



NetVal, Roma,
17 Settembre 2019

Tom Hockaday
technology transfer innovation

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The state of the art of University-Industry knowledge transfer in the UK

Tom Hockaday

- 1989-1993 University College London TTO
- 1993-2000 Bristol University TTO
- 2000-2016 Oxford University TTO
- 2016- Technology Transfer Innovation
(independent consultant)
 - BeAble Investment Fund, Spain
 - UPF Ventures, Barcelona
 - Progress Tech Transfer Fund, Italy
 - EIT Health Innovation Panel
- 2017 Appointed “Netvalian”

Contents

- NCUB
- HEBCI
- HEIF
- REF
- KEF
- UVF
- SSHA
- *// conto*

Contents

- NCUB
- HEBCI
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- REF
- KEF
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- *Il conto*



Contents

- NCUB National Centre for Universities and Business
- HEBCI Higher Education Business and Community Interaction Survey
- HEIF Higher Education innovation Fund
- REF Research Excellence Framework
- KEF Knowledge Exchange Framework
- UVF University Venture Funds
- SSHA Social Sciences, Humanities, Arts
- *Il conto Chi paga?*

Labels

- TT Technology Transfer
- 3rd Mission Arm, leg, thing
- KT Knowledge Transfer
- KE Knowledge Exchange
- WE Wider Engagement
- KEC Knowledge Exchange & Commercialisation
- Valorisation, Maturation,
- KM Knowledge Mobilisation



