



# Entrepreneurship & Innovation Ecosystems

28<sup>th</sup> January 2015

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- Isis Enterprise
  - Supports for E&I
  - Case Study

**How Governments  
can foster innovation  
within an ecosystem**

**How Governments  
can influence how  
Universities and  
industry engage**



# Introduction to Oxford University and Isis Innovation



A successful company 100% owned by the University of Oxford



## Oxford Technology Transfer

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



## Oxford Expertise

Consulting, Services



## Isis Consulting Business

Technology Transfer and Innovation  
Management



  @isisinnovation



# Technology Transfer & Doing Business



University  
entrepreneurial  
culture



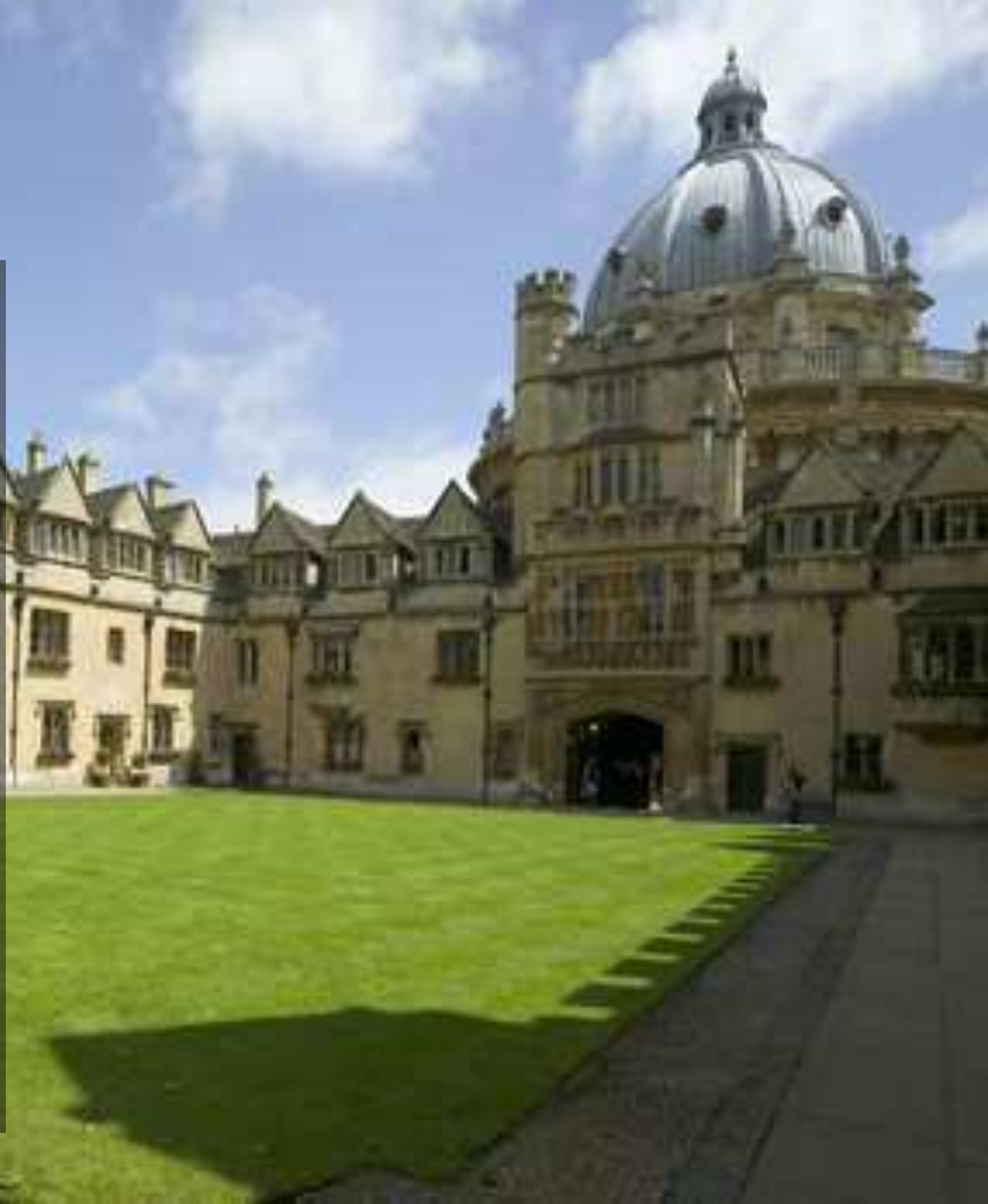
Industry,  
Business &  
Professional  
environment



University technology transfer resource

# Oxford University

- Oxford University is the oldest university in the English-speaking world (founded c.1188)
- A leader in learning, teaching and research
- 26 British Prime Ministers educated at Oxford
- Including current Prime Minister David Cameron
- Royal Society founded from Oxford in 1640
- 51 Nobel prize winners



## 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



# Isis delivers returns to the University and beyond

## Oxford University invests in Isis to protect University intellectual property

- Financial Returns

- Distributions of royalties back to University
- Spin-outs Cash & Spin-outs shareholding portfolio Value
- Oxford University Challenge Seed Fund & Oxford Invention Fund
- Research Funding from Translation Awards to University
- Supporting Strategic IP Deals eg: Chemistry, IBME

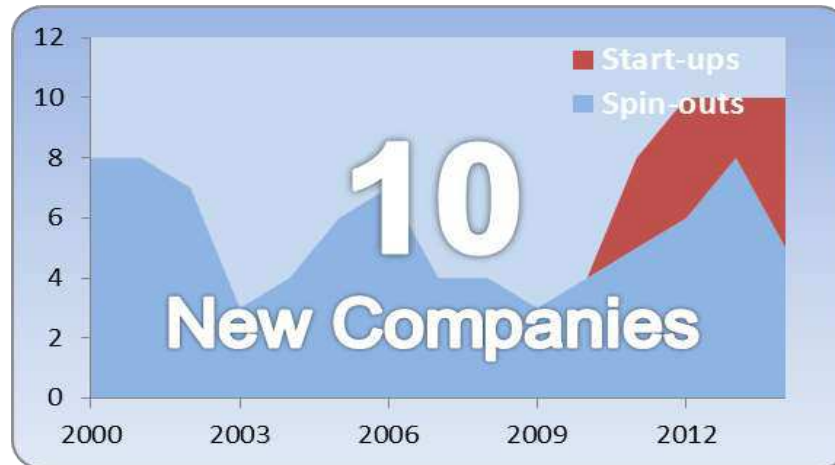
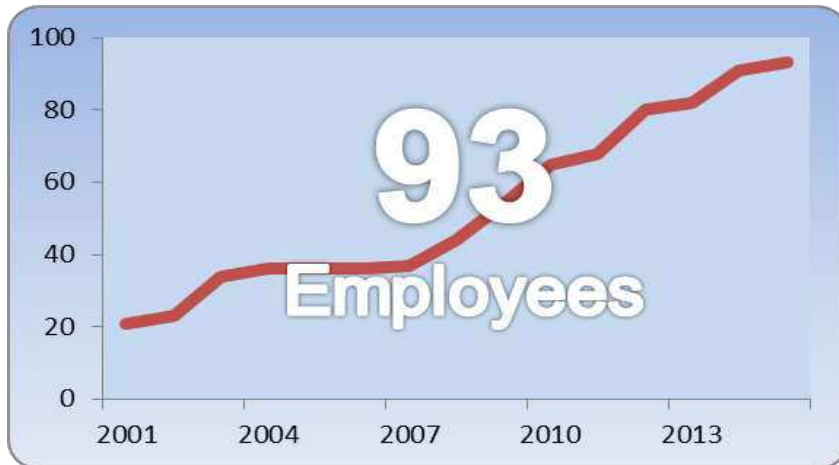
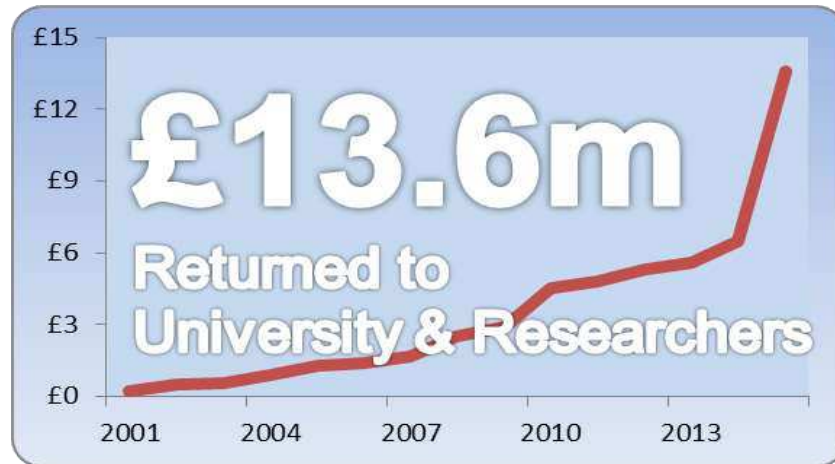
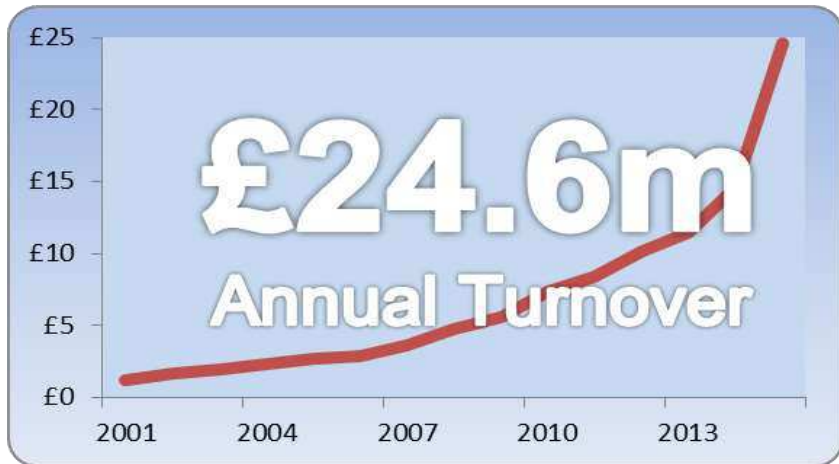
- Other, non-financial, benefits to the University

- Transferring technologies to improve lives
- Promoting good news stories from University
- Local engagement and local economic activity
- Managing Oxford Innovation Society
- Contributing to the **'Impact'** of the University

