

# Technology Transfer & Innovation Management, University of Oxford

Apr 15



# Contents

- Isis Innovation
- Spin-out companies
- Some issues for Universities, TTOs

# University-Business Interactions

- People
  - Educated workforce
  - Advisory Boards
  - Lectures
  - Exchanges – students, staff
- Research
  - Collaborative Research
  - Contract Research
- Donations, Gifts
- Commercial
  - Consulting, Services
  - Licensing technology
  - Spin-out company formation
  - Entrepreneurship



# Isis Innovation Ltd

A profitable company 100% owned by the University of Oxford



**Isis**  
TECHNOLOGY TRANSFER

**Oxford Technology Transfer**  
IP, Patents, Licences, Spin-outs,  
Material Sales, Outcome Questionnaires, Seed Funds,  
Isis Angels Network, Isis Software Incubator, Oxford  
University Hospitals NHS Trust



**OXFORD**  
UNIVERSITY  
CONSULTING

**Oxford Expertise**  
Consulting, Services



**Isis**  
ENTERPRISE

**Isis Consulting Business**  
Technology Transfer and Innovation  
Management



@isisinnovation

isis-innovation.com

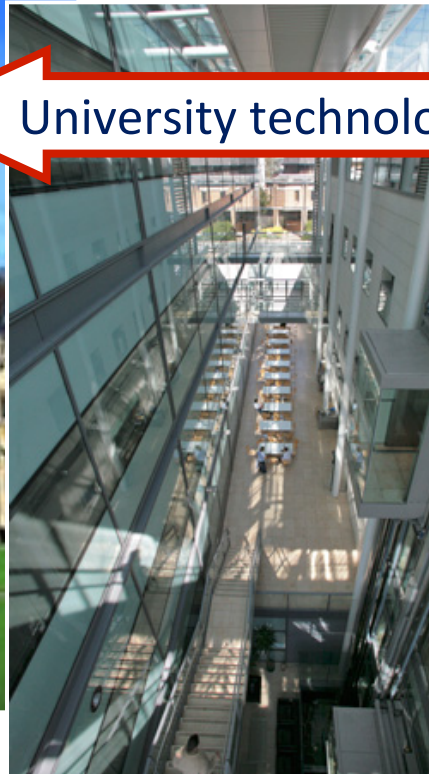




# Technology Transfer & Doing Business



University  
entrepreneurial  
culture



Industry,  
Business &  
Professional  
environment



University technology transfer resource

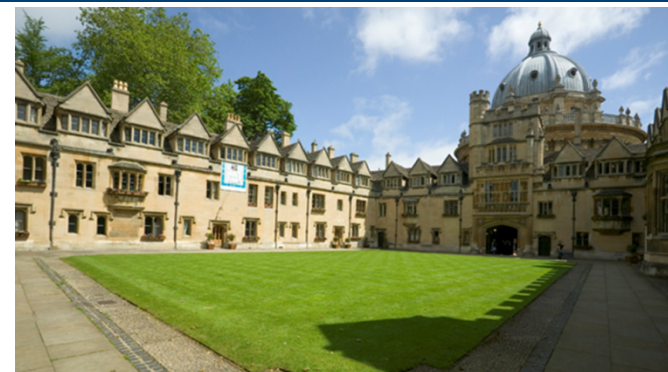
# Oxford & Isis Innovation

## OXFORD

### Most Powerful UK Research University

According to the 2014 Research Excellence Framework, Oxford has the largest volume of world-leading (4\*) research in the UK.

Highest University Research Spend in UK at  
£612 million (2014)



## ISIS INNOVATION

A company 100% owned by the University of Oxford,  
established in 1988

Isis *helps* researchers *who wish to* commercialise the  
results of their research





A world-class Technology Innovation business

- 4<sup>th</sup> highest British PCT patent applicant
- highest University PCT applicant in Eu, 16<sup>th</sup> highest worldwide



