transformation
- Knowledge Translation
- Knowledge Uptake
- Knowledge Utilization
- Knowledge-to-Action
- Linkage and Exchange
- Mode 2 Knowledge Production
- Opinion Leaders
- Organizational Innovation
- Participatory Action Research
- Participatory Research
- Patient Safety
- Popularization of Research
- Quality Assurance
- Quality Improvement
- Research Capacity
- Research Utilization
- Science Communication
- Technology Transfer
- Third Mission
- Total Quality Management
- Translational Medicine
- Translational Research
- Translational Science
- Transmission of Knowledge
- TRIP
- Utilization

WhatIsKT
- McMaster University
- whatiskt.wikispaces.com
**KT Definition**

- **Classic accepted definition of Knowledge Transfer**

  “about transferring good ideas, research results and skills from universities and other research organisations, to business and the wider community to enable innovative new products and services to be developed”

  evolved to often include “the exchange of information through networks” & “takes place when existing information is recombined in a new way”

- The Government’s aim is to “promote the transfer of knowledge generated and held in HEIs and PSREs to the wider economy to enhance economic growth”
Key Drivers

- **Key Government Drivers in KT/KE development**
  - Science and Technology Committee (HofC) Review of Knowledge Transfer (2005)
House of Commons - Science and Technology Committee: Research Council Support for Knowledge Transfer (Third Report of Session 2005–06)

All figures approx for 2008-2009

- c£112M
- c£120M
- c£30M
- c£50M = 24 KTNs
- c£140M = 900 projects in CR&D
- c£7M = 960 active partnerships in KTP
Evolution of KT within HEIs

So what are HEIs achieving?

- Total HEIs income from UK KT/KE was £2.8 billion in 2007-08
- HEIs becoming increasingly engaged with external partners across public, private and third sectors

A range of activities such as:

- Collaborative research = £697 million
- Contract research (*direct*) = £835 million
- Consultancy (*application of existing knowledge to new problems*) = £335 million
- Continuing professional development = £540 million
- Facilities and equipment = £103 million
- Licensing = £45 million
- Spin off = 219 in year (*& 923 previous spin-offs still surviving three or more yrs*)
Key Drivers ... More recent influences

- **Key Government Drivers in KT/KE development**
  - Science and Technology Committee (HofC) Review of Knowledge Transfer (2005)
  - DIUS - Innovation Nation (2008)
  - BIS - Higher Ambition (Nov 2009)
Key Drivers ... More recent influences

- More influential publications (collectively providing overall insight)
  - TSB - Connect & Catalyse 2008-2011 (May 2008)
  - HEFCE - Analysis of HEIF 4 institutional Strategies (Oct 2008)
  - DIUS - Fourth Annual Survey of Knowledge Transfer Activities in Public Sector Research Establishments (Dec 2008)
  - CBI - Stronger together: Businesses & universities in turbulent times (Sept 2009)
  - UKTI - UK: Innovation Nation Guide to Key Players in UK Innovation (Oct 2009)
  - UUK - The impact of universities on the UK economy (Nov 2009)

*Increasingly a need to account for ‘Impacts’ of investment*
Wider KT/KE market in UK Government?

Based on original diagram from House of Commons - Science and Technology Committee: Research Council Support for Knowledge Transfer (Third Report of Session 2005–06)
Redefining the KT landscape

based on an assumption that Universities are ‘primary’ & ‘vital source for accessing external ideas’

based on a wider (enhanced) appreciation that KT methods are active in all market engagement and enablement programmes, change facilitations and business networking activities
A little about AEA Technology plc

AEA Technology plc

Energy & Climate Change
Waste & Resource Efficiency
Air & Environmental Management
Sustainable Transport
NCEC
Innovation & Knowledge Transfer

Project / Programme Management
Marketing
IT & Knowledge management
# Knowledge Transfer consultancy

## Definition

The process through which knowledge, held by one entity (the knowledge holder), is embedded within another (the recipient) to enable that recipient to undertake a specific action differently and/or more effectively.