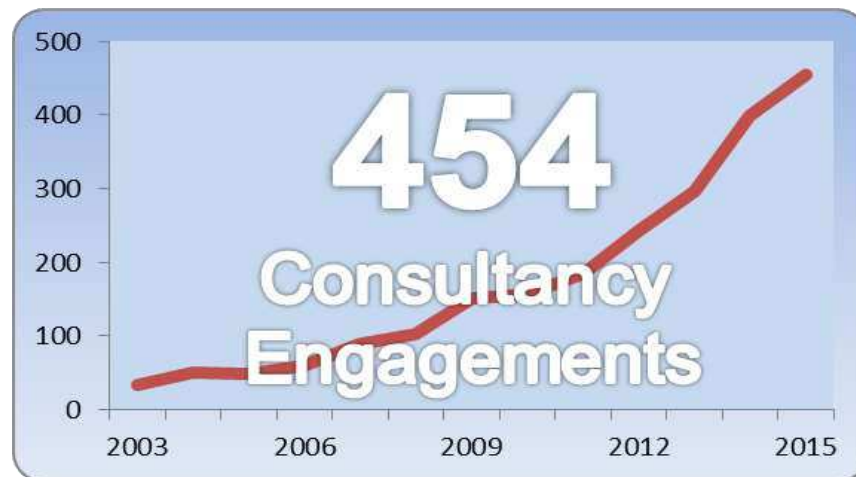
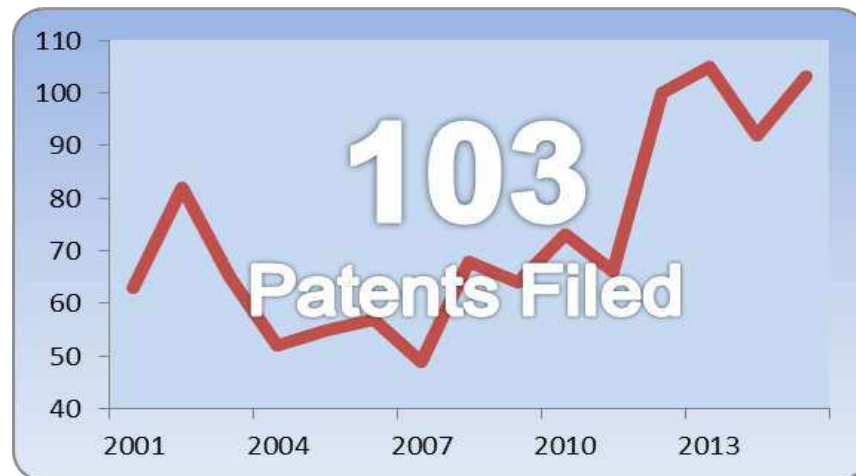
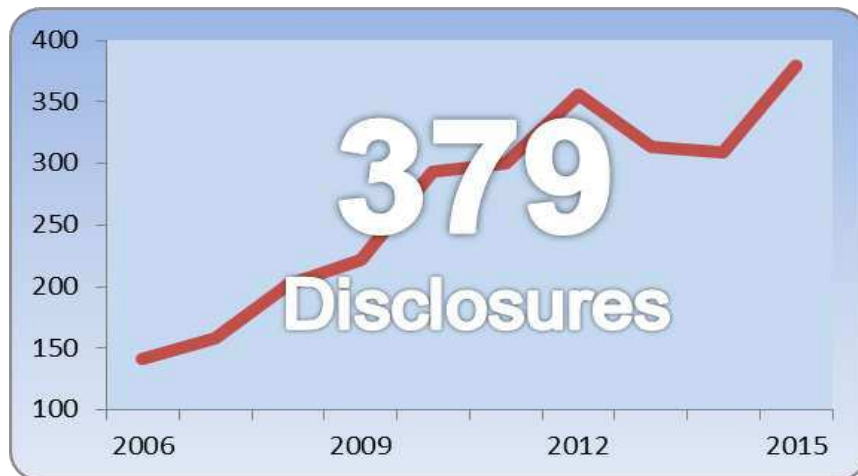




# Isis Innovation, year-ending March 2015



# Isis Innovation, year-ending March 2015



## Chief Executive Officer

Tom Hockaday

## Business Support (21)

### Central Administration

Jenny Bailey  
Philip Priest  
Vacancy  
Ricky Allain  
Isabel Lavis  
Karen Bayliss

### 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  
Denise Farrell  
Sarah Clayton

### Legal

Vacancy

## Managing Director

Linda Naylor

## Technology Transfer Group (44)

Evert Geurtsen

Dr Adam Stoten

Dr Jamie Ferguson

Dr Paul Ashley

Roy Azoulay  
Dr Mark Gostock  
Dr Andrew Bowen  
Dr Gareth Smith

Dr Alex Marshall  
Dr Angela Calvert  
Dr Nikolaos Chalkias  
Dr Astrid Woollard

Rakesh Roshan

Dr Carolyn Porter

Dr Jon Carr  
Dr Andy Robertson  
Daniel Stachowiak

Dr Christine Whyte  
Dr Ruth Barrett  
Dr Matthew Carpenter  
Dr Richard Reschen

Dr Richard Holliday

Dr Fred Kemp

Dr David Churchman  
Chim Chu  
Lamin Ben-Hamdane  
Dr Mark Mann  
Roksana Bugaj

Dr Sarah Deakin  
Dr Richard Auburn  
Dr Weng Sie Wong  
Dr James Groves

### New Venture Support & Funding

Andrea Alunni  
Zoe Reich

### Patent & Licence

Steven Bayliss  
Rosalind French  
Kate Spanchak  
Arooj Azam  
Theresa Freeman

### Operations

Dr Mairi Gibbs  
Dr Pippa Nuttall

### Administration

Kristin Hayes

## Oxford University Consulting (7)

Andrew Goff

### Project Managers

Susan Clark  
Gurinder Punn  
Dr Josef Walker  
Kerry Antcliffe  
Magda Bezdekova  
Sally Sheard

## Isis Enterprise, UK (22)

Dr Steve Cleverley

### Consultants

Dr Tim Hart  
Dr Mireya McKee  
Britta Wyatt  
Elena Andonova

Pete Moores

Dr Laura Droessler  
Dr Michael Mbogoro  
Mike Poynter

Dr Sarah Macnaughton

Dr Alexandra Bush  
Dr Bruno Reynolds  
Dr Gareth Rogers

### Project Support

Sophie Martin

Dr Nathan Pike

### Operations Support

Sophie Gunputhram  
Jennifer Malendewicz

*Associates* James Hudson, Olga Shvarova (UK); Eva Baltar (Spain); Yousuf Al Bulushi (Oman); Kevin Dunseath (UAE)

## Isis Enterprise, Asia (8)

Dr David Baghurst

### Consultants

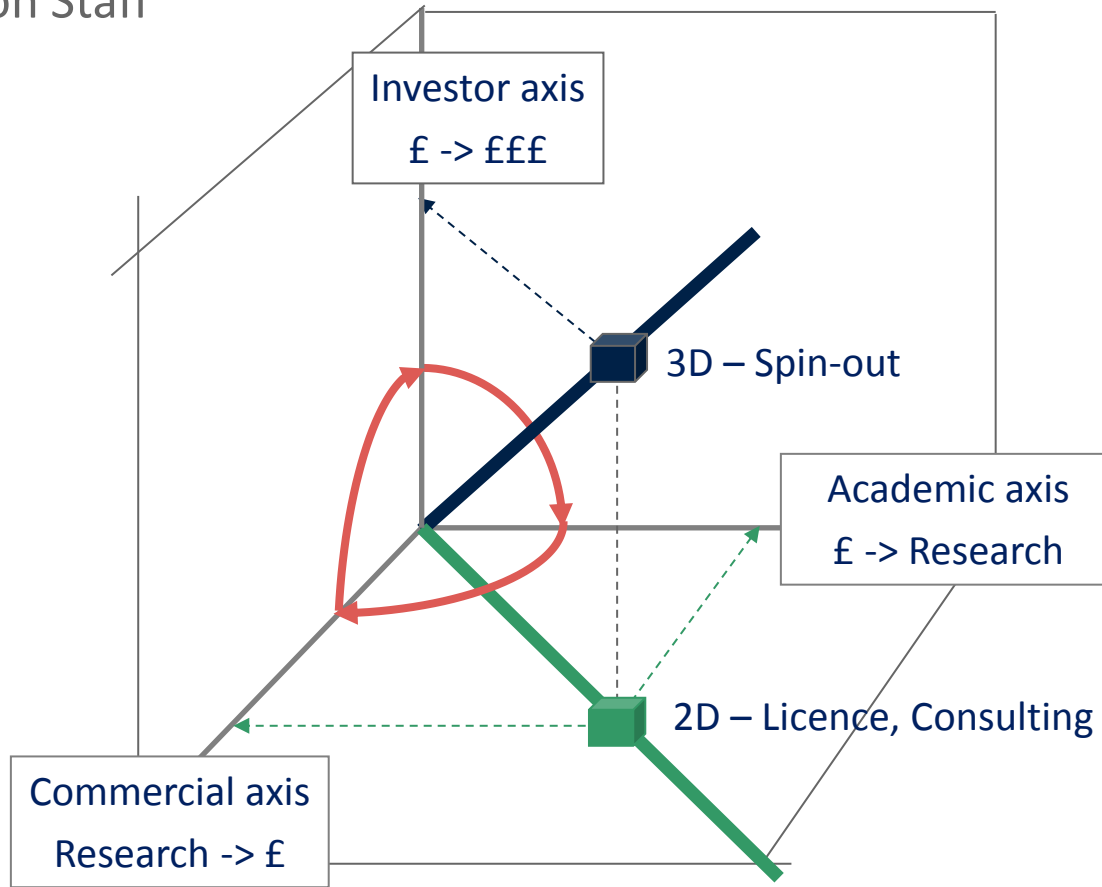
Ya-hsin Shen  
Dr Wenyuan Wang  
Laura Yu