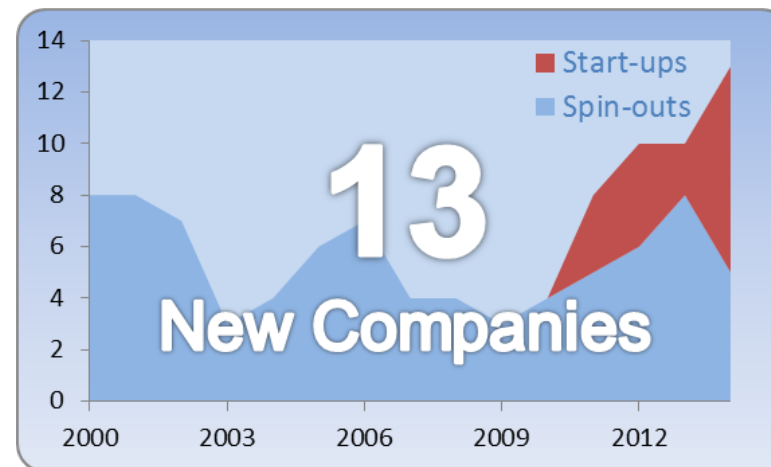
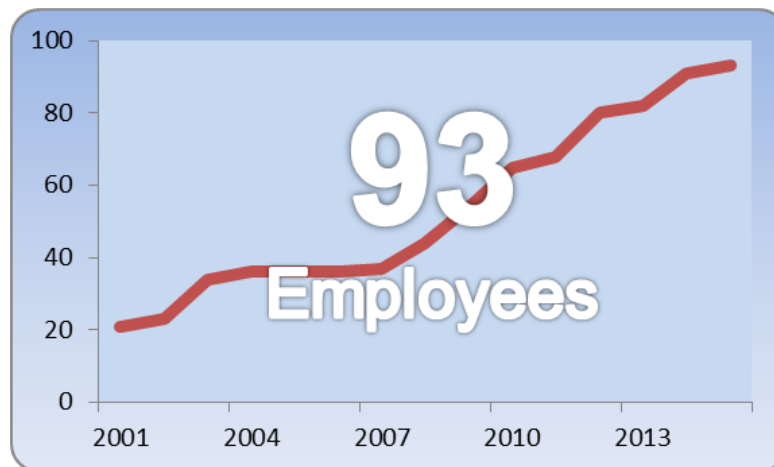
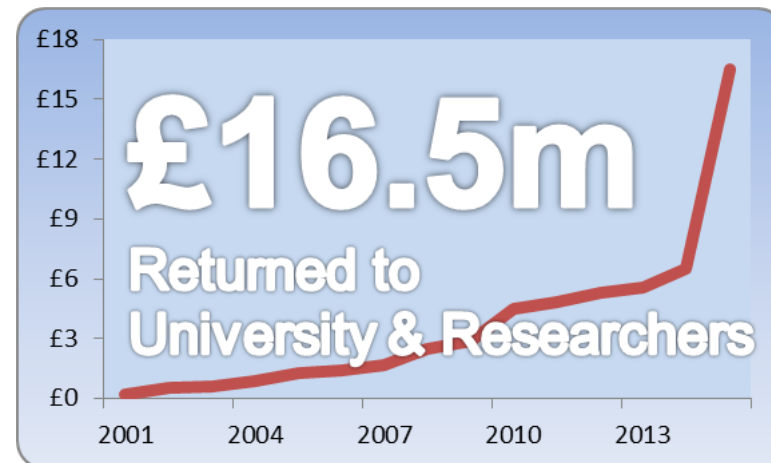
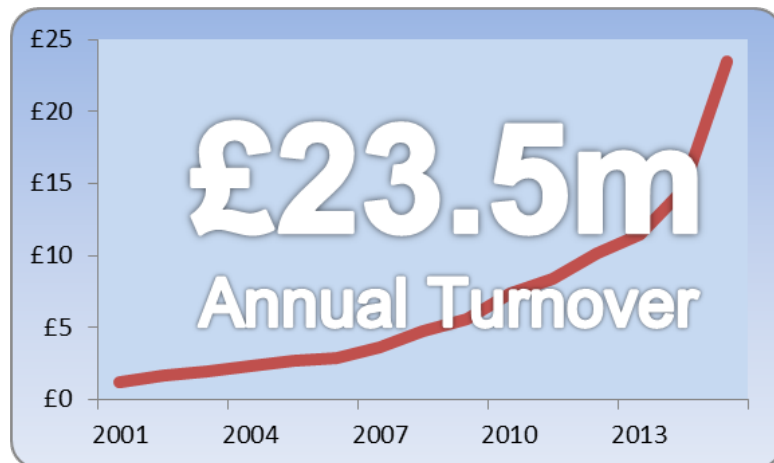


# University of Oxford: Research themes examples

Medical Sciences	Maths, Physical, Life Sciences	Social Sciences	Humanities
Cancer	Energy	International Growth	Digital Humanities
Cardiovascular Disease	Healthcare	Government and Leadership	Environmental Humanities
Diabetes, Endocrinology, Metabolism	Advanced Materials	Big Data & Social Media	Medical Humanities
Infection and Immunology	Resource Efficiency	Corporate Governance	Medicine and Conflict
Genomics	Recovery & ICT	Women in Business	Global History
Musculo-skeletal Science	Cyber Security	Training Educators	Cultural Heritage
Neuroscience	Big Data	Social Policy	Culture Transfer & Translation
Reproduction & Development	Robotics	Social Intervention	Practical Ethics
			