National Centre
for Universities and Business

STATE OF THE RELATIONSHIP

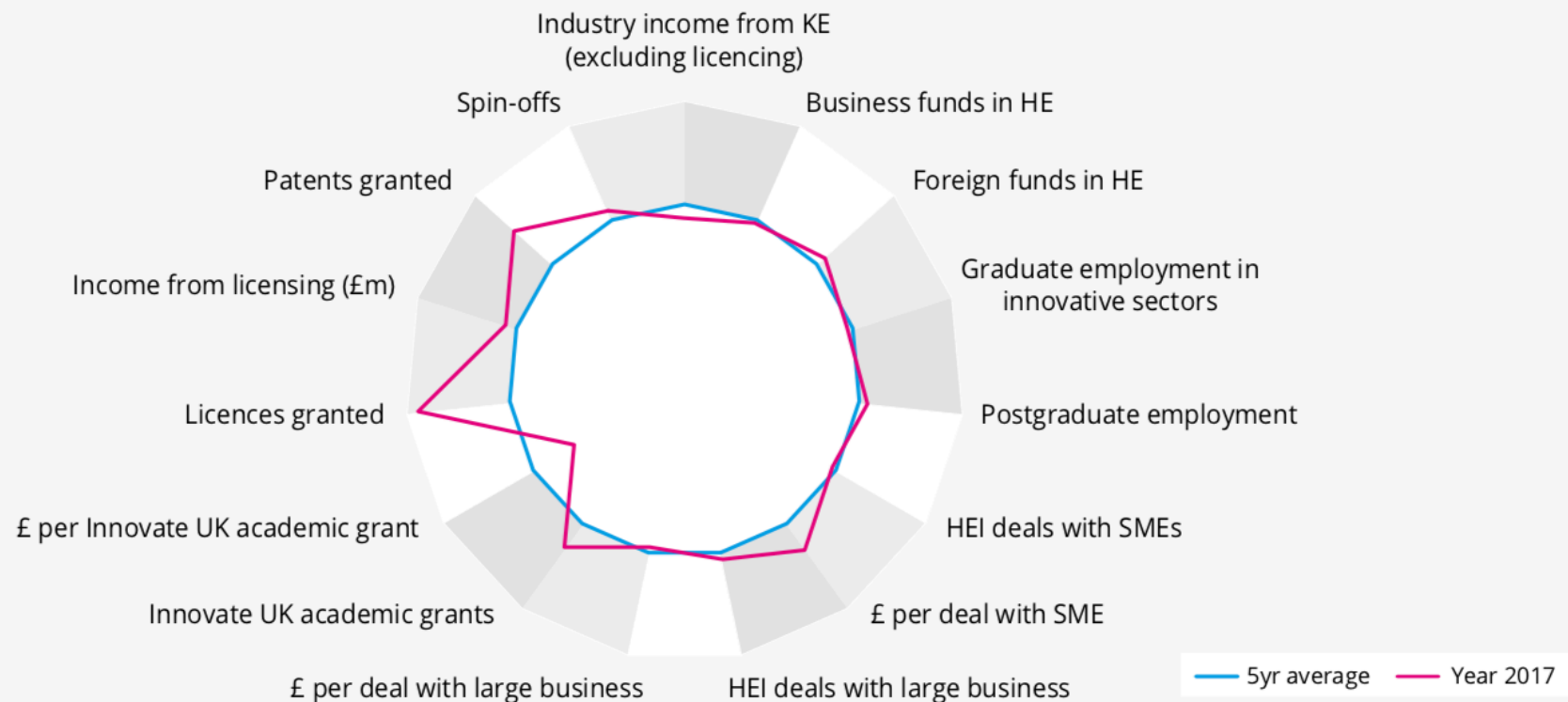
REPORT 2019

www.ncub.co.uk

Collaboration Progress Monitor

Figure 1

The Collaboration Progress Monitor: covering resources for collaboration, knowledge flows, partnerships and commercialisation.