Dr Wenming Ji  
Dr Renchen Liu

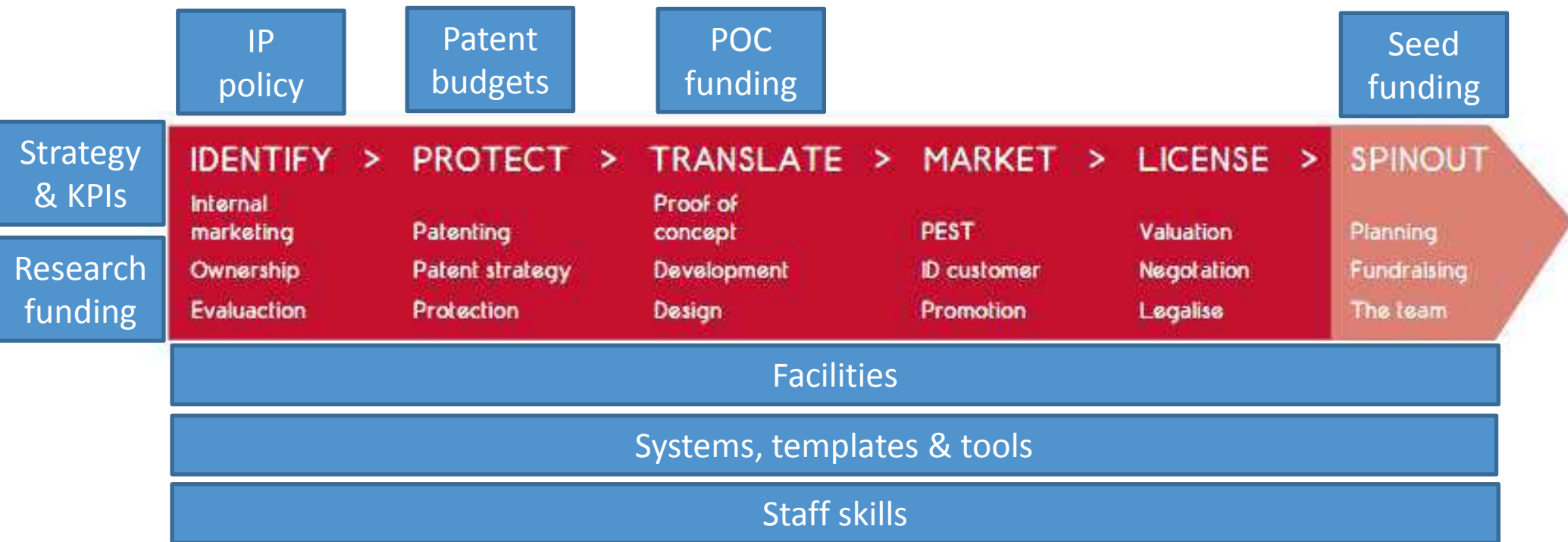
*Associates* Kenji Aiba (Japan); Helen Ujvary (Australia)

# Acting as Multi-dimensional Intermediaries

Isis Innovation Staff



# Technology transfer process



# Economic Impact

“Commercialisation activity undertaken by Isis Innovation contributed more than **£0.4 billion GVA<sup>1</sup>** to the global economy in 2012/13 and supported almost **5,000 jobs**. This includes:

- £264m GVA and almost 3,400 jobs in the UK (of which £129m GVA and around 1,630 jobs were estimated to be in Oxfordshire);
- £9.9m GVA and 150 jobs elsewhere in Europe;
- £109m GVA and around 1,200 jobs in the USA; and
- £25.7m GVA and almost 240 jobs in the rest of the world.”

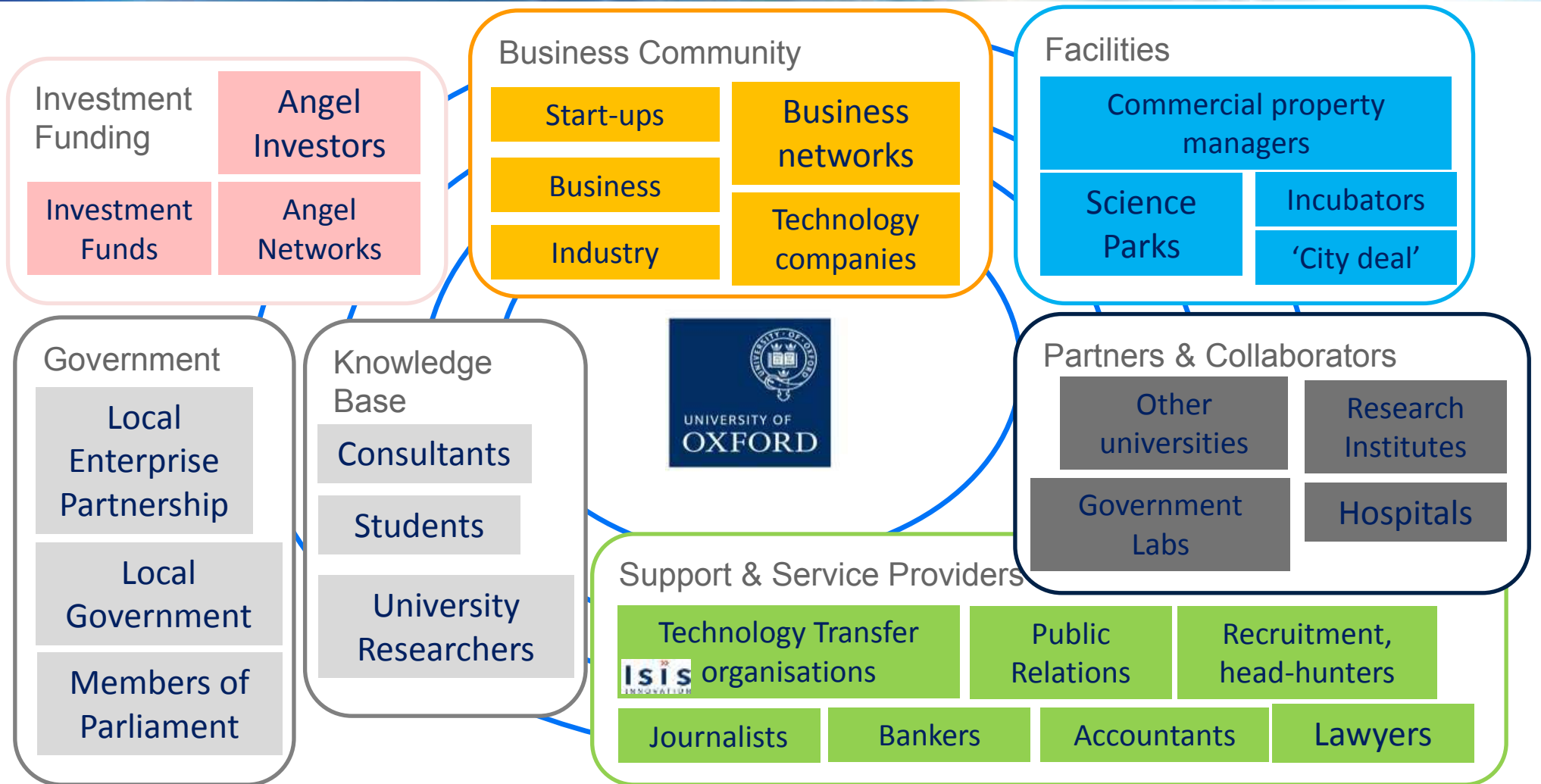


See summary flyer and full report at - [www.isis-innovation.com/about/index.html](http://www.isis-innovation.com/about/index.html)

<sup>1</sup> : Gross Value Added

Source: Evaluation by BiGGAR, an independent economics consultancy, for Isis in February 2014

# The Innovation System



@isisinnovation



# Components of the E&I Ecosystem





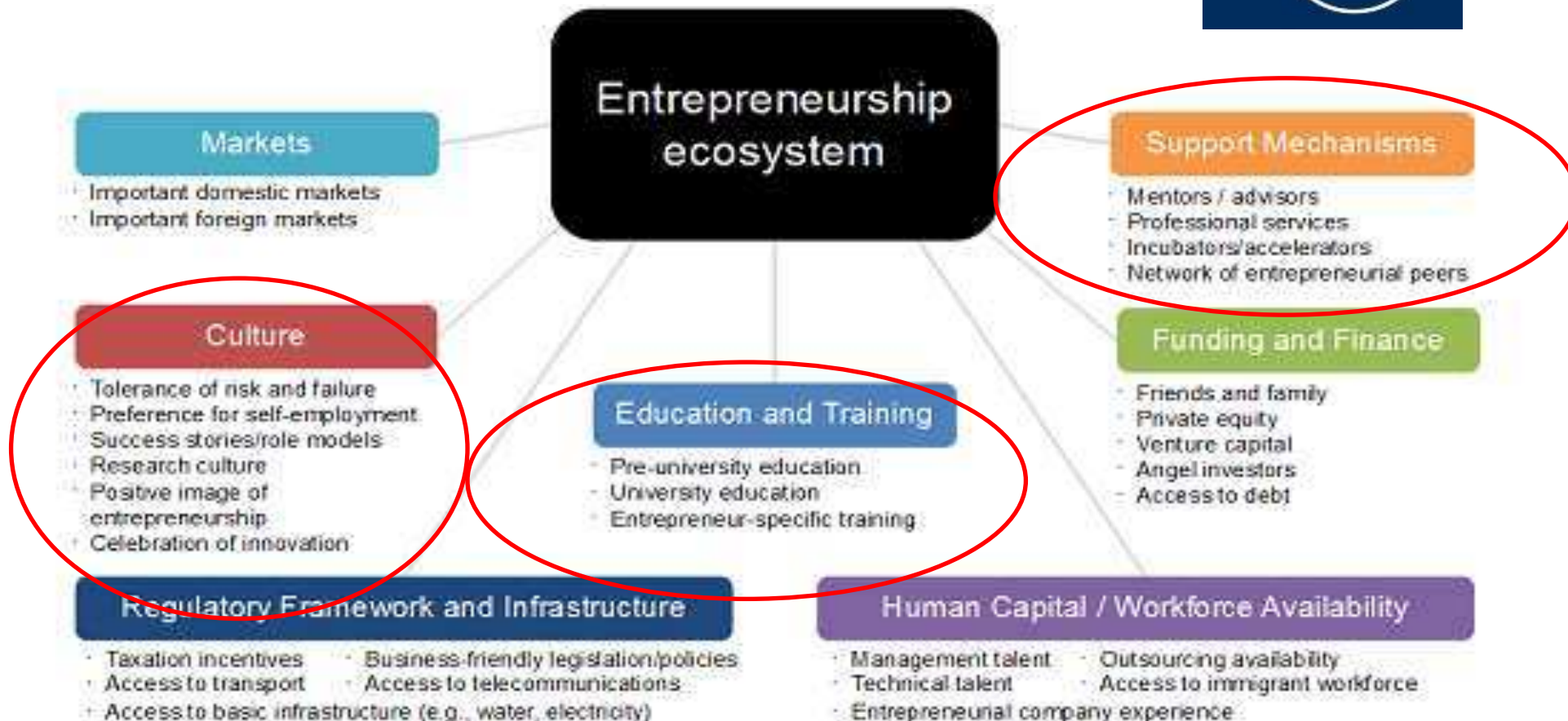
# How to foster Entrepreneurship & Innovation (E&I)?