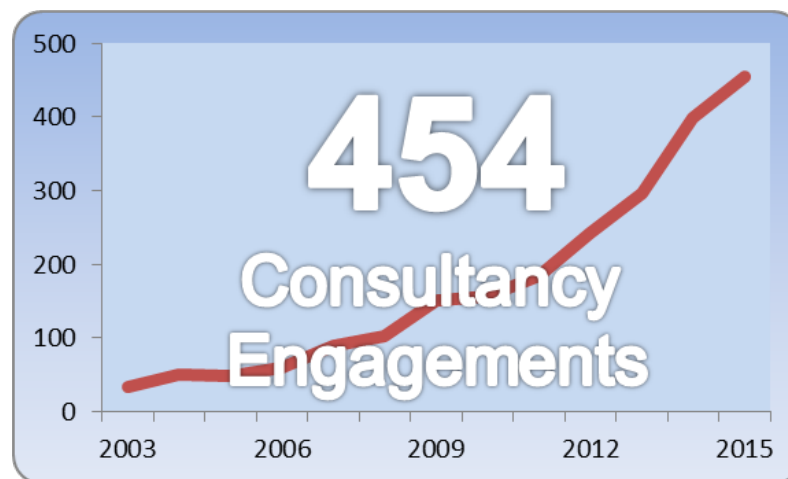
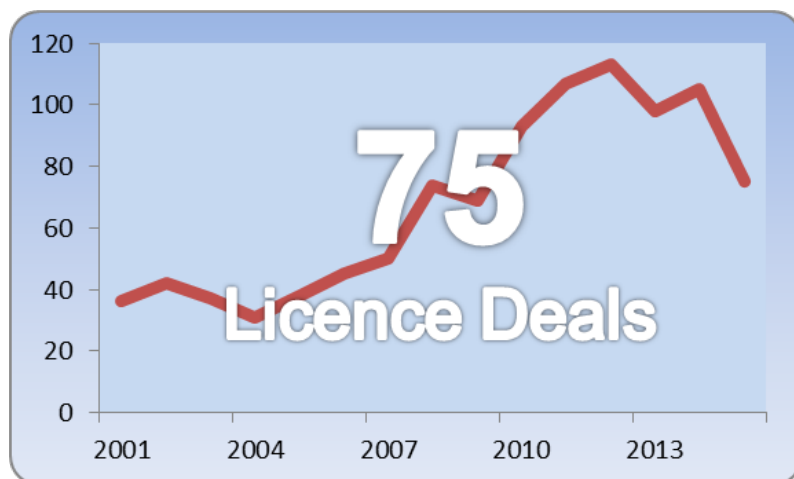
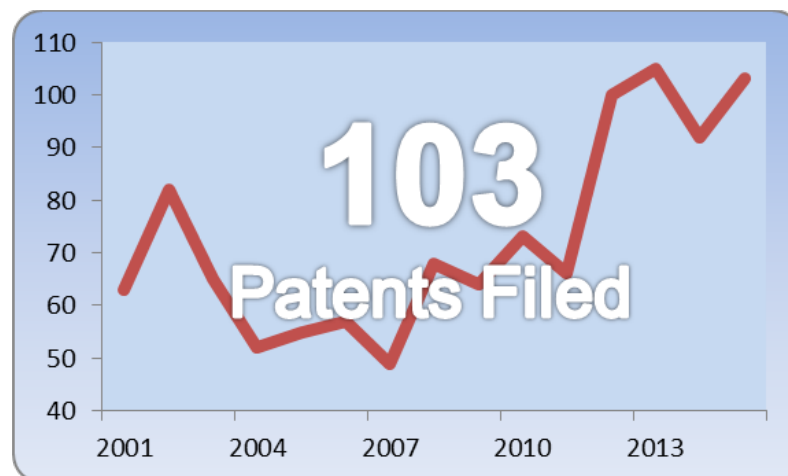
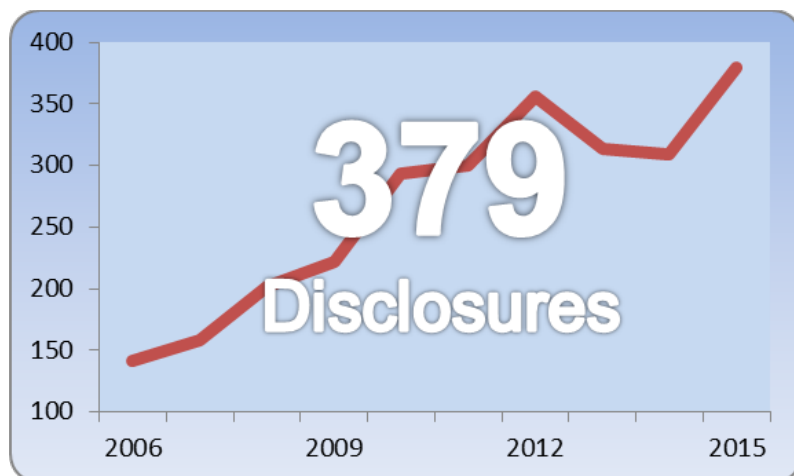


# Isis Innovation, year-ending March 2015



NB Unaudited figures

# Isis Innovation, year-ending March 2015



# Impacts





# Sequenom – pre-natal blood test

## SEQUENOM LABORATORIES

The only results that matter are accurate ones.

Sequenom Laboratories, a wholly owned subsidiary of Sequenom, Inc., is a CAP-accredited and CLIA-certified molecular diagnostics laboratory, dedicated to the development and commercialization of laboratory-developed tests (LDTs) for prenatal diseases and conditions. Sequenom Laboratories holds or has access to intellectual property for noninvasive prenatal testing using circulating cell-free fetal nucleic acids.

EXPLORE —  **sequenom.**  
Laboratories



## Our test menu

### MaterniT21® PLUS noninvasive prenatal test

*Clearly revolutionary.*

The [MaterniT21 PLUS](#) test was the first commercial noninvasive prenatal test (NIPT) of its kind for the detection of a chromosomal anomaly known as trisomy 21, the most common cause of Down syndrome. Based on the pioneering work of Sequenom's advisor and collaborator, Professor Dennis Lo, the technology isolates and analyzes circulating cell-free fetal nucleic acid from a maternal blood sample.

The MaterniT21 PLUS LDT reports on trisomy 21, 18, 13, 16 and 22, sex chromosome aneuploidies, fetal sex and select microdeletions in single or multifetal gestations as early as 10 weeks in a pregnancy.

# YASA Motors



Powering the Future



HOME

MARKETS

APPLICATIONS

TECHNOLOGY

PRODUCTS

ABOUT US

CAREERS

NEWS

CONTACT



## Advanced axial flux motors

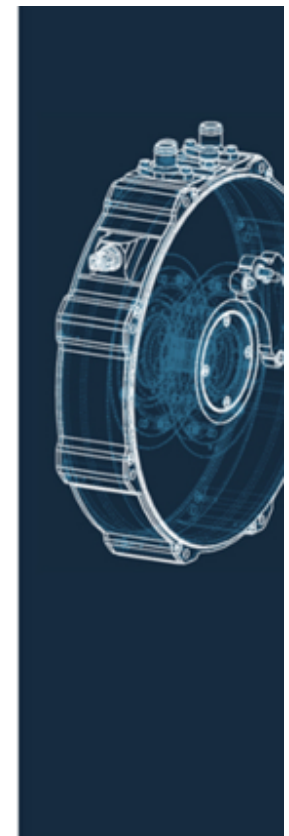


## YASA Motors - Powering the Future

YASA Motors manufactures a family of high-performance axial flux motors and generators based on the world's most advanced technology.

