



Introduction to Knowledge Transfer

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Aim: To provide an understanding of the motivations, modes and research frontier in Knowledge Transfer

- Why Do It?
- Models of Interaction
- The Role of Knowledge
- Channels of Knowledge
- Rich Media Interactions
- Effective management





Knowledge Based
Economy



Largest Region in UK

630 miles of Coast

5.2M People / 3.2M of working age and
127 000 Unemployed

Highest number of old people

Sector wide - Knowledge Transfer Outputs		
Type	Period	Income £m
Collaborative research (£m)	2001-07	2,768
Contract research (£m)	2001-07	3,200
Consultancy/ facilities (£m)	2001-07	1,434
CPD Courses (£m)	2001-07	1,688
Regeneration & Development (£m)	2001-07	960
IP Revenues (£m)	2001-07	228
Total income (£m)		10,278

University Benefits

Opens the Frontier of knowledge

(Reams 1986)

Additional funding sources of academic salaries

Research and Educational Programmes

Technical and Physical Resources that would otherwise be
unavailable

Resources to Hire New Faculty

Curriculum Enhancement

Access to Industry Projects and Jobs for Students

Educational Programmes for Industry

An increased awareness among faculty and Administrators
of Industry Needs and Resources

Matthews & Norgaard (1984)



Industry Benefits

Competitive Advantage (Grant 1996)

Access to New Expertise to Solve Problems

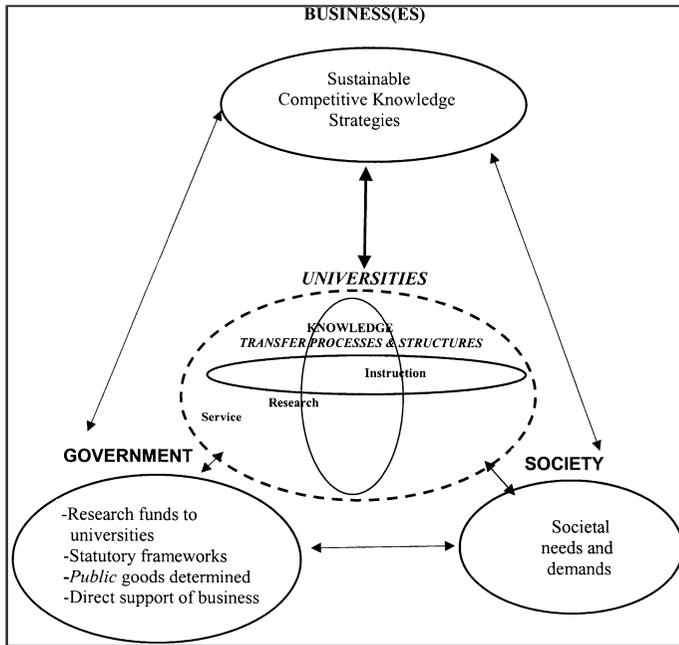
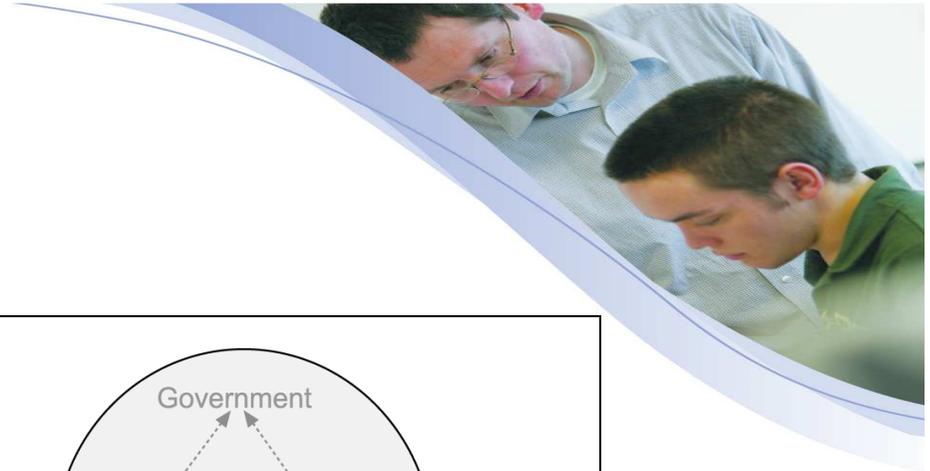
Renewal of Extension of Technology