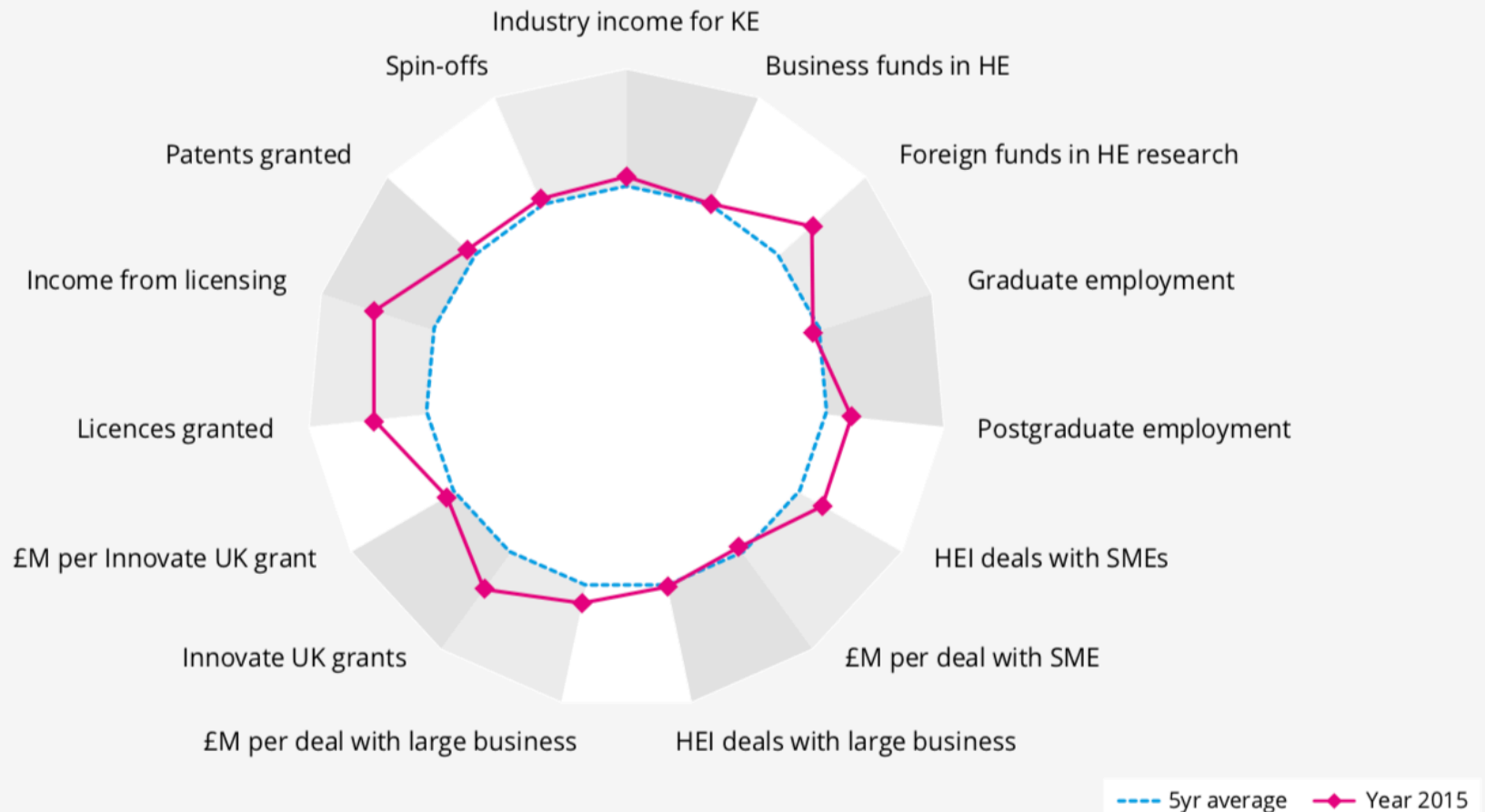
NCUB Collaboration Progress Monitor

1. Industry Income from Knowledge Exchange
2. Business Funds in Higher Education
3. Foreign Funds in Higher Education
4. Graduate employment
5. Postgraduate employment
6. HEI Deals with SMEs
7. £ M per deal with SME
8. HEI Deals with large businesses
9. £ M per deal with large business
10. Innovate UK Grants
11. £ M per Innovate UK Grant
12. Licenses granted
13. Income from licensing
14. Patents granted
15. Spin-outs

2015

Figure 1

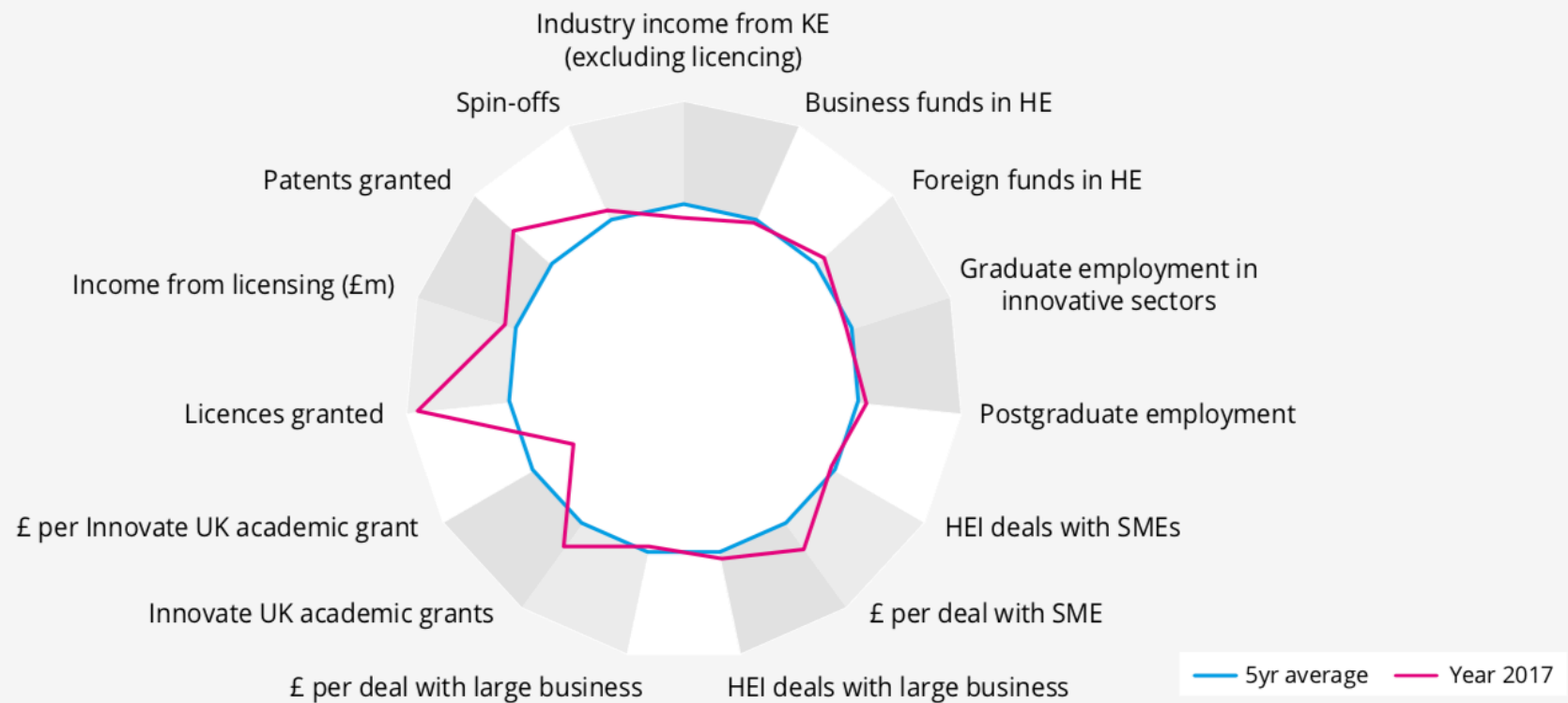
The Collaboration Progress Monitor: covering resources for collaboration, knowledge flows, partnerships and commercialisation (see Table 2). The indicators in dashed line have been projected for 2015⁴.