## Key Benefits

- Connect the right people to the experts and information they need
- Improved collaboration and brokerage
- Greater behavioural change effectiveness
- Increased commercial development
- Actual impact awareness benefit realisation
- Superior knowledge retention

## What We Do

- End-to-end Knowledge Transfer design, planning, management, and sustainment
- Innovation support, & technical research
- Collaboration, brokerage & facilitation
- Stakeholder management and stimuli
- Communications, engagement enablement
- Training and capacity building
- Impact benefit evaluation & management

## Clients

- TSB, BIS, Defra, DECC, DfT, DoH, DWP, DfID, FCO, NHS, CT, EST, EA, UKTI, RCUK, Research Councils, BigLottery,
- International, EC (various DGs) etc

## Recipients

- Public, private & third sector organisations
Our KT Services

1. **KT Development Services** - Supporting the (classical/academic) knowledge transfer activities most typically associated with academic-to-business KT of technology and innovation development, and commercialisation / routes to market etc.

2. **KT Management Services** - Providing strategic KT management type services associated with wider policy development/support related KT, including KT programme planning, management, technical support, and analytics / evaluations.

3. **KT Engagement & Enablement Services** - Providing for the stakeholder dialogue led forms of KT leading on direct and indirect facilitation, communication and change management.
# KT Service Offerings

## Three main strands of KT activity

<table>
<thead>
<tr>
<th>Development services</th>
<th>Management services</th>
<th>Engagement &amp; Enablement services</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Innovation support</td>
<td>• Grant administration</td>
<td>• Business stimulus</td>
</tr>
<tr>
<td>• Technical research</td>
<td>• Post-grant evaluation</td>
<td>• Awareness raising</td>
</tr>
<tr>
<td>• R&amp;3D collaboration</td>
<td>• Stakeholder mapping</td>
<td>• Behaviour change</td>
</tr>
<tr>
<td>• Technology support</td>
<td>• Network management</td>
<td>• Change management</td>
</tr>
<tr>
<td>• Commercialisation</td>
<td>• Brand/accreditation management</td>
<td>• Market engagement</td>
</tr>
<tr>
<td>• IP-R &amp; licensing</td>
<td>• Impact evaluation</td>
<td>• Partnership brokerage</td>
</tr>
<tr>
<td>• Spin-out/off support</td>
<td>• Benefit realisation</td>
<td>• Knowledge networks, clusters and forums</td>
</tr>
<tr>
<td>• Market stimulus</td>
<td>• KT audits &amp; analytics</td>
<td>• Facilitation/mentoring</td>
</tr>
<tr>
<td></td>
<td>• Knowledge retention strategies</td>
<td>• CPD &amp; short training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specialist qualification</td>
</tr>
</tbody>
</table>
Common challenges & issues

Our experience shows us that KT programmes, irrespective of size, scope or stakeholder context to which they are being applied, traditionally fall short of delivering effective impacts due to a combination of one of four key issues:

1. A lack of understanding and / or appreciation of the knowledge’s form and of the constituent mix of KT actors involved

2. A scarcity of enablement support required to effect the productive use of the knowledge being transferred

3. An absence of clear, measurable and realistic impact objectives that can be monitored to evaluate the tangible (or lack of) benefit being realised

4. An inability to adjust the programme and / or adapt the specific KT mechanisms being implemented to match the evolving landscape into which the programme is delivering
Identifying the type (& mix) of knowledge

- Difference between information or knowledge... ? – a spectrum, not prescriptive

- Justified true belief (?)

- Interaction between and accessibility of different forms of knowledge is key to KT

**Explicit knowledge** - formal and codified – sometimes called ‘*know-what*’, and easy to store and retrieve - eg databases, memos, notes, documents

**Tacit knowledge** - embodied knowledge, sometimes called ‘*know-how*’ and largely experience based. - includes cultural beliefs, values, attitudes, mental models, etc. as well as skills, capabilities and expertise

**Embedded knowledge** - knowledge that is locked in or can be found from rules, processes, manuals, organisational culture, routines, codes of conduct

- though note while embedded knowledge can exist in explicit sources (i.e. a rule can be written in a manual), the knowledge itself is not explicit, i.e. it is not immediately apparent why doing something this way is beneficial to the organisation.
Understanding the mix of KT actors involved