## Latest News

Electric & Hybrid Vehicle Show -  
Motor Machines Conference 4 Feb. 4 Feb.



# Natural Motion

**CLUMSY  
NINJA**



**CSR  
RACING**



**My  
Horse**



**Jenga**



**BACKBREAKER 2  
VENGEANCE**





# Publications



Printed brochures



E-News  
(English, Chinese)



Social Media  
(LinkedIn, Twitter)

## Managing Director

Tom Hockaday

## Business Support (20)

### Central Administration

Jenny Bailey

Philip Priest

Nissar Mohammed

Ricky Allain

Isabel Lavis

### HR

Carolyn Hall

Vacancy

Viv Parry

### Marketing

Simon Gray

Renate Krelle

Dr Chandra Ramanujan

Dr Fiona Story

Craig Smith

Adele Davies

### Finance

Janeen Wilson

Gemma Allnutt

Amanda Thornton

Denise Farrell

### Legal

Vacancy

## Technology Transfer Group (44)

Linda Naylor

### Technology Transfer Teams

Evert Geurtsen

Dr Adam Stoten

Dr Jamie Ferguson

Roy Azoulay

Dr Mark Gostock

Dr Andrew Bowen

Dr Gareth Smith

Dr Paul Ashley

Dr Alex Marshall

Dr Angela Calvert

Dr Nikolaos Chalkias

Dr Astrid Woollard

Rakesh Roshan

Dr Jon Carr

Dr Manjari Chandran-Ramesh

Dr Andy Robertson

Daniel Stachowiak

Dr Carolyn Porter

Dr Christine Whyte

Dr Ruth Barrett

Dr Matthew Carpenter

Dr Richard Reschen

Dr Richard Holliday

Dr David Churchman

Chim Chu

Lamin Ben-Hamdane

Roksana Bugaj

Dr Fred Kemp

Dr Sarah Deakin

Dr Louis Pymar

Dr Brijesh Roy

Dr Weng Sie Wong

Dr James Groves

### Operations

Dr Mairi Gibbs

Dr Laura Droessler

Patent & Licence

Steven Bayliss

Rosalind French

Kate Spanchak

Arooj Azam

Theresa Freeman

### New Venture Support & Funding

Andrea Alunni

Zoe Reich

### Administration

Kristin Hayes

## Oxford University Consulting (6)

Andrew Goff

### Project Managers

Susan Clark

Gurinder Punj

Dr Josef Walker

Kerry Antcliffe

Magda Bezdekova

## Isis Enterprise, UK (19)

Steve Cleverley

### Consultants

Dr Tim Hart

Dr Mireya McKee

Britta Wyatt

Elena Andonova

Pete Moores

Dr Andrew Barber

Dr Michael Mbogoro

Mike Poynter

Dr Nathan Pike

### Administration

Sophie Gunputhram

Sophie Martin

Dr Sarah Macnaughton

Dr Alexandra Bush

Dr Bruno Reynolds

Dr Gareth Rogers

Associates Eva Baltar & Manuel Fuertes(Spain); Yousuf Al Bulushi (Oman)

## Isis Enterprise, Asia (7)

### Consultants

Dr David Baghurst

Ya-hsin Shen

Dr Wen Yuan Wang

Laura Yu

Dr Wenming Ji

Dr Renchen Liu

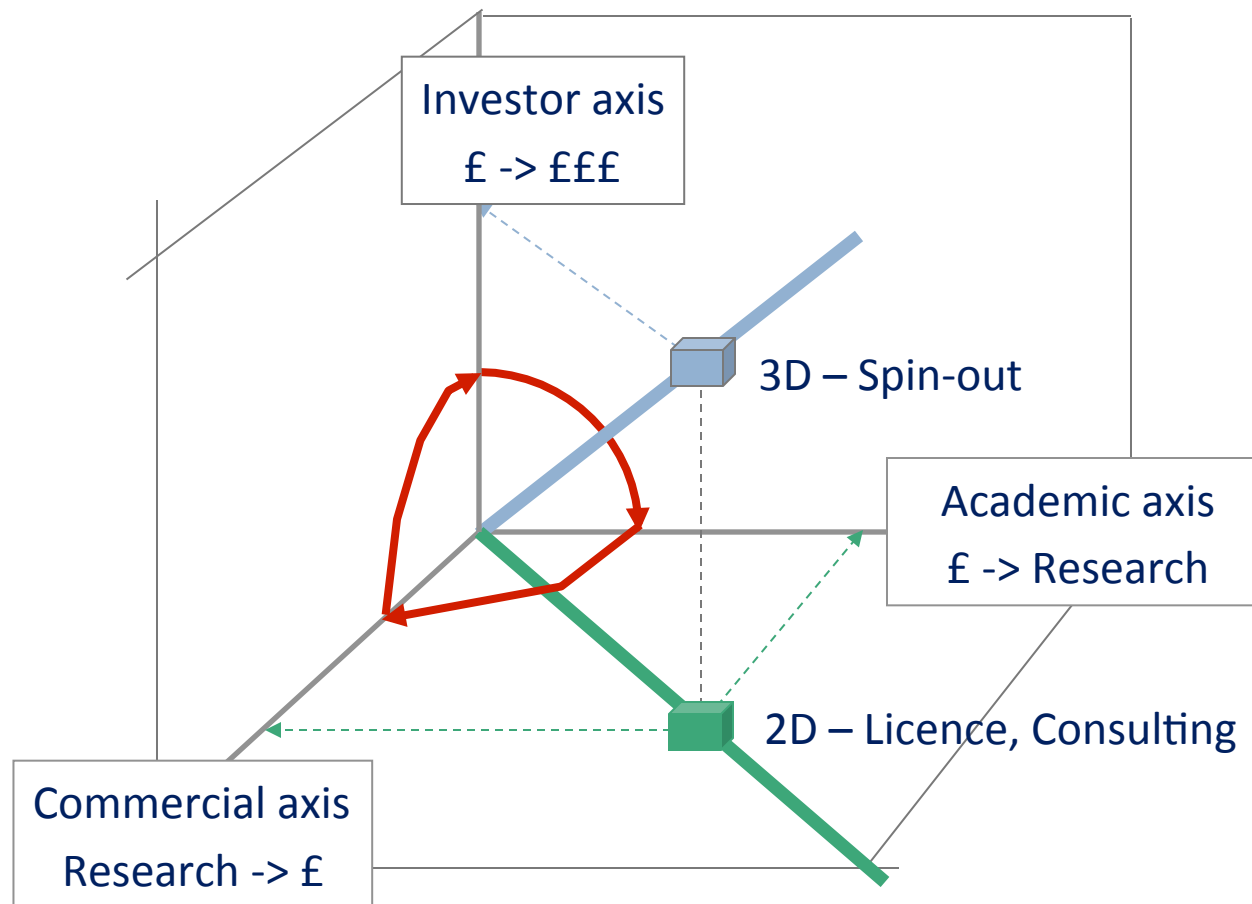
Associate Kenji Aiba (Japan)