Components of an

## Ecosystem for Entrepreneurship

The existence or non-existence of these seven components may impact the ability of a company to grow in a sustained way for the next 3-5 years.

© World Economic Forum 2012



# The EY G20 Entrepreneurship Barometer

## Access to Funding

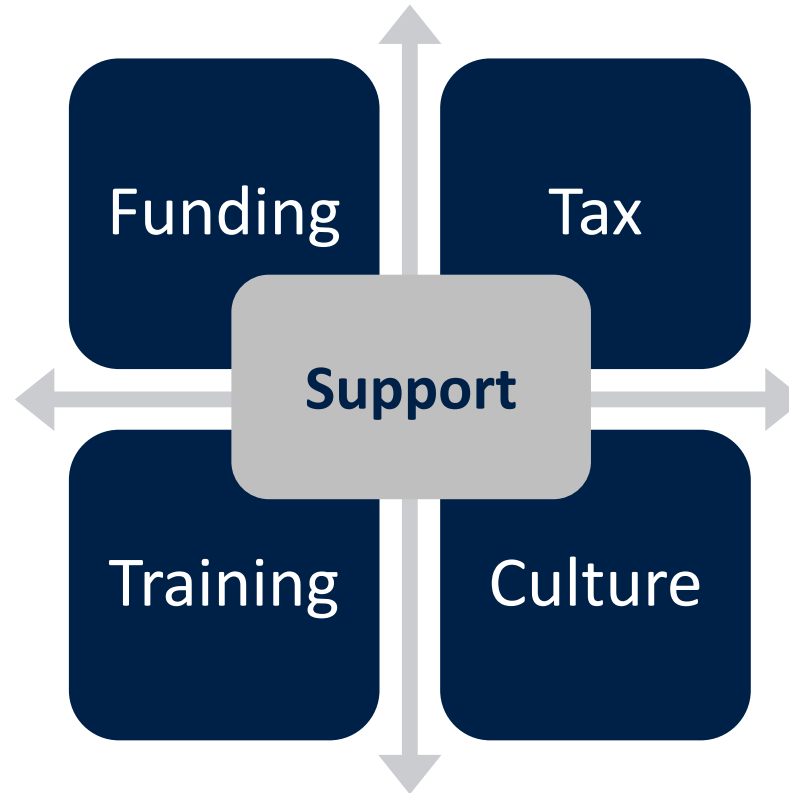
- Seed
- Start-up
- Growth
- Expansion

## Education & Training

- Pre-University
- University
- Entrepreneurial Education
- Informal Education

## Support

- Incubators
- Networks
- Mentors



## Tax & Regulation

- Tax
- Business Friendly Regulation
- Government Incentives

## Entrepreneurial Culture

- Fear of Failure
- Attitude to Risk
- Entrepreneurship as a career choice
- Celebration of self-made wealth
- Innovation & Research Culture

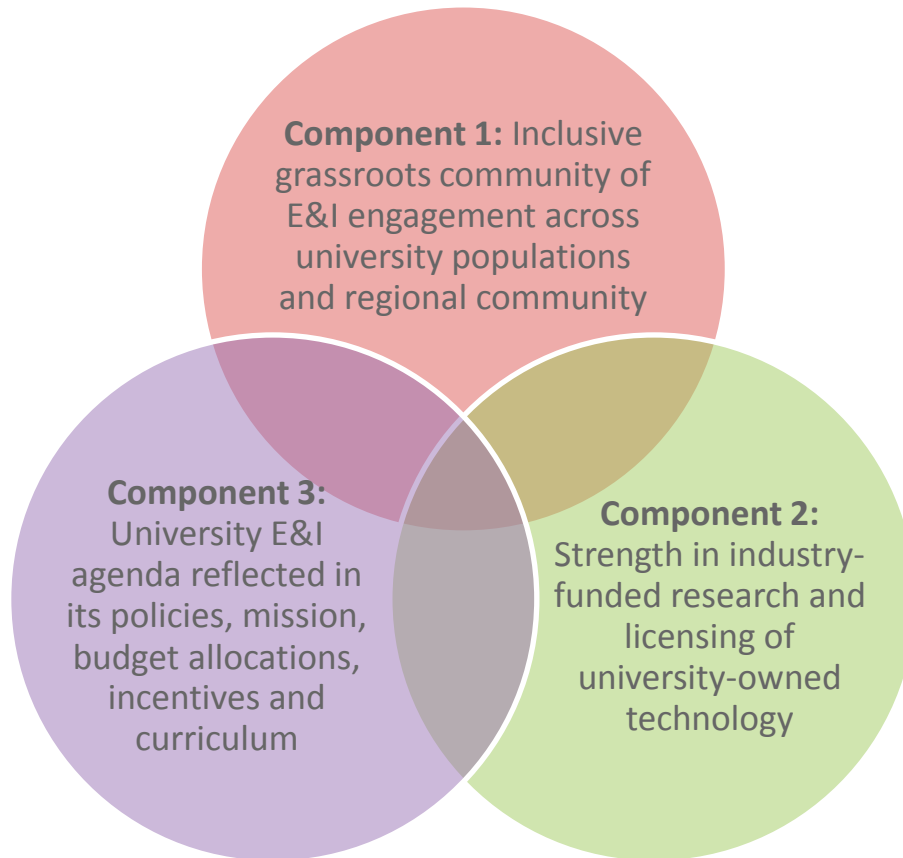
# Emulating Silicon Valley's success



- World class industry access to research
- Primary, almost exclusive source of its research budget is the federal government
- Developing “T-shaped” students
- Involvement of alumni
  - Mentoring / coaching
  - \$6.32Bn in donations to University over five years
- Proximity of Venture Capitalists / alumni
  - Competitions (BASES 150K / E-Challenge)
  - Classes (Launchpad and Creating a Startup)
  - Accelerators (StartX or at Y Combinator or Lightspeed Ventures Summer Fellowship Program)

Diagram from: Ernestine Fu, Tim Hsia (2014) *Universities and Entrepreneurial Ecosystems: Elements of the Stanford-Silicon Valley Success* Kauffman Fellows Report, Volume 5

# Three component model for successful University ecosystems



- Study of the “Emerging Leaders Group, ELG” of Universities
- Components required to build entrepreneurial culture within Universities:
  - Culture -- Strategy, policies, rewards and curriculum
  - Community -- Students, academic staff, alumni, business
  - Commercialisation -- Bi-directional engagement with industry; Track record of commercialising high value research

Diagram from: Graham, R (2014) Creating university-based entrepreneurial ecosystems: evidence from emerging world leaders [www.rhgraham.org](http://www.rhgraham.org)

# 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

Graham, R (2014) Creating university-based entrepreneurial ecosystems: evidence from emerging world leaders [www.rhgraham.org](http://www.rhgraham.org)

# Summary

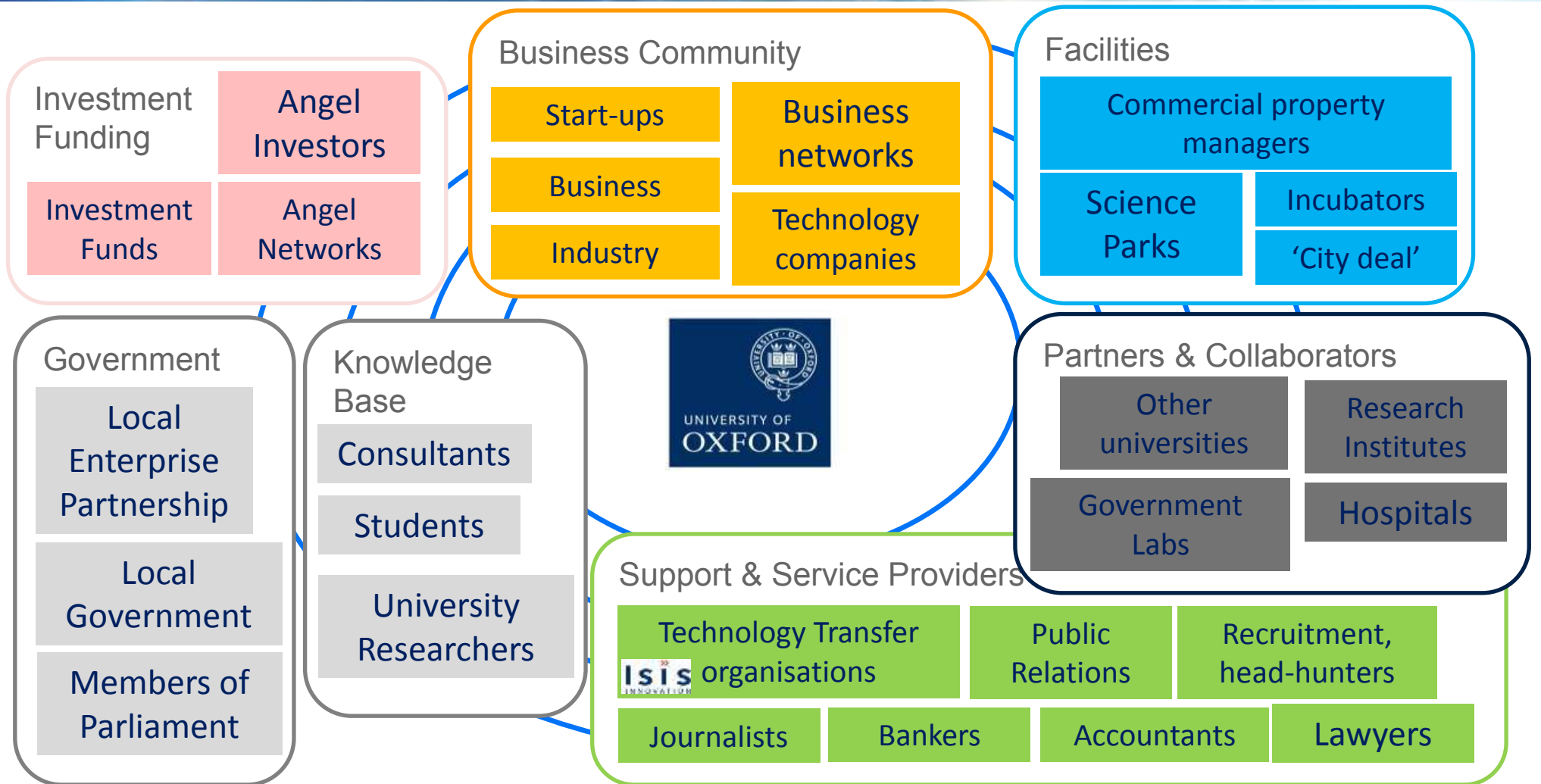
- A successful ecosystem is **not just** appropriate space and a research institute
- Needs **interconnectivity** with all the actors involved in growing successful, technology based companies
- The ingredients:
  - Culture, Community, Capital, University, Industry, and Government
- Within a University (or Research Institute):
  - Utilise a combination of “Top-down” and “Bottom-up” models
  - Build on successes in:
    - Entrepreneurial culture
    - Alignment with University strategy
    - World class technology exploitation