Access to Potential New Employees (Students)

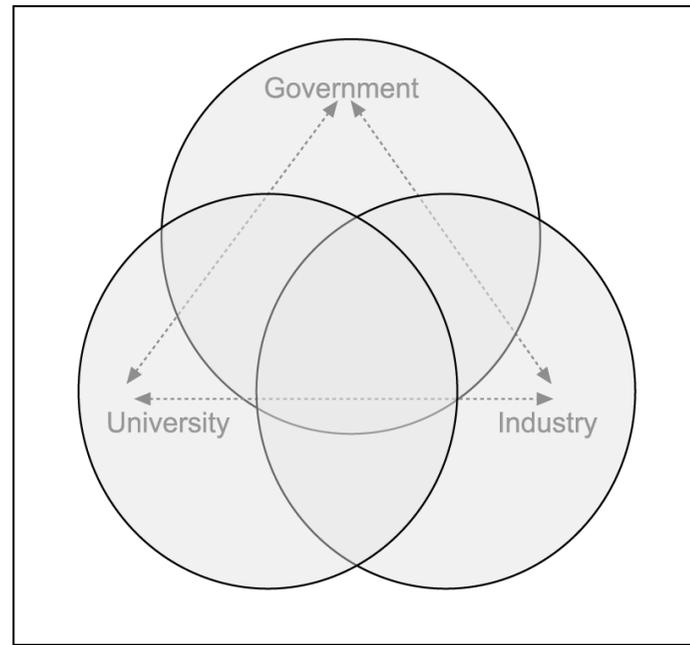
Enhanced Internal Research Capabilities

Grant (1996), Brock & Yaniv (2007), Bommer & Jalajas (2004) Schartinger et al (2002)





Inter-dependence between business, government, society, and universities in knowledge transfer processes (within the US) (Stevens & Bagby 2001).



Triple Helix Model (Etzkowitz 2002)

KT or TT

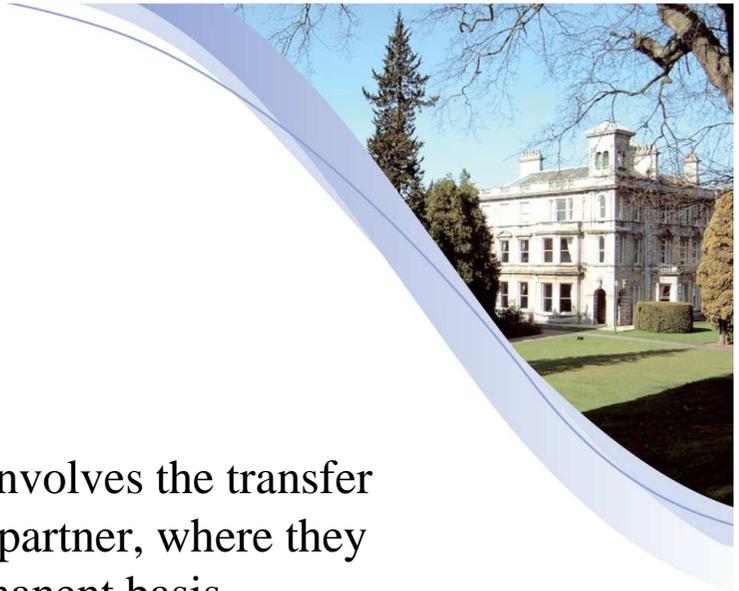
	Knowledge Transfer (KT)	Technology Transfer (TT)
Origin	1 st Order Development	2 nd Order Development
Development	Often HEIs or other research organisation	Can be HEIs or Commercial/Industrial
Concept	Formed from “Why”	Formed when Why is applied
Format	Tends towards Copyright	Tends towards Licenses and Patents
Benefit	Greater Overall Benefit due to ability to embed the understanding behind the solutions, when properly developed.	Faster potential for impact as the “Products” or “Solution” are already developed and tested.
Ownership	Commercial ownership of ideas that lead to the “Solution”.	Commercial purchase of the “Solution”



Channels of Knowledge Transfer

Student Placements / Graduate Employment - involves the transfer of student or graduate into a business or company partner, where they are employed on either a placement or permanent basis.