Staff & Associates: 96

MBAs: 14

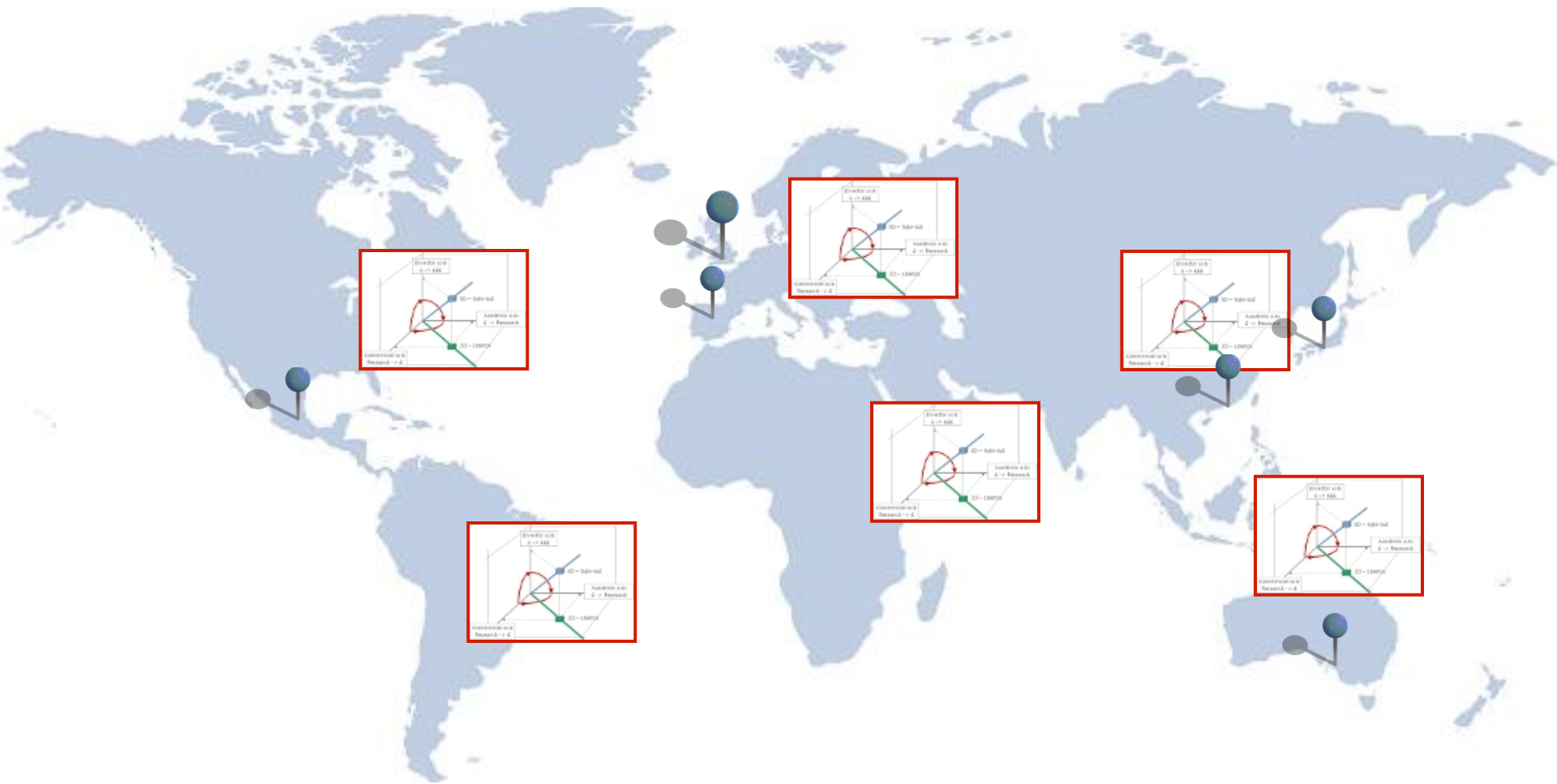
PhDs: 39

# Acting as Multi-dimensional Intermediaries

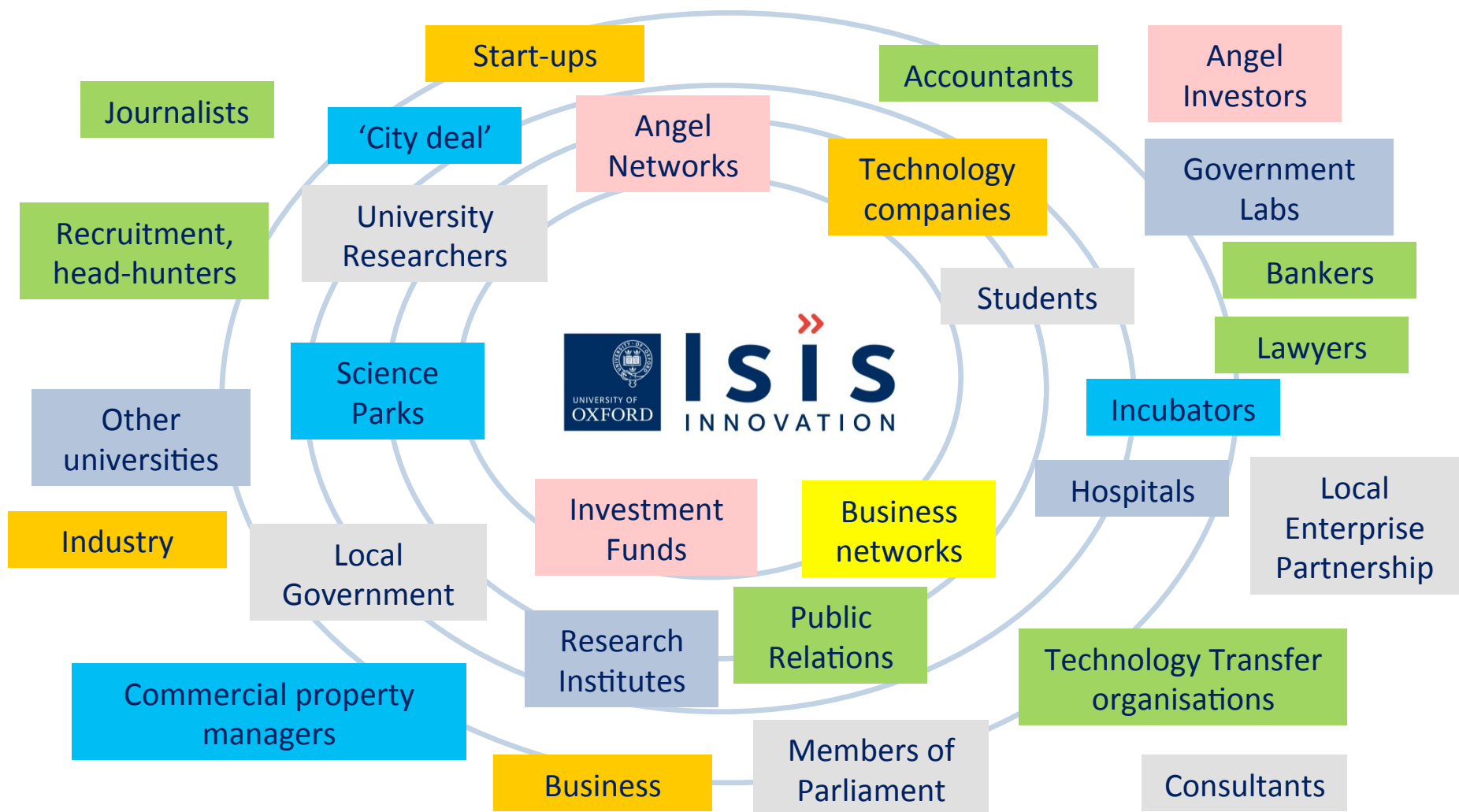




# Intermediaries - International



# The Innovation System



# Oxford Innovation Society



- Tea & coffee reception
- Academic presentation
- Sponsor presentation
- Champagne reception
- Dinner in College
- After dinner drinks



# Spin-outs

# Oxford University Technology Spin-outs (post 2010)

TT

2011	5	Oxyntix, Oxtex, Oxford Multi Spectral, Oxford Imaging Detectors, OCB
2012	4	Intelligent Ultrasound, OxEHealth, Oxford Vacmedix, Run3D
2013	4	Perspectum Diagnostics, MuOx, Oxford Mestar, Oxford Biotrans
2014	8	Oxsonics, Oxcept, NightstaRx, Genomics, Designer Carbon Materials, OxSyBio, Oxford Deontics, Oxbotica
2015	[1]	Diadem