2017

Figure 1

The Collaboration Progress Monitor: covering resources for collaboration, knowledge flows, partnerships and commercialisation.



HEBCI

- Higher Education Business and Community Interaction Survey
- Business involvement in research, consultancy, commercialisation of intellectual property, continuing professional development, lectures, exhibitions and other cultural activities
- HESA - Higher Education Statistics Agency

HEIF

- Higher Education Innovation Fund
- Since 1999 (different names)
- Now £250m pa
- Allocated by formula from *HEBCI Survey*
- The more you do, the more you get
- Up to €4m pa for one university !

REF

- Research Excellence Framework
- 2014 Impact 20%
- 2021 Impact 25%
- Case Studies
 - www.impact.ref.ac.uk/casestudies/

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Browse the index

[Submitting Institution](#)
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[Summary Impact Type](#)
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Research Subject Area ?

Mathematical Sciences	(404)	Physical Sciences	(248)	Chemical Sciences	(345)
Pure Mathematics	(29)	Astronomical and Space Sciences	(45)	Analytical Chemistry	(82)
Applied Mathematics	(142)	Atomic, Molecular, Nuclear, Particle and Plasma Physics	(97)	Inorganic Chemistry	(66)
Numerical and Computational Mathematics	(42)	Classical Physics	(1)	Macromolecular and Materials Chemistry	(89)
Statistics	(255)	Condensed Matter Physics	(5)	Medicinal and Biomolecular Chemistry	(1)
Mathematical Physics	(1)	Optical Physics	(27)	Organic Chemistry	(49)
				Physical Chemistry (incl. Structural)	(162)

New Eco-Friendly Hybrid Buses for London and Beyond

Submitting Institution

Queen's University Belfast

Unit of Assessment

Aeronautical, Mechanical, Chemical and Manufacturing Engineering

Summary Impact Type

Technological

Research Subject Area(s)

Engineering: Automotive Engineering, Civil Engineering
Built Environment and Design: Design Practice and Management

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Summary of the impact

Using powertrain system models arising from QUB research **Wrightbus Ltd** developed an advanced eco-friendly hybrid diesel-electric bus which won the **New Bus for London contract worth £230M supplying 600 buses to Transport for London** (commencing August 2012).