Joint Conferences – where the audience consists of company employees and academic colleagues and speakers are taken from both groups. The speakers present materials and propose theories to attendees. In developing the structure of the conference the organisers receive proposals for presentation topics or actively seek out presenters that are able to frame popular concepts in either research or practice.



Channels of Knowledge Transfer

Spin-outs – where University personnel, often responsible for the discovery of particular piece of Intellectual Property (IP) join together with commercial partners to create a formally recognised company that will then create either goods or services surrounding that particular piece of IP.

In the process of creating and protecting the IP that forms the basis for the company many hours are spent making this knowledge explicit, as legally intellectual property can only be registered and therefore protected if first it is made explicit. It is this explicit knowledge that is then placed at the centre of the spin out and further developed by the new company.



Channels of Knowledge Transfer

Professional Journal Publications – this is where academic and professional people develop a paper together that defines particular research or knowledge that they possess. These papers are then collated into professional journals and these are then read by scholars and business folk alike.

Networks – are groups of professionals and / or academics that come together and meet face-to-face under a banner of common interest or subject discipline. They may meet both formally and informally (socially) and discuss aspects of their shared interest and debate research or knowledge and its value and applicability to their own work environments.



Channels of Knowledge Transfer

Joint Supervision – this is where academics and industrialists come together to jointly supervise a piece of research or study. It involves academic study by a student and the company and academics supervise this student together toward a qualification, which could be an Undergraduate project, Master Thesis or Doctoral study. Whilst the subject material of the thesis is identified at the outset in order to attract and cement the participation of the partners, the activity of supervision and also to attract the student to take up the study, the detailed scope of the work develops as the project progresses.

Training & Continuing Professional Development - this is where commercial partners are encouraged to keep their professional knowledge up to date with new developments and techniques. Often but not always delivered by academics, activity occurs in a similar same way as teaching, where the teacher or tutor codifies their knowledge in order to transfer this knowledge in a lecture or tutorial based study activity.



Channels of Knowledge Transfer

Secondment – this is where a member of staff is present for a period of time in another organisation with a focus on exchanging or contextualising knowledge between partners.

Collaborative Research – this is where a problem or gap in knowledge exists and both commercial partners and academic partners realise this gap and agree to work together to discover new knowledge surrounding the problem or indeed propose solutions that may solve the problem.

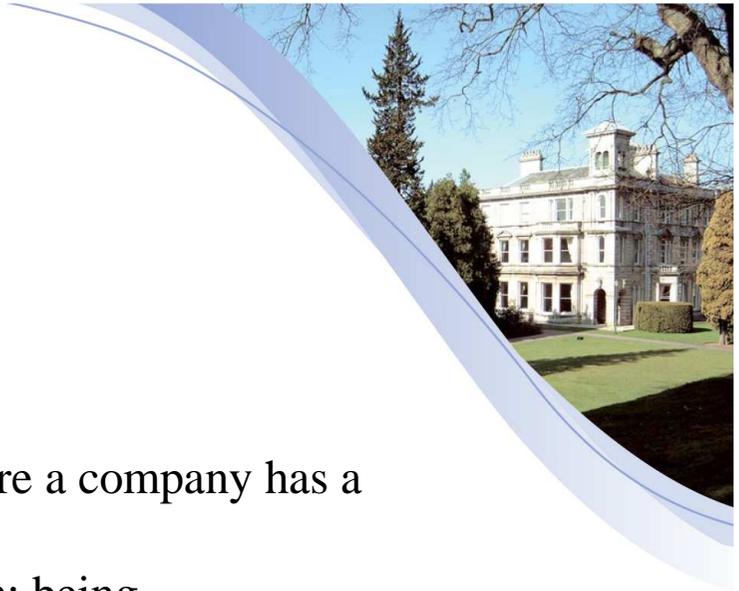


Channels of Knowledge Transfer

Contract Research & Consultancy – this is where a company has a problem and wishes for either:

- A “known” solution to be applied to their problem; being consultancy.
- An unknown solution is researched and proven and then presented to the company in order for it to be applied to the company problem.