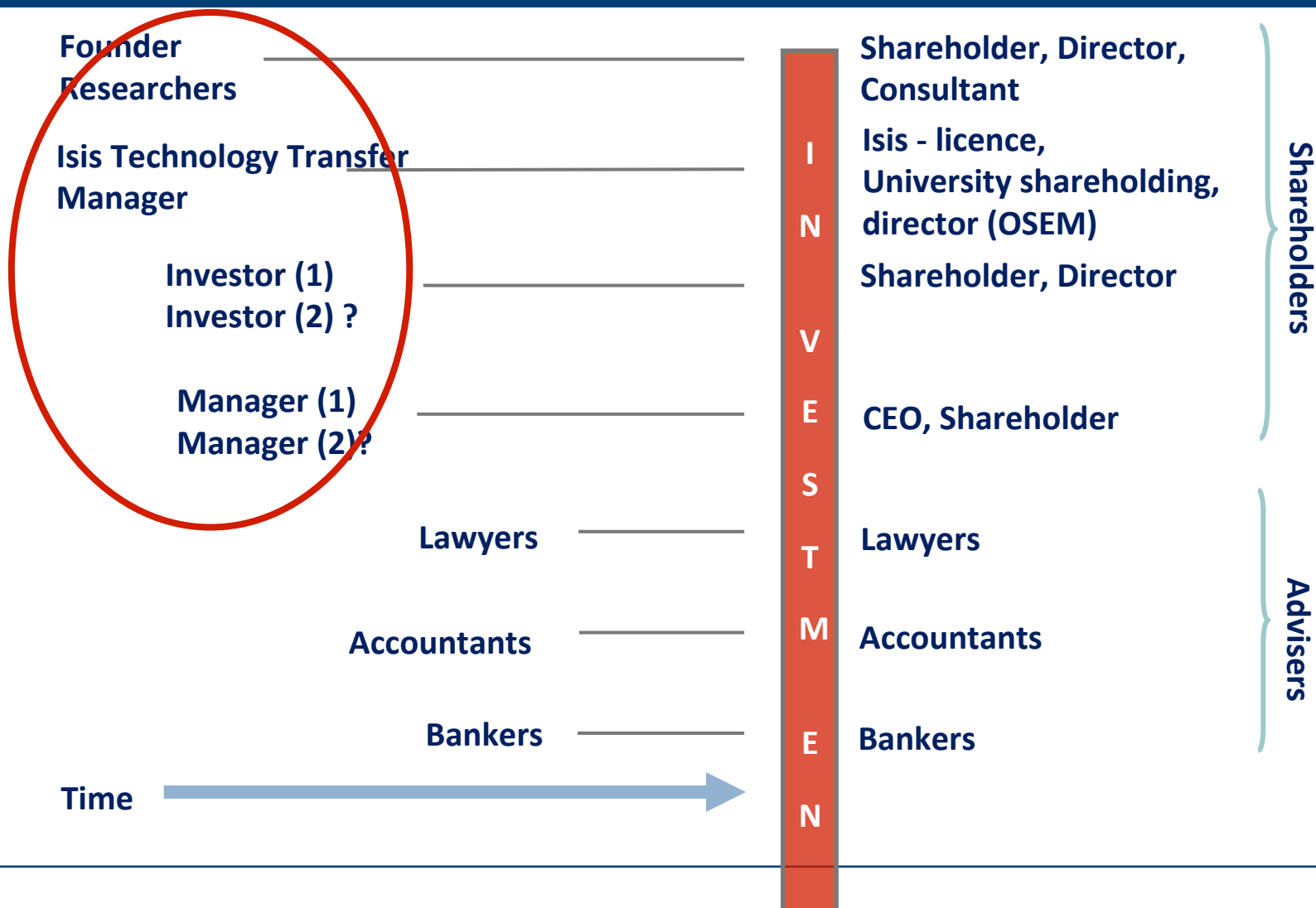
Total external investment to date in **82** spin-outs since 2000:  
**£535m**

**£67m** 1st round Seed/Business Angels – **£468m** follow-on  
Investment Capital



# Spin-outs – The Players

TT





# Syzygy



## Oxford University Challenge Seed Fund (UCSF)

- Launched 1999 with £4m (£1m OU)
- Over £7.5m invested in 140 projects
- The only UCSF still running in its original form

## Oxford Invention Fund (OIF)

**Oxford Thinking**  
The Campaign for the University of Oxford

- Donate to support development of new technologies from Oxford
- Part of Oxford Thinking, the University's fund raising Campaign
- £1.5m raised to date



## University of Oxford Isis Fund (UOIF)

**PARKWALK**  
investing in innovation

- EIS/SEIS funds for investors managed by Parkwalk Advisors
- Isis Innovation is Portfolio Advisor
- 1st fund fully committed, 2nd closed

## Isis Angels Network (IAN)

**Isis**  
ANGELS NETWORK

- For Business Angels and early-stage VCs
- 216 registered members
- No membership fee
- Twice-yearly meetings, newsletters

# Isis Software Incubator (established in 2010)

Support for early-stage software ventures from Oxford University

Assists the creation and development of a software business opportunity, whether or not a company has yet been incorporated

Isis provides commercial mentoring, negotiation support, services, desk space, access to business networks

Projects that have a credible business concept and need:

- Substantial work to develop IP and build a realistic commercial prospect
- With entrepreneurial founders
- But do not need patents, investors, full-time management







# Spin-outs

- How do you decide
  - What is the route to market?
  - The ‘art of the possible’
  - What makes you think you have a choice!
- Role of researchers
- Shareholdings
  - Academic Founders
  - University
  - Investors
  - Management & Employees

# Some issues, questions

# Issues, Questions

- WHAT then HOW
- Income - v - Impact
  - Potential Income, Potential Impact
  - Income is Impact
- Incentives
  - Researchers
  - TTO
- TT costs; you have to invest to get a return
  - of any flavour
- 'Impact' is diluting Technology Transfer



# WHAT then HOW

- WHAT – does the University want
  - Objectives, outcomes, relationships
- then
- HOW - can it best be delivered
  - Structures, resources, people
- There is a need for leadership inside the university
  - if it doesn't exist, you need to make it up for them
- Remember what universities are - Teaching, Research, and Engaged
- Remember who owns you
- Help the ones who want help
- Develop the ecosystem
- What NOT to do - be gatekeepers; try to control



# Value of a TTO

- Benefit to society
- Public Relations
- Local engagement and local economic activity
- University staff recruitment & retention
- .... Money ....?