Demonstrating highly significant economic and environmental impacts the bus has twice the fuel economy of a standard diesel and emits less than half the CO₂ and NO_x. The full fleet **reduces annual CO₂ emissions in London by 230,000 tonnes**, improving air quality and reducing greenhouse gases.

The company continues to develop the technology in new hybrid vehicles **reaching worldwide, including USA, Hong Kong, Singapore and China**.

Underpinning research

Engine performance simulation research has been led by Professor Douglas since the mid 1990s. Prior to this, much of the predictions for engines used data from prototypes and operational systems, and little existed in reliable models which could be used effect in design. Much of the problem relates to the complexity of performance in a typical drive cycle which has a large number of constantly changing parameters and is therefore difficult to extract reliable average or predictive measures. The breakthrough was in developing the 1-D code which though of low fidelity allowed a complete predictive model to be established with reliable output. The work continued throughout the late 1990s with the development and implementation of component models for Internal Combustion (IC) engines [1,2] leading to the evolution of fully operational engine simulation code [3].

The success of the 1-D simulations allowed further development to the broader powertrain system using 2-D models (Douglas & McCullough, joined 1999) and linking several system

Search again:

Submitting Institution: London School of Economics and Political Science

REF impact found 1 Case Studies

Currently displayed text from case study:

[European Human Rights and strengthening policy to prevent genocide](#)

Summary of the impact

Professor Karen E. Smith's research into European Union policy in the areas of human rights and the prevention of mass atrocities underpins the work of the European Foreign Policy Unit (EFPU). On the basis of this research, and as Director of the EFPU, Professor Smith has conducted a study of European Union human rights policies for the European

[Read More](#)

Submitting Institution	Unit of Assessment	Summary Impact Type
London School of Economics & Political Science	Politics and International Studies	Societal
Research Subject Area(s)		
Studies In Human Society: Political Science		
Law and Legal Studies: Law		
Philosophy and Religious Studies: Philosophy		

Filter Impact Case Studies

Submitting Institution: ?

☐ Show only Joint Submissions ?

Unit of Assessment: ?

Summary Impact Type: ?

Research Subject Area: ?

☐ Show only interdisciplinary Case Studies ?

Impact Global Location: ?

KEF

- Knowledge Exchange Framework (2019, 2020 ...?)
 - Metrics (HEBCI Survey) & Good Practice
 - Clusters
 - E Large universities
 - J Mid sized universities
 - M Small universities
 - V Very Large universities, research intensive
 - X Large, research intensive
 - Special Arts, Social Science & Business, STEM
 - Different from REF ?
 - REF is only Research outputs
 - KEF is wider - everything
 - Annual

KEF - Clusters

- Clusters

- E Large universities
- J Mid sized universities
- M Small universities
- V Very Large universities, research intensive
- X Large, research intensive
- Special Arts, Social Science & Business, STEM

- Cluster X, *includes*

Oxford - OUI, OSI

Cambridge - CE, CIC

Imperial College - Enterprise ... in/out .??

UCL - UCLB, UCL Technology Fund

- Networks - PraxisAuril

UVF, SSHA

- University Venture Funds
 - Proof-of-Concept
 - Seed Funds
 - Private investors
 - OSI, CIC
- Social Science, Humanities, Arts
 - The new area
 - How much difference really?
 - Enterprise / Social-enterprise