In both of these cases much work is undertaken to define the problems for investigation and / solution and this represents the translation of tacit knowledge into implicit knowledge and often in relation to consultancy, into particularly explicit information.



Channels of Knowledge Transfer

Shared Facilities – this is where a university and a commercial partner join together to invest in the development and operation of a facility or piece of equipment that will yield benefit to both parties. An example of this may be the purchase of a particularly expensive machine or the fitting out of a high technology laboratory that can be used by both parties and would often have been prohibitively expensive to one party alone.

Patents and Licenses – this is where a particular piece of knowledge or know-how is developed and then protected by either an academic partner or a commercial partner. The knowledge transfer is affected by granting a license for the other party to use this knowledge or technique in their activities.

Channels of Knowledge Transfer

Joint Ventures – this is where a company partner and an academic partner come together to investigate or promote a solution to a problem. It differs from a spin-out in as much as there is not a new legal entity, in the form of a company, created to investigate the problem or exploit the solution, but it does rely on a set of legal agreements being created that ties the parties together into a common purpose.



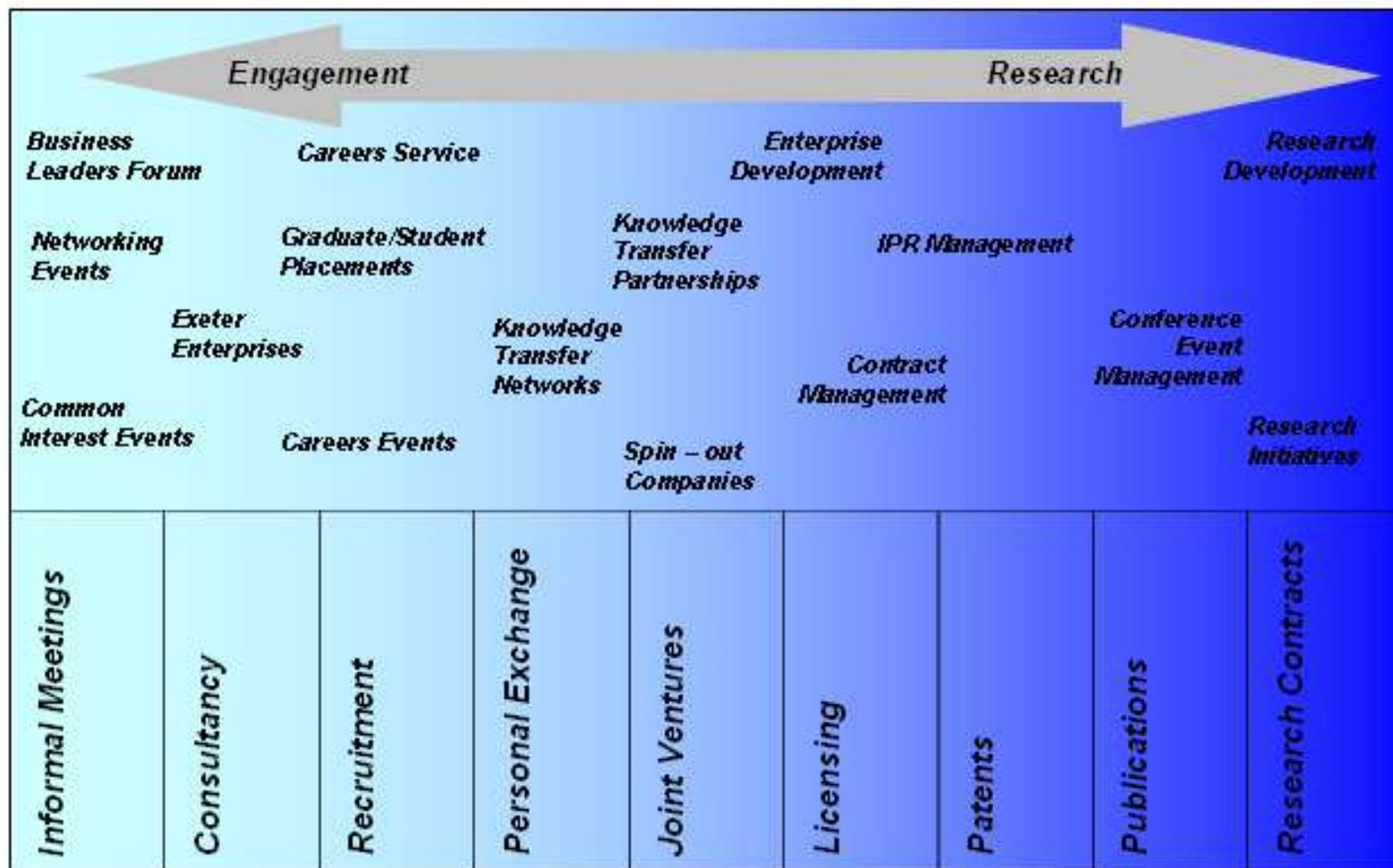
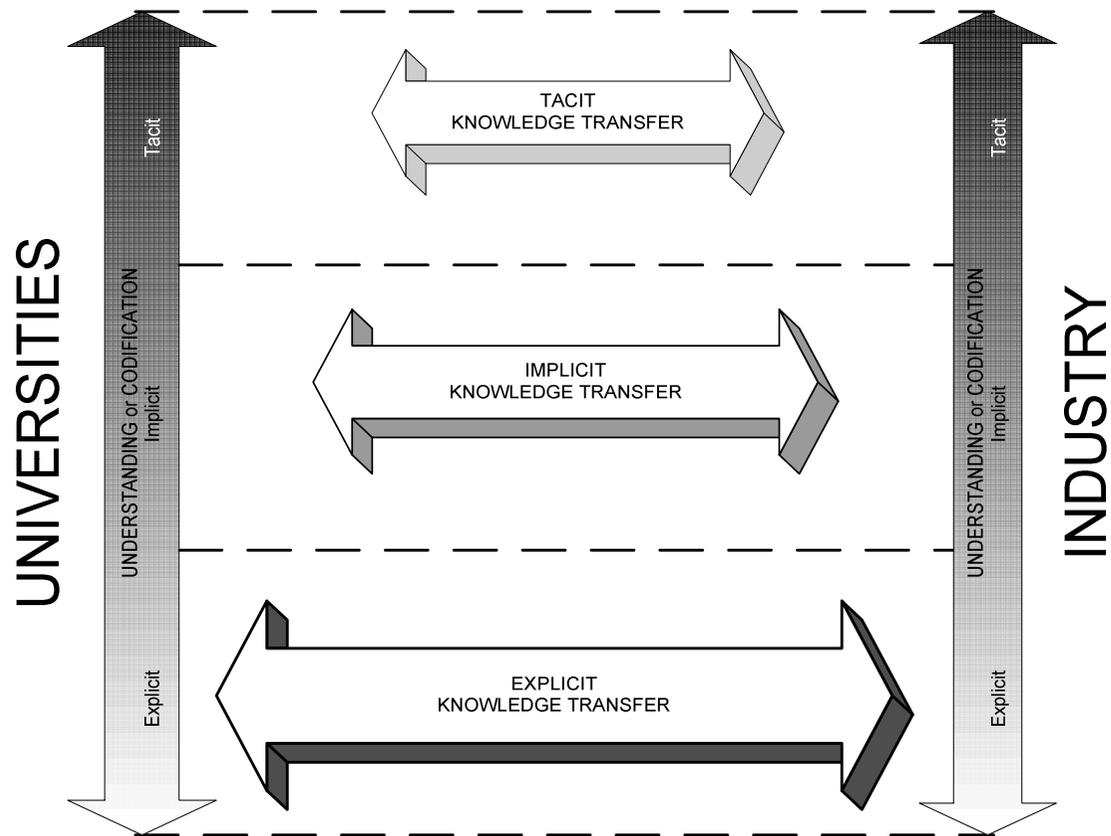


Figure 5.3 - Knowledge Transfer Channels at the University of Exeter (including Agrawal (2001) Channels of Knowledge Transfer).