- Mix of KT actors involved (i.e. the holder, recipient & stakeholder landscape)
- Getting the basics right:
  - WHY are you engaging – do you need to?
  - WHO needs to be engaged?
  - WHEN do you need to engage?
  - …only then do you identify HOW to engage and what methods to use…
- You may have many different (stakeholder) groups that you need to engage
- May not always ‘just’ be the obvious ones
- Continue to review at inception and as the programme evolves
- Need to also understand and consider:
  - Their degree of influence over the successes of the transfer processes
  - Their motivations for engaging (or for not engaging)
  - The Relative importance of the knowledge to them and their organisation
Example 1: Closed Nuclear Cities

- Programme redeploying former weapons experts in the Republics of the Former Soviet Union to sustainable commercial work.
- The work supports the implementation of UK government policy to reduce the global threat from proliferation of nuclear materials and knowledge and in meeting its commitments to the Global Threat Reduction Programme agreed by G8 group of nations.

  - Developing the former weapons experts’ commercial skills, including: new product development; market analysis; business planning; identification, selection and development of new business streams where there are market opportunities
  - Assisting the Institutes in the establishment of these new business streams including the establishment of appropriate organisational structures to support this, including spin out organisations
  - Supporting Senior Managers of the Institutes, particularly in the Republics of Central Asia, to identify and implement Organisational Development Strategies to meet the changes they are facing from being entirely funded from national research budgets to more commercial footings.
Example 2: Bio-Energy Capital Grants Scheme

- Manage the Bio-Energy Capital Grants Scheme on behalf of the DECC.

- Scheme to promote the efficient use of biomass for energy by stimulating the early deployment of biomass fuelled heat and electricity generation products.

- Contracted to administer and manage the first round of the Scheme in 2002 and have since managed six rounds of the scheme
  - Administer ‘Call for Applications’ from industry, local authorities, & community groups
  - Technical & financial assessments of applications
  - Making recommendation to DECC on projects to support
  - Continual monitoring of projects up to full installation of boilers/CHP systems
  - Quarterly and annual reports for each individual project and the production of overview progress reports and spend profiles.
Example 3: Sciencewise - Expert Resource Centre

- Public dialogue, within this context is a two-way conversation between public & policy makers, to inspire and inform better policy in science and technology.
- Engaging the public in these discussions helps ensure that policy makers better understand public fears, concerns, hopes and aspirations for the better use and development of science and technology in the future.

- Provides a “one-stop shop” of information, advice and guidance to policy makers, dialogue practitioners and stakeholders inc public, scientists, NGOs & lobby groups
- Web portal provides online forums, blogs and webinars for groups of experts to get together to discuss topics of common interest [www.sciencewise-erc.org.uk]
- e-newsletters, FAQs, guidance documents, dialogue tools and case studies
- Facilitates the development, procurement and monitoring of funded dialogue projects with Government departments and agencies.
Example 4: NER300 - Knowledge sharing requirements

- "NER300" is a financing instrument by the EC, European Investment Bank and Member States
- Emissions Trading Directive (2009/29/EC) has provision to set aside 300 million allowances (rights to emit one tonne of carbon dioxide) in the New Entrants’ Reserve of EU-ETS
- Subsidising installations of full-scale commercial demonstration projects for innovative renewable energy technology and carbon capture and storage (CCS)
  - Funding for these demonstration projects will only be disbursed if they meet specific knowledge sharing requirements
  - Supporting EC DG CLIMA in defining the working procedures for implementing the knowledge-sharing requirements defined in the SLBI (Specification for Legally Binding Instrument)
    - Develop options for the establishment and composition of a KSB
    - Develop appropriate procedures for the ‘KSB
    - Develop tools for the implementation of these procedures
    - Provide advice on questions relating to the knowledge sharing requirements.


Summary

- **KT** = more than an academic contact sport
- **Aim** = to design engaging KT programme that responds with, speaks to and delivers for the needs of all of its constituent stakeholders
- **Process** = equally supports enablement, embedding and engagement
- **Effective KT** = only successfully achieved when the recipient is able to make independent, productive use of that knowledge for themselves
- **Delivery** = suite of tools, activities and factors (inc analytics) that are able to be easily refined, as necessary, to match the evolving landscape which they are influencing and informing
- **Underpinning methodology** = evaluate the successes of KT through impact and benefit realisation, and subject to continual iterative review of the outcomes that are being achieved rather than just delivery output alone

Bottom line – there must be an approach, per programme, and that is specific, focused and bespoke to each client’s particular needs.