# The Oxford E&I Ecosystem: University Supports & Services



# The Innovation System



@isisinnovation





# Oxford Innovation Ecosystem



## KEY

- |  |                       |  |                          |  |                      |  |                              |  |                       |
|--|-----------------------|--|--------------------------|--|----------------------|--|------------------------------|--|-----------------------|
|  | Isis Innovation       |  | Churchill & JR Hospitals |  | Student Entrepreneur |  | OSEP                         |  | Harwell Campus        |
|  | Saïd Business School  |  | Oxford Science Park      |  | Enterprising Oxford  |  | Oxfordshire Business Support |  | Culham Science centre |
|  | Begbroke Science Park |  | Milton Park              |  | Venturefest          |  | Oxford Sciences Innovation   |  |                       |

# Oxford Innovation Ecosystem

## Organisations and spaces

-  **Isis Software Incubator**  
Support for digital startups
-  **Launchpad**  
Co-working space at the Saïd Business School with events and resources for startups
-  **Student Entrepreneur (Careers Service)**  
Entrepreneurship information and events from the University Careers Service
-  **Begbroke Accelerator**  
Lab and office space for companies scaling up – due 2016
-  **BioEscalator**  
170,000 sq ft in offices and labs for Oxford companies at the Churchill Hospital – due 2017

## Courses and resources

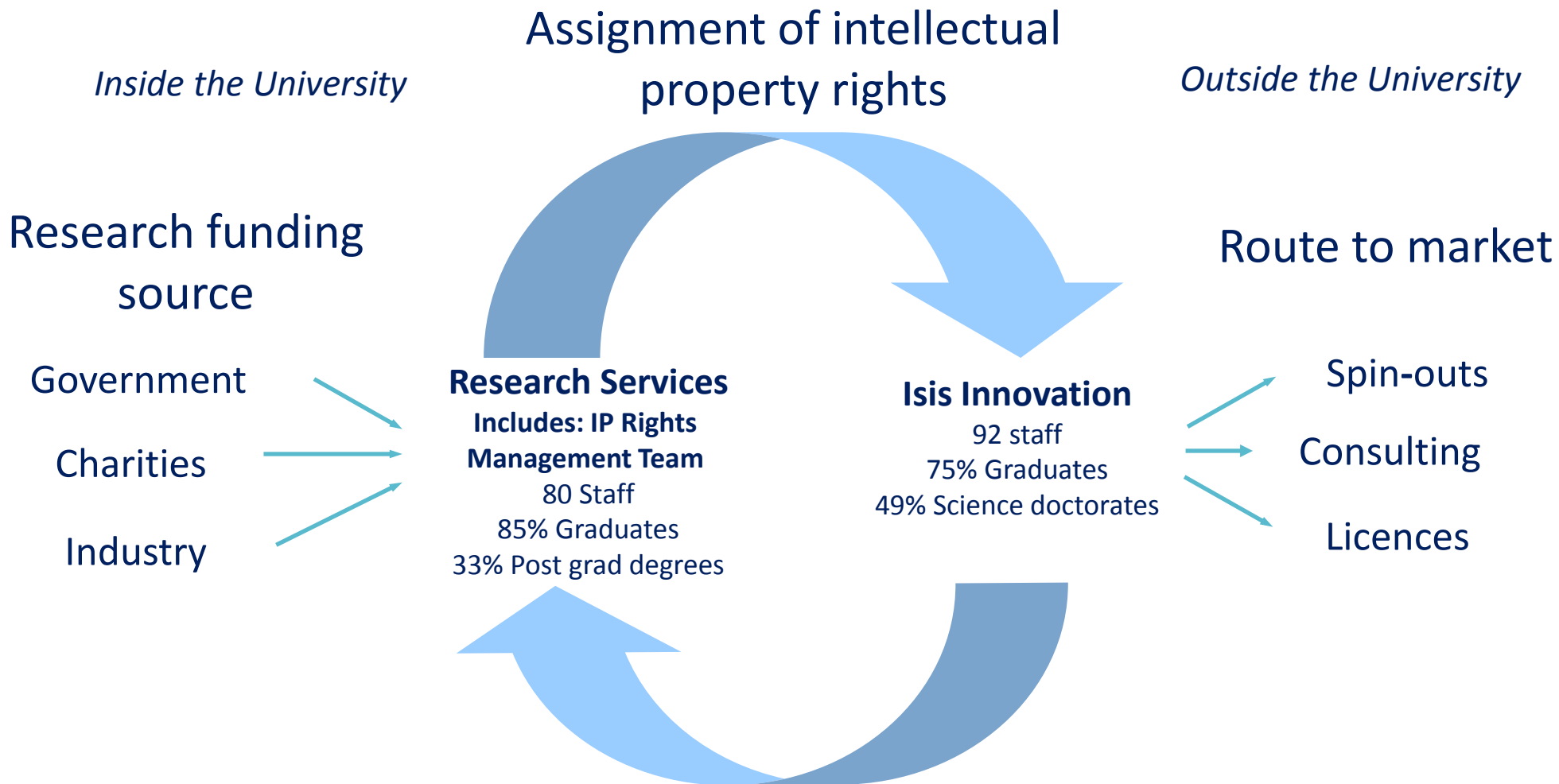
-  **Isis Innovation**  
Protecting and marketing intellectual property and academic expertise
-  **Building a Business**  
A series of lectures from the Entrepreneurship Centre of the Saïd Business School
-  **Enterprising Oxford Portal**  
Resources, guidance and stories for Oxford entrepreneurs
-  **Ideas2Impact**  
MBA innovation classes for DPhil students to participate in
-  **Oxfordshire Business Support**  
Programmes and events from the Oxfordshire Local Enterprise Partnership

## Networks

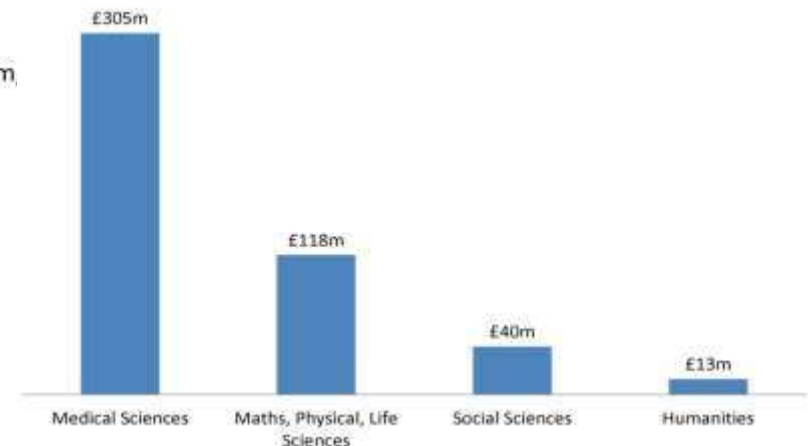
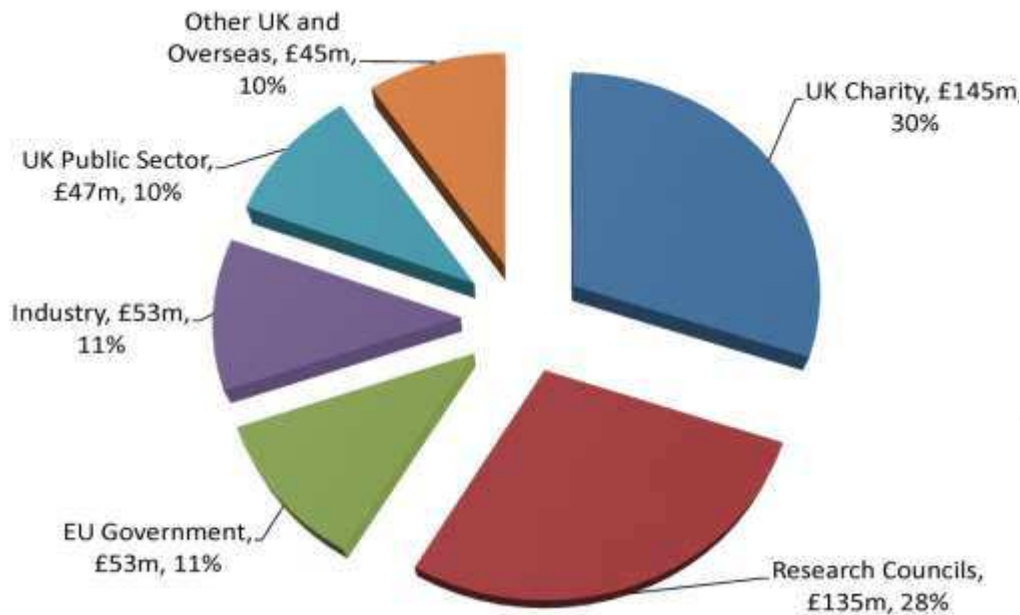
-  **Venturefest**  
Annual high tech event: lectures, workshops and networking
-  **Oxford Entrepreneurs**  
Largest student entrepreneurs society in Europe with over 10,000 members
-  **Isis Innovation Idea Idol**  
Oxford Entrepreneurs' annual business idea competition – sponsored by Isis
-  **Oxford Innovation Society**  
Oxford's Open Innovation network, managed on behalf of the University by Isis Innovation

## Funding

-  **Oxford Sciences Innovation fund**  
£320m venture fund earmarked for investment in Oxford IP and ideas
-  **Isis Angels Network**  
Angel network providing investment into UO spinout companies
-  **University of Oxford Isis Funds & Oxford Invention Fund**  
Managed by Isis Innovation, fund proof-of-concept and prototyping
-  **SBS Seed Fund**  
MBA student run seed fund to support Oxford University startups
-  **OSEP Awards**  
Awards programme from the Oxfordshire Social Entrepreneurship Partnership



- Highest University Research Spend in UK
- 6,335 academics and researchers, and 10,173 postgraduate students
- Submitted the largest volume of world-leading (4\*) research and impact in the UK – REF 2014
- Charts show £478m grants and contracts by source, and University Division