The Role of Knowledge

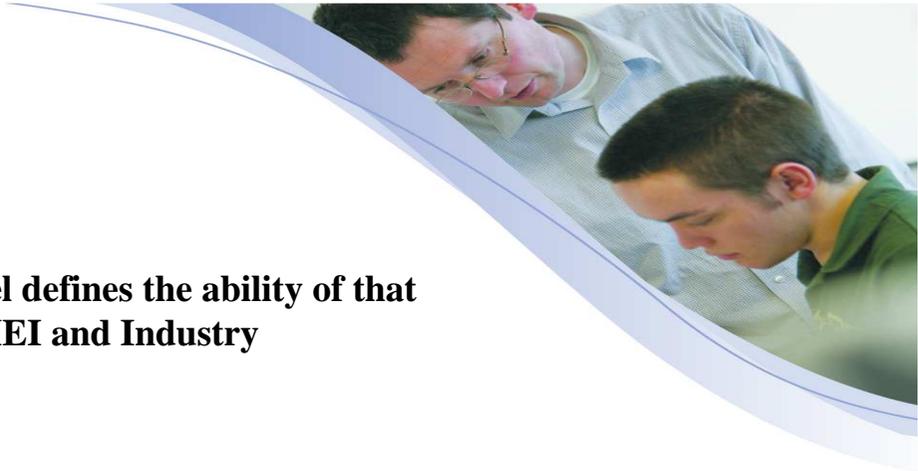
Tacit	Explicit	Reference
Personal, context specific, hard to formalise, hard to communicate	Codified, transmittable in formal systematic language	Polanyi (1966)
Knowledge that has not been fully articulated in writing.	Knowledge fully articulated as language or writing: codified.	Von Hippel 1988
Subjective and intuitive nature of tacit knowledge makes it difficult to process or transmit the acquired knowledge in any systematic or logical manner.	Easily processed by a computer, transmitted electronically, stored in databases.	Nonaka & Takeuchi (1995)
Not easily visible and expressible, systematic, highly personal and hard to formalise and difficult to communicate and share with others.	Explicit and discrete such as technical drawings and patents, consists of words and numbers and can be shared in the form of data and scientific formulae, specifications and manuals.	Civi 2000
Implicit; mental models; experiences; stories; rituals and skills residing in the individuals mind.	Explicit; formal models; processes; rules and procedures which can be communicated externally	Lomax 2007



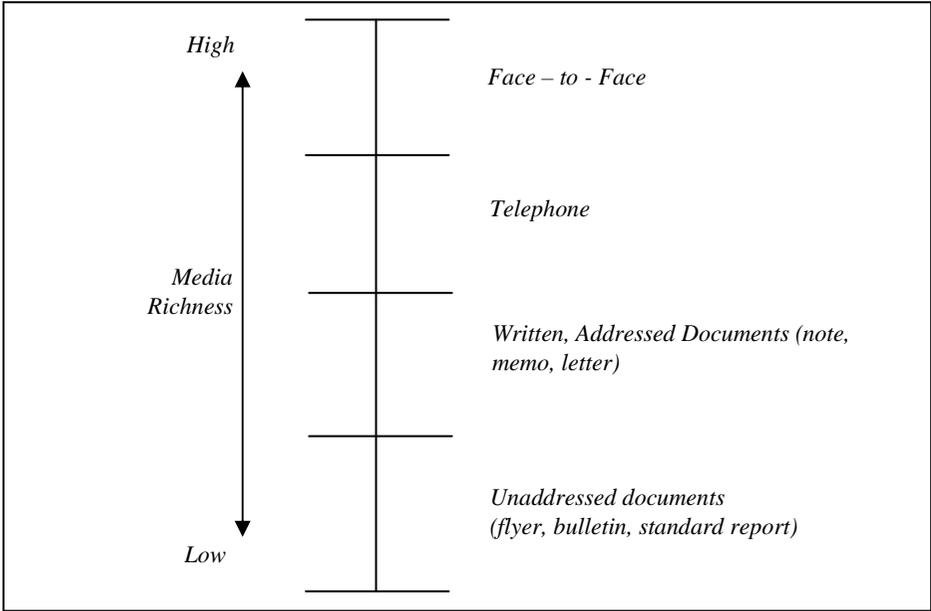
Review Framework (Alexander 2010)