## Some issues

- What kind of organisation?
- What kind of funding?
  - University
  - Private, Foundation
- What kind of a
- Accountability
- Role in the eco

## Some recommendations

- Owned by university
  - Company or Administration
- Non-zero!
  - No external strings attached
  - People, policies, patents, concept
- al
- sity
- connect, catalyse

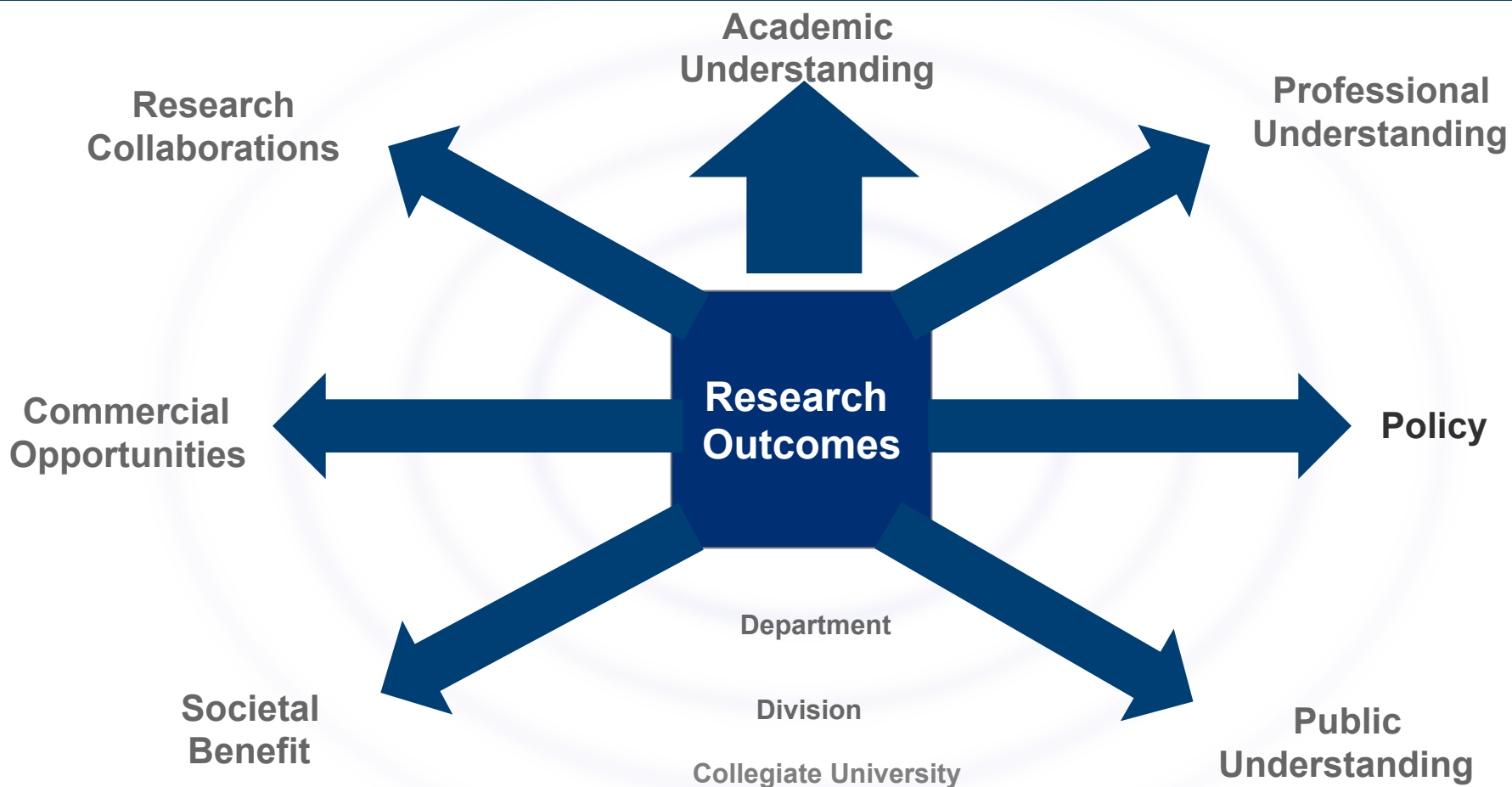
- People
- Policies
- Patent budget
- Proof-of-concept fund



# Everything Changes – the Language

- Technology Transfer
  - Technology Commercialisation
- Knowledge Transfer
  - Equation, solve for  $x$ , where  $x = KT - TT$  [ $x > 0$  !]
- Third arm ... leg ... thing ... mission
- Knowledge Exchange
- Wider engagement
- Impact

# Facilitating Impact at Oxford



# Facilitating Impact at Oxford





# Models of E&I development - Ruth Graham \*

## Model A

- 'Bottom up'
- Community led
- Loose IP control
- Students, alumni
- Regional capacity
- Regional entrepreneurial community

## Challenges

- Is it embedded in institution?

## Model B

- 'Top down'
- University led
- Tight IP control
- TTO
- Institutional capacity
- International R & D strengths

## Challenges

- Only university-IP is seen as worthwhile, marginalising student driven entrepreneurship

---

\* E & I = entrepreneurship & innovation  
[www.rhgraham.org](http://www.rhgraham.org) ... recent publications

# Hub & Spoke

- National Technology Transfer Office
- Regional
- Local
- University
  - 'Spokes' within, across the University
- Technology Transfer is a 'contact sport'
  - Be close, people who know and trust each other
- UK – 1970's 1980's BTG in London – did not work
- France – 2010's SATTs' – early days

www.isis-innovation.com

Isis Enterprise wins Queens Award

Isis Innovation Ltd.

Isis Innovation is a wholly-owned subsidiary of the University of Oxford, managing technology transfer and academic consulting for Oxford, and providing consultancy services to clients around the world.

Our mission is to be the leading international technology transfer organisation to

Isis Innovation Ltd, Ewert House, Ewert Place, Summertown, Oxford OX2 7SG

T 01865 280830

F 01865 280831

E [innovation@isis.ox.ac.uk](mailto:innovation@isis.ox.ac.uk)

Register to receive Isis E-News at: [isis-innovation.com/news/publications/isis-newsletters/](http://isis-innovation.com/news/publications/isis-newsletters/)

Follow us



@IsisInnovation