**Total £478m**  
**+ HEFCE £134m**

## UNIVERSITY CONGREGATION

## UNIVERSITY COUNCIL

*Four Academic Divisions*

Intellectual Property Advisory Group

**Medical Sciences Division**

**Maths, Physical & Life Sciences Division**

**Humanities Division**

**Social Sciences Division**

**Administration**

Business Development Team

Business Development Team

Oxford Entrepreneurs Student Society



**Begbroke Science Park**



**Research Services**



**Isis Innovation Limited**



**Centre for Entrepreneurship & Innovation**

- University claims ownership of all employees' and students' IP rights resulting from University research activities
- The University helps researchers who wish to commercialise their research
- Researchers share the benefits
  - Royalty shares from licences
  - Equity in spinout companies
  - Income from personal consultancy

2,541  
Patents & Applications

1,407  
Active Licensing Deals

Total net revenue	Researchers personally	University General Fund	Department Funds	Isis Innovation
To £72K	60%	10%*	0%	30%
£72K to £720K	31.5%	21%	17.5%	30%
Over £720K	15.75%	28%	26.25%	30%

\* pays National Insurance employment tax

## Oxford University Challenge Seed Fund (UCSF)

- Launched 1999 with £4m (£1m OU)
- Over £7.5m invested in 143 projects
- One of the few UCSF funds still running in its original form

## Oxford Invention Fund (OIF)



- 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)



- EIS/SEIS funds for investors managed by Parkwalk Advisors
- Isis Innovation is Portfolio Advisor
- 1<sup>st</sup> fund £1.25m fully committed, 2<sup>nd</sup> closed

## Isis Angels Network (IAN)



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

- **Oxford Sciences Innovation** formed to invest in spin-outs from Oxford (MPLS & Medical Sciences Divisions), Harwell & Culham laboratories
- Investing in **new and existing** spin-out companies, working **inclusively with other investors**
- **Investors** : Invesco, IP Group, Lansdowne Partners, Oxford University Endowment Fund, the Wellcome Trust, Woodford Investment Management, Google Ventures and Sir Charles Dunstone

ft.com > companies >

## Technology

Home UK World Companies Markets Global Economy Lex Comment  
Energy Financials Health Industrials Luxury 360 Media Retail & Consumer Tech

May 14, 2015 12:09 am

### University of Oxford receives backing for £300m science venture

Harriet Agnew



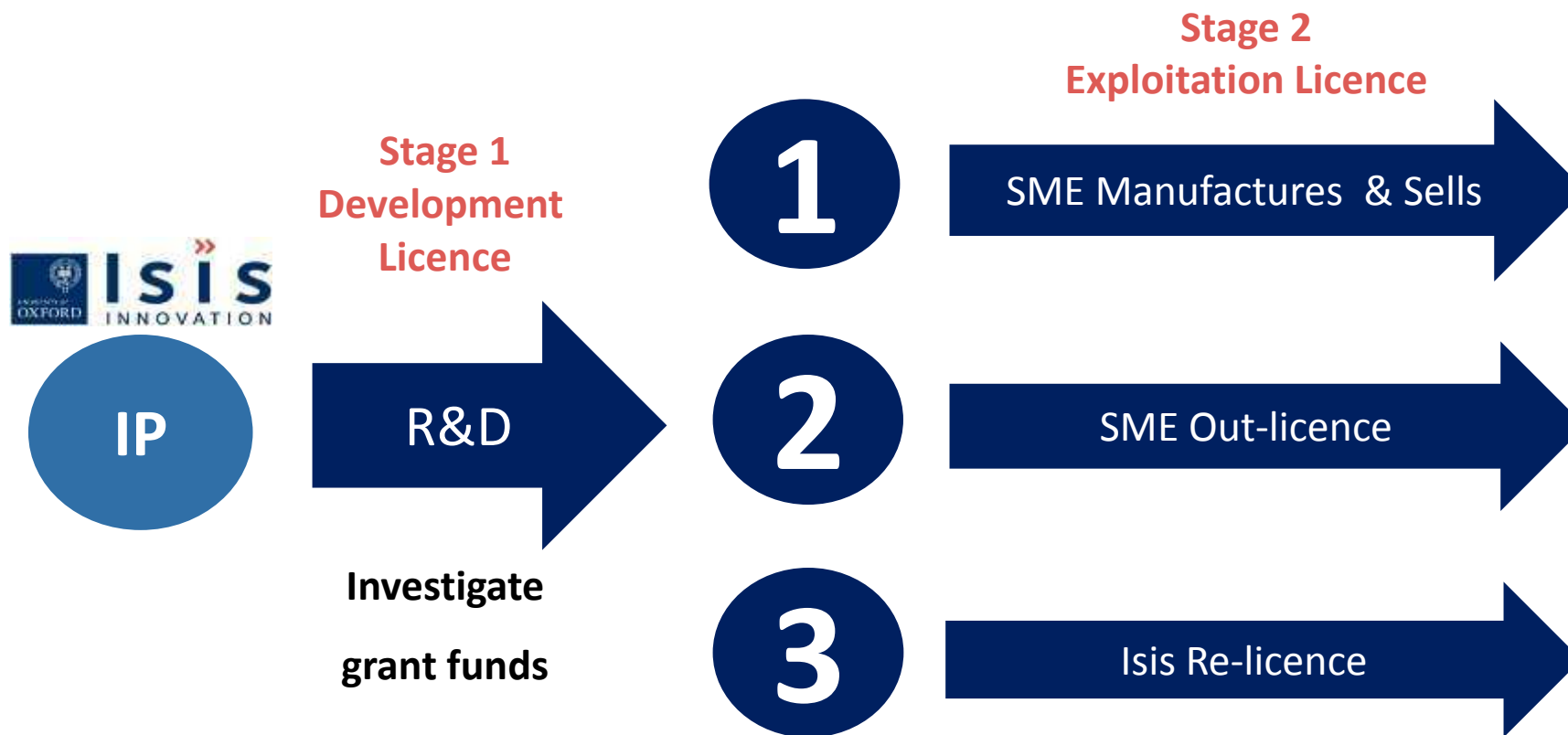
The University of Oxford has lined up a roster of high-profile investors to back a £300m joint venture that will develop science and technology businesses, one of the largest attempts to commercialise intellectual property in the UK.

The University and Isis Innovation, its technology commercialisation subsidiary, are partnering with a new company, Oxford Sciences Innovation, to develop research from the university's mathematical, physical, life sciences and medical sciences divisions, and commercialise their ideas into companies. The divisions will also advise companies as they grow.

OSI is raising £300m, of which £210m has been committed by six cornerstone investors. These include hedge fund Lansdowne Partners; Woodford Investment Management, an asset manager and the Wellcome Trust.

[IP Group](#), a London-listed intellectual property business that invests in technology companies, is also backing the venture. David Norwood, who founded IP Group is





... adds more flexibility and reduce business risk for SMEs.  
Supported by UK IPO as Fast Forward Winner 2014.

# Oxford incubators & science parks

 Oxford Entrepreneurs Incubator

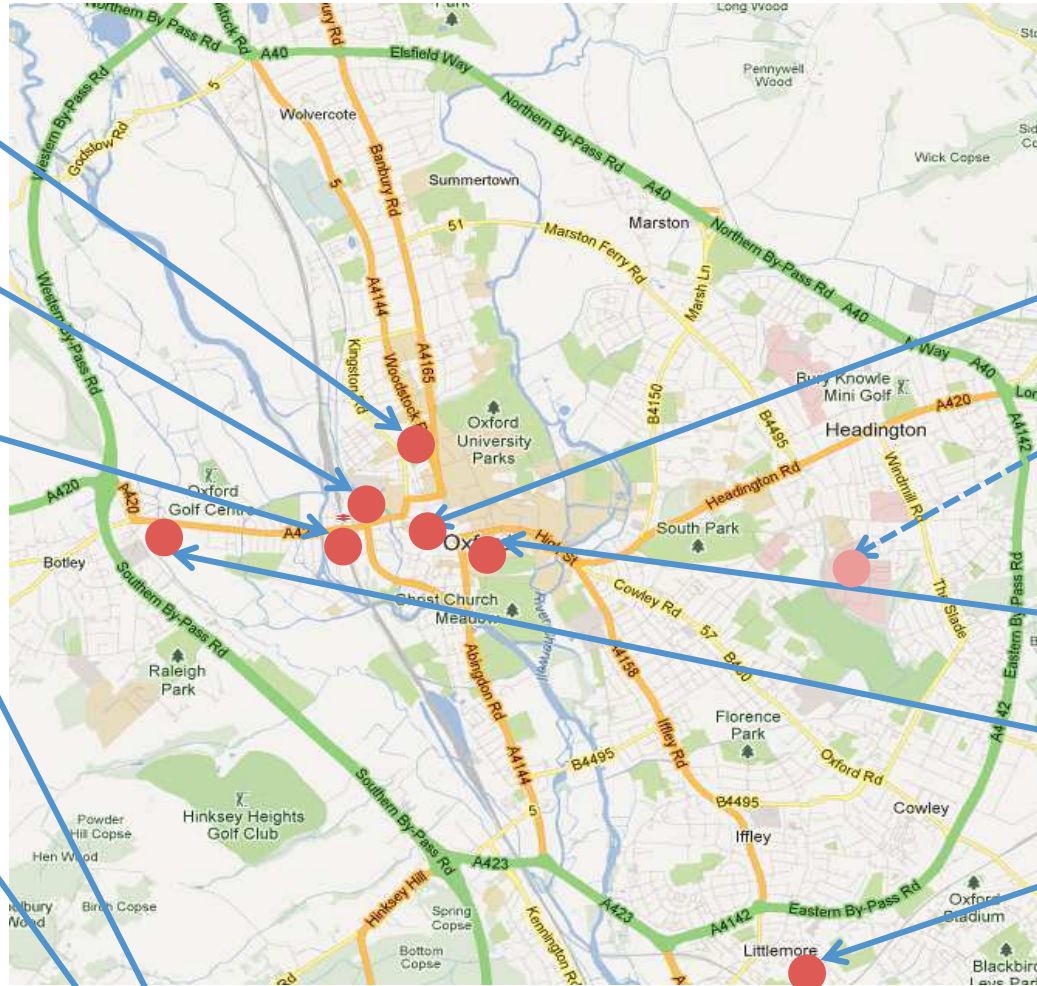
 Oxford Launchpad

 Oxford Low Carbon Hub

Harwell – European Space Agency's Business Incubation Centre


Science Vale Enterprise Zone

Milton Park




 Begbroke Science Park

 Oxford Centre for Innovation Oxford Magnet

 Oxford BioEscalator

 Oxford Hub

 Isis Software Incubator

 Oxford Science Park

Source: Google Maps



# Isis Start-up Incubator (established in 2010)

Facilities

- 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 funding, 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



- Hosted by Oxford Centre for Entrepreneurship and Innovation at SBS
- Co-workspace for entrepreneurs from the university and Oxford community
- A meeting space – “to collaborate, create and strengthen ventures, as well as to share knowledge, practice and connections.”