Knowledge Transfer Channel (as defined in Chapter 6)	Schmock's assessment of Tacit Knowledge Transfer (2000)	Case Study based categorisation (Chapter 7)	Combined View (Case Studies & Schmock 2000)
Student Placements / Graduate Employment	Tacit	N/A	Tacit Likely
Joint Conferences	Varying Tacit	Some Tacit but mostly Explicit	Varying Tacit & Explicit (but little agreement)
Spin-outs	Tacit	Tacit & Explicit	Varying Tacit & Explicit
Professional Journal Publications	Tacit (if produced jointly)	Tacit but mostly Explicit as read	Tacit (at development) & Explicit (during reading) therefore varying Tacit & Explicit
Networks	Tacit	Tacit & Explicit	Varying Tacit & Explicit
Joint Supervision	Varying Tacit	Tacit Mainly	Tacit Likely
Training & CPD	Varying Tacit	N/A	Varying Tacit
Secondment	Tacit	Tacit	Tacit Likely
Collaborative Research	Tacit	Tacit	Tacit Likely
Contract Research & Consultancy	Varying Tacit	Explicit	Varying Tacit, Explicit Likely (little agreement)
Shared Facilities	No Tacit	N/A	No Tacit (little evidence)
Patents & Licenses	No Tacit	Explicit with some Tacit	Explicit Likely
Joint Ventures	N/A	Tacit	Tacit likely