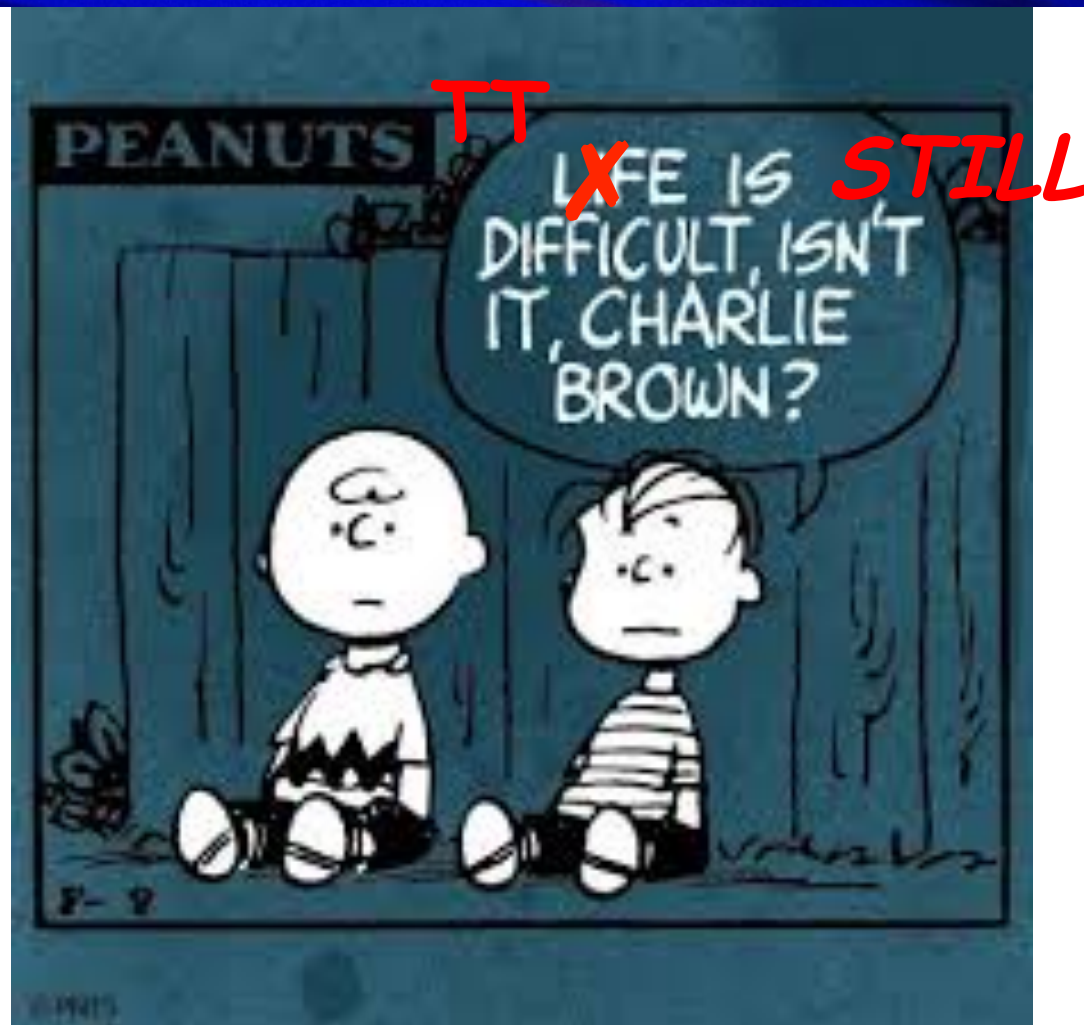
Ecco il conto, signori

- **TTO Director:**
 - “Here is my budget for next year”
- Vice-Rector:
 - “What ?! We have to pay ?!”
- Rector:
 - “That university next door makes €m’s from this”
- **TTO Director:**
 - “But ... you said you wanted impact ... you never said it was about the income ...”
- *TTO Director exits to write resignation letter*

Ecco il conto, signori

- How are you going to pay for it ?
- Be realistic
- 'Universities should be as generous as they can afford to be'
- How do you pay for the library, the swimming pool?

This is difficult



TECHNOLOGY TRANSFER INNOVATION

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Tom Hockaday

Tom Hockaday is a leading expert in university technology transfer leadership, management and activities. He led the technology transfer activities at the University of Oxford for ten years from 2006 to 2016, having started at Oxford in 2000.

Tom has over 27 years experience in this field.

Tom Hockaday is an independent private consultant, working with a number of clients in the university technology transfer sector.

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