- £11m funding from City Deal + University contribution
- Hub for the commercialisation of bioscience and medical research and innovation in Oxford
- Meeting point for entrepreneurial researchers, clinicians, medical entrepreneurs and a wide range of bioscience companies
- Managed by KEIT and Medical Sciences Division



# Summary

- Research and investment funding are essential for innovation
  - Feeding the pipeline for innovation and entrepreneurship at all stages
- Government as a facilitator and stimulant is equally important
  - Changing culture and behaviour through policy and programmes
  - Stimulating interactions between industry and academic
  - Creating spaces and infrastructure to enable innovation
  - Partnering with other members of the local ecosystems to generate solutions



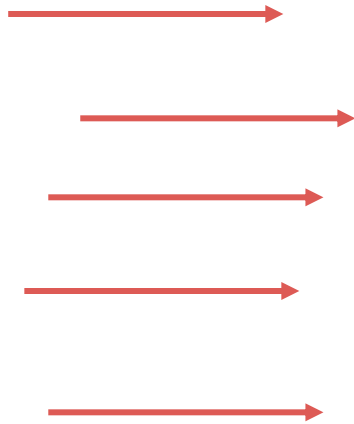
# Evolution of the Technology Transfer Office

# Phase 1 – The Old Days

**Research just got funded somehow,  
anyway, by government?  
Occasional interactions with  
industry, ex-students**

University,  
Researchers

Industry



- A number of small scale interactions between industry and researchers
- A handful of formalised Industry-University collaborations
- TTOs did not exist
- Industry-liaison offices supported funding arrangements, academic consulting, licensing etc

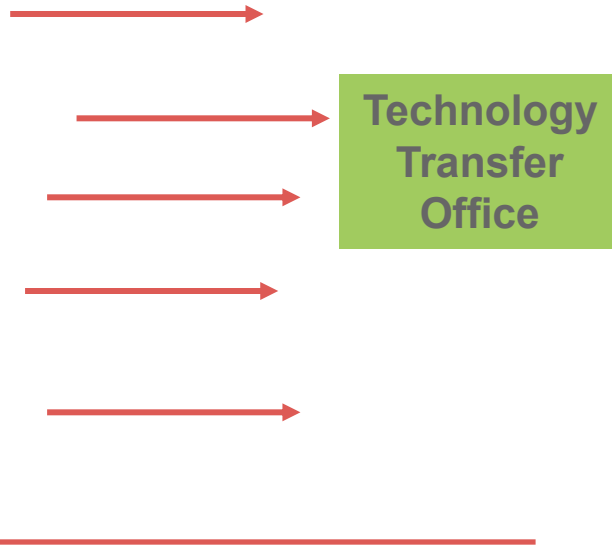
Early 1980s



# Phase 2 – The Hey Days..... Birth of the TTO

**Increasing interactions with industry,  
technology companies, 2-way flows.  
Recognition of value of IP,  
creation of TTOs**

University,  
Researchers

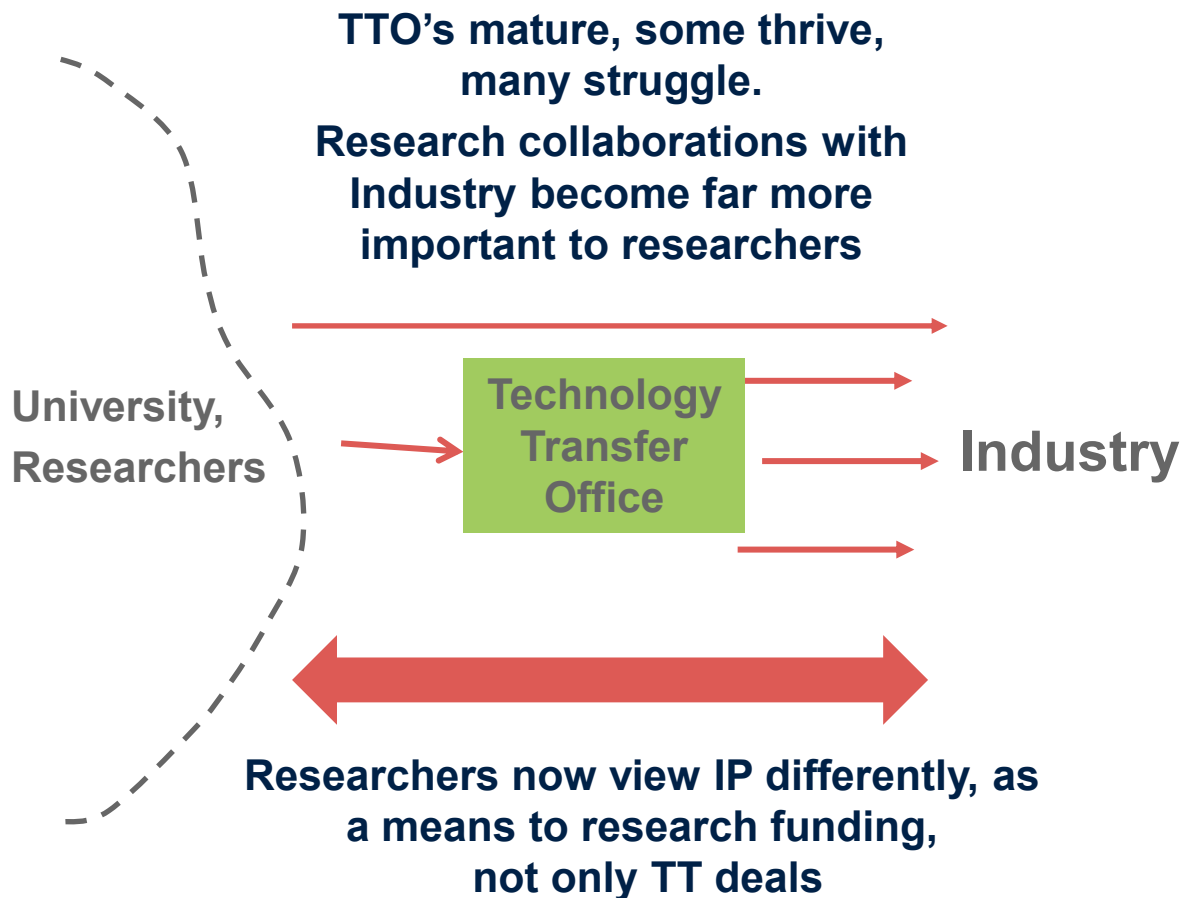


Industry

- Greater awareness of the value of IP
- Growing interest by industry
- High profile failures of universities to capture value from their IP
- Introduction of Bayh-Dole act in the US
- TTOs played an increasing role in most, but not all, University-Industry interactions
- TTOs grew in size and learned what to count
- Governments provided grants to support TTOs

1980-90's

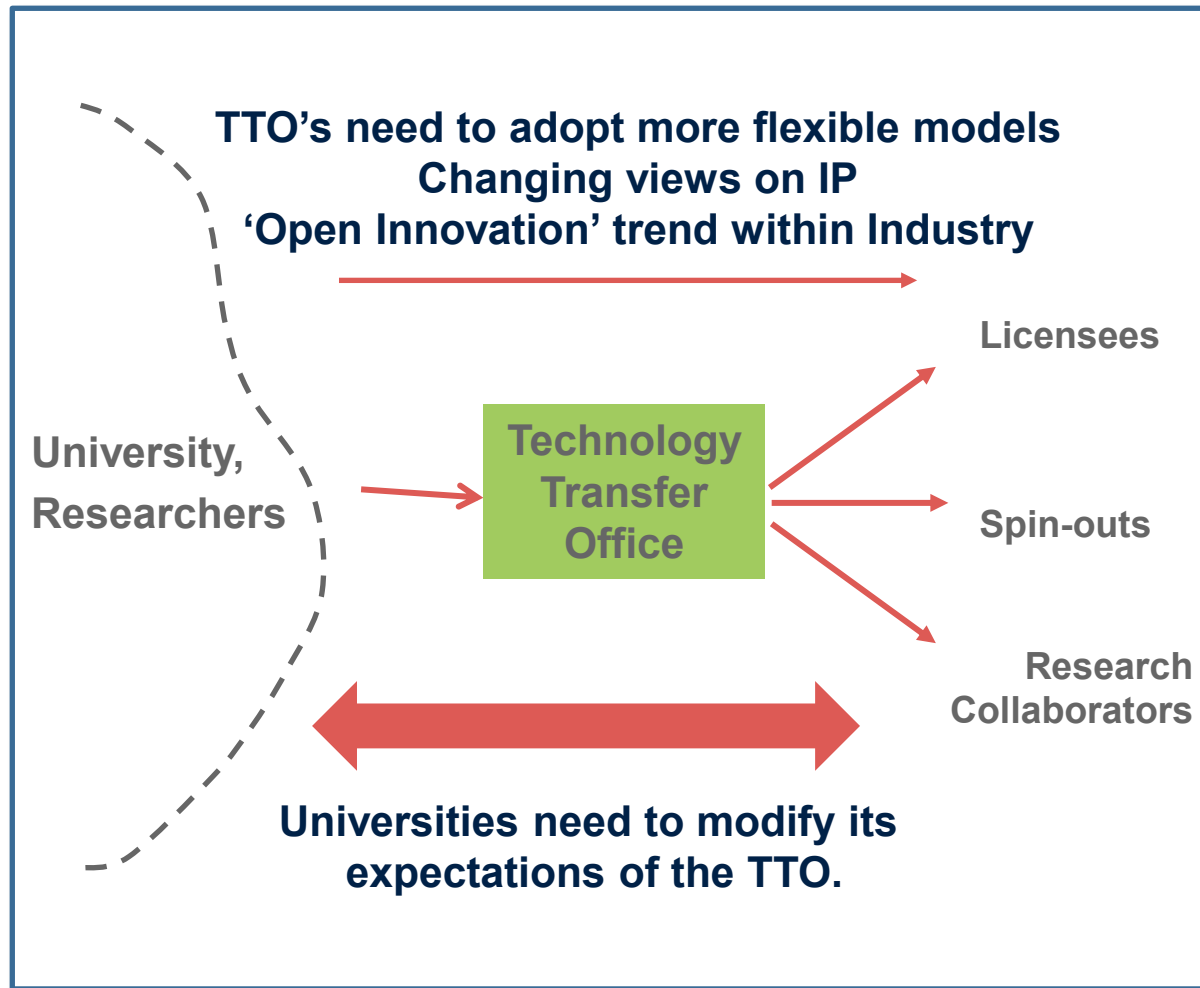
# Phase 3 – The ‘Winds of Change’