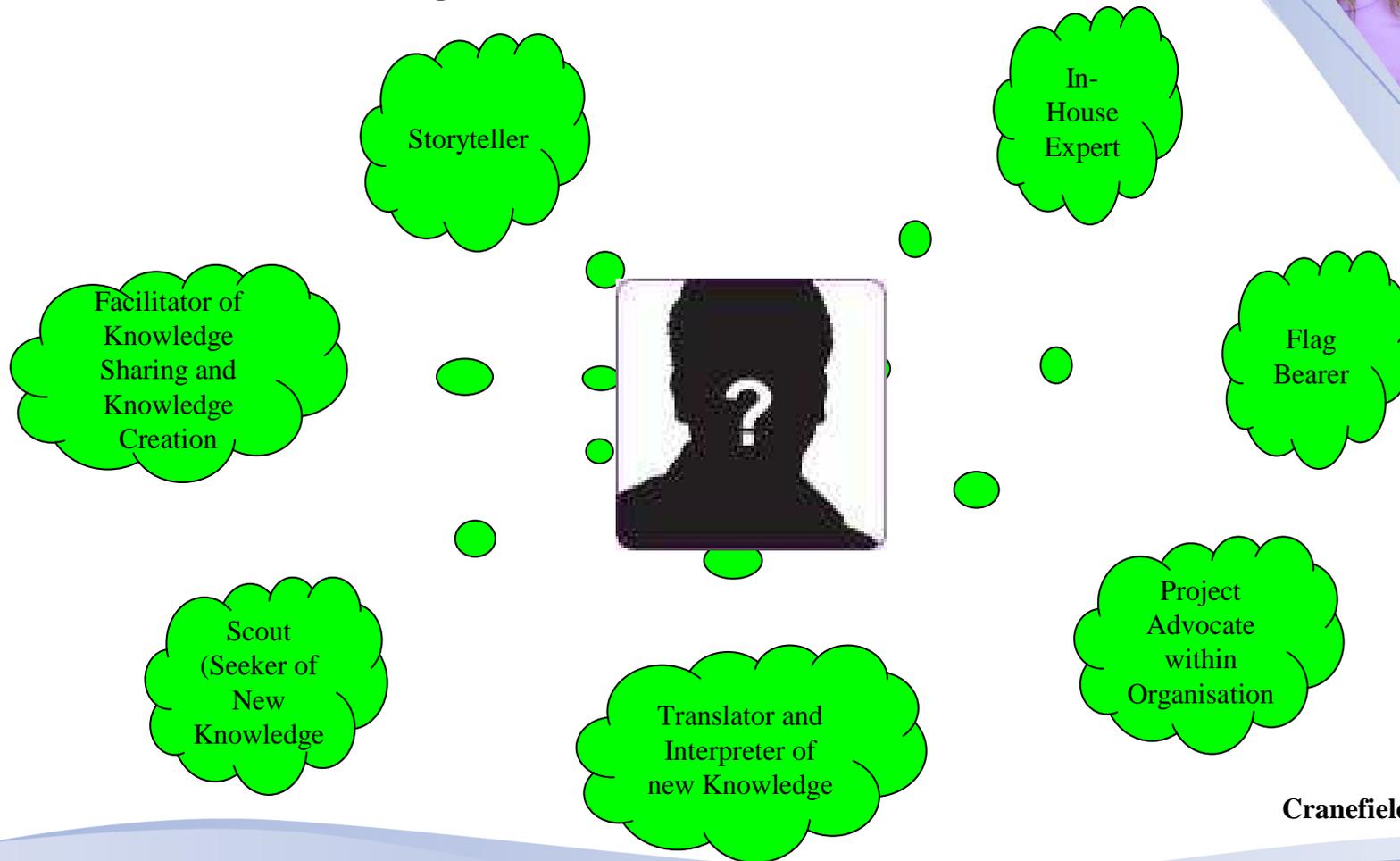


The media richness of a knowledge transfer channel defines the ability of that channel to transfer knowledge between HEI and Industry



Media Richness Scale (Daft & Lengal 1988)

Knowledge Gatekeeper



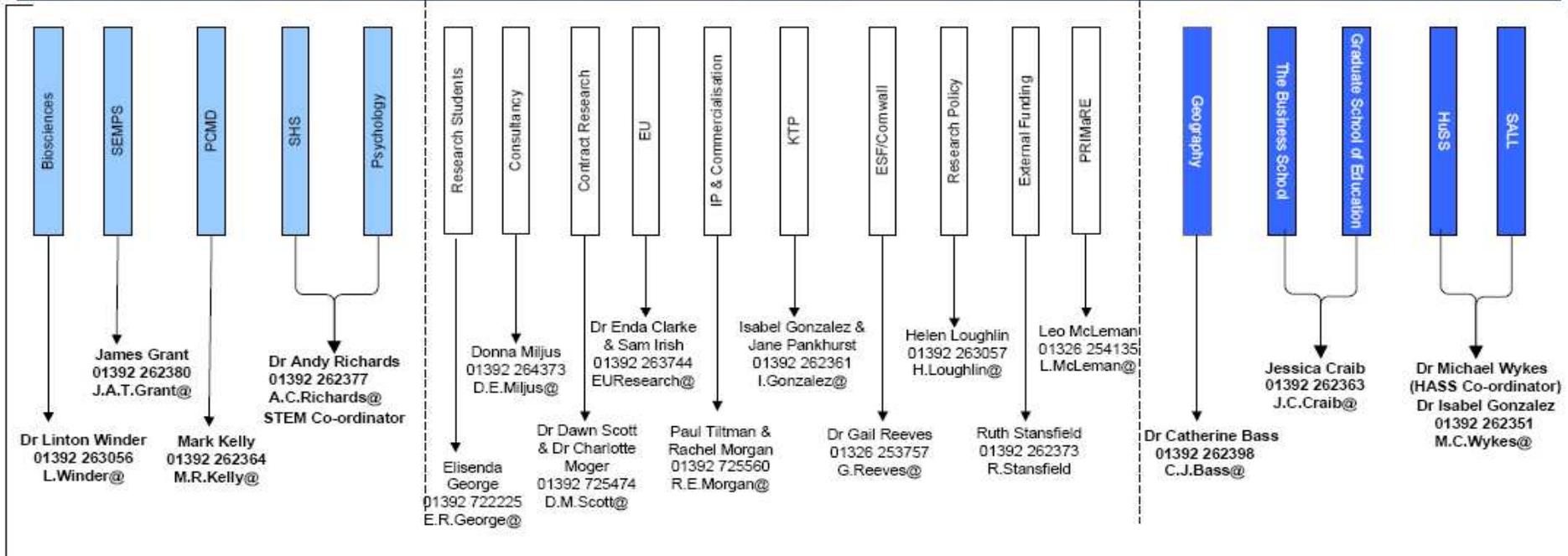
Cranfield & Yoong 2007

Research & Knowledge Transfer

STEM & M

ACADEMIC SCHOOLS

HASS



PROJECT SUPPORT

Events - Information & Data Management - Business Relations - Sponsorship

Director - Sean Fielding
 Head of Operations - Allen Alexander
 Senior Project Support Manager - Eleanor Kennedy



QUESTIONS



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