- TTOs matured , developed more professional project management processes
- Agreement upon two main objectives
  - Transfer technology to industry in order to create better products/services for society
  - Generate a financial return for the university
- Financial Crisis
  - Less public funding
  - More interest in industry research collaborations
  - Researchers less interested in protecting and benefiting from their IP

Early 2000's

# Phase 4 – Economic Pressures



- Role of TTOs starts to expand
  - Beyond IP protection and licensing
  - TTOs support research funding applications
  - PoC applications
  - Providing evidence of how research spending will benefit society
- Further financial pressures ensued
- TTOs asked to provide more time supporting non-revenue generating activities

2009-10

# Phase 5 – Impact of Impact

**Universities respond to pressure for Impact, become far better at explaining benefits from public investment, TT impact diluted.**



Policy

University,  
Researchers

Technology  
Transfer  
Office

Industry

Society

**University views TTO as (relatively) smaller part of a bigger picture.**

- **IMPACT**

- Broadly summarised at 'Benefit to Society'
- Not purely economic impact

- TTOs becoming a smaller part of a much larger picture

Today

# Research Excellence Framework 2014

A new system for assessing the quality of research in UK higher education institutions

## 15% - ENVIRONMENT

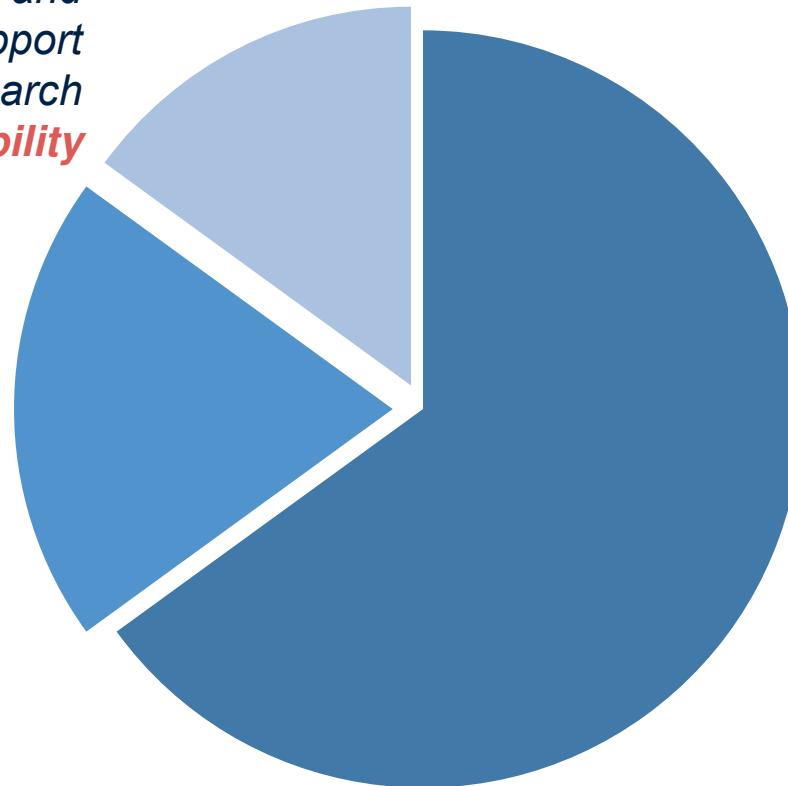
*Eg: strategy, resources and infrastructure that support research*

***Vitality & Sustainability***

## 20% - IMPACT

*Effect on, change or benefit to economy, society, public policy etc.*

***Reach & significance***



## 65% - OUTPUTS

*Eg: publications, articles, book chapters etc.*

***Originality, significance & rigour***

# Impact Case Study Templates

'Impact' assessed through the submission and review of case studies

- Title of case study
- Summary of specific impact created 100 words
- Underpinning research 500 words
- References Up to 6 references
- Details of the impact 750 words
- Sources to corroborate the impact Up to 10 sources



They made **1,911** submissions including:

- **52,061** academic staff
- **191,150** research outputs
- **6,975** impact case studies

The **overall quality** of submissions was judged, on average to be:

★★★★ **30%** world-leading (4\*)

★★★ **46%** internationally excellent (3\*)

★★ **20%** recognised internationally (2\*)

★ **3%** recognised nationally (1\*)

# IMPACT – Gene Therapy

Gene therapy within sight



**'One night in the summer, my wife called me outside as it was a particularly starry evening. As I looked up, I was amazed that I was able to see a few stars. I hadn't seen stars for a long, long time... For a long time I lived with the certainty of losing vision. Now I have uncertainty of whether the trial will work, but it is worth the risk.'**

Wayne Thompson, 43, an IT project manager in Staffordshire, was treated as part of the second phase of the gene therapy trial published in *The Lancet*.

Nightstar was spun out from Oxford University, supported by Isis Innovation, in early 2014 and has raised £17 million to develop a gene therapy to treat Choroideremia, an X-linked recessive disorder that leads to progressive blindness.

The company's breakthrough retinal gene therapy was developed by Professor Robert MacLaren at Oxford's Nuffield Laboratory of Ophthalmology. The initial results of the first trial grabbed worldwide media attention when they were published in *The Lancet* in January 2014.

The gene therapy uses a small, safe virus to carry the missing CHM gene into the light-sensing cells (photoreceptors) in the retina. In an operation similar to cataract surgery, the patient's retina is first detached and then the virus is injected underneath using a very fine needle.

The *Lancet* reported that six months after treatment with this therapy, the first six patients showed improvement in their vision in dim light and two of the six were able to read more lines on the eye chart.

The company has since received both US Food and Drug Administration and European Medicines Agency Orphan Drug designation for its lead programme.

Isis Innovation's Tom Hochaday said: 'The investment in Nightstar represents one of the largest in a new academic spin-out in Europe. We are very excited to have worked with Professor MacLaren since 2009 to protect this technology and we look forward to it benefiting patients.'

Professor MacLaren said: 'The initial clinical results for choroideremia gene therapy are very promising and they give us an indication of what this technology can achieve in the future.'

Nightstar has received funding from Syncona, the venture arm of the Wellcome Trust.



[www.nightstarx.com](http://www.nightstarx.com)

## Gene Therapy as a treatment for blindness

- Breakthrough retinal gene therapy
- Treatment of an X-linked recessive disorder that leads to progressive blindness
- Uses a virus to carry the missing CHM gene into photoreceptors in the eye

***“6 months after treatment, the first 6 patients showed improvement and two of the six were able to read two or more lines on the eye chart” The Lancet***





# IMPACT – Autonomous Vehicles



## Driverless cars

Oxbotica, spun out from Oxford's Mobile Robotics Group with support from Isis Innovation in late 2014, is already set to provide control systems for 40 driverless pods which will carry people around Milton Keynes city centre as part of the UK's multi-million pound driverless car challenge.

The company will manage and expand the large and rapidly growing pool of intellectual property created by the Mobile Robotics Group to meet the demand for smart robotics and autonomous systems. Current projects include robotic survey systems for roads and railways, low-speed driverless pods for urban transport, a robot electric car, and robotic rovers for use on Mars.

Oxbotica aims to overcome the limitations of existing navigation technologies such as GPS, which does not work when navigating tunnels, indoor car parks or even forests. GPS is also unable to provide the exact positioning necessary to safely navigate a car through city streets, where mere centimetres can mean the difference between safety and a collision.

Professor Ingmar Posner said: "We believe that Oxford University's robotics expertise can transform a wide spectrum of application domains. Our intended markets range from devices that survey our roads, buildings and chemical plants to autonomous systems for warehouse logistics and, of course, autonomous driving."

"Oxbotica may be one of the few companies in the world to rival Google in driverless cars," said the Wall Street Journal, naming Oxbotica as one of the Top 10 Tech Companies to Watch in 2015.



Professor Paul Newman, Oxbotica co-founder

"It's important that the UK invests not only in its research institutions and the technology that underpins autonomous self-driving vehicles but also that it supports and builds companies that can exploit and deliver this technology to the market.

It's time to transition the UK's leading edge intellectual property in mobile autonomy from our research institutions to global markets in a coherent and integrated fashion. We created Oxbotica to accelerate this transition."

[www.oxbotica.com](http://www.oxbotica.com)

## Driverless Cars

- Spinout from Oxford's Mobile Robotics Group
- Set to provide 40 driverless pods to carry passengers around Milton Keynes city centre
- Set to overcome limitations of existing GPS-based navigation technologies



# IMPACT – Local Community Archaeology



Community-based archaeological project in East Oxford led by the Dept of Continuing Education

- Involved over 300 local volunteers
- Increased awareness of the richness of archaeological heritage
- Fostering closer links between the University and local community





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**Isis**  
ENTERPRISE

**What does this mean for Universities,  
Industry and Governments?**

# How can TTOs/KTOs support Impact Assessments?

**Track good potential case studies early**

**Gather data and manage case studies**

**Support from the top**

**Identify “Impact Champions”**

**Think holistically**

**Incentivise impact generating activities – use appraisals, targets, rewards and incentives**

**Provide small pots of money and a central resource to support funding application**

**Upskill academics and celebrate impact**

# Publications

“The impact of Isis activities to commercialise technologies and expertise from Oxford University is seen through the creation of new products and services.”



“Commercialisation activity undertaken by Isis Innovation contributed more than £0.4 billion GVA<sup>1</sup> to the global economy in 2012/13 and supported almost 5,000 jobs. “

# For Governments

- Governments should place more efforts into helping universities understand why the commercial route is good for them
- Be aware of the Commercialisation Effect
  - Do not push too hard for commercial and economic return
  - This can have the opposite effect
- Supportive policies to develop an innovation ecosystem
  - Tax incentives
  - Grant programmes
  - Legislative framework



# Economic Implications

## Phase 1

The 'old days'

## Phase 2

The 'hey-days'

## Phase 3

The 'winds of  
change'

## Phase 4

Economic  
Pressures

## Phase 5

The Impact of  
Impact

### In the UK & US

Late 1980s

Mid 90s – Late 2000

Early 2010

2011-2014

Today

- Will other economies follow a similar development path?

Or

- Will they look at the shortcomings of the hey-days and lack of relevance to their own circumstances?
- Capitalise on opportunities to focus on promoting *local entrepreneurship* that may be far more relevant to their circumstances than patent-based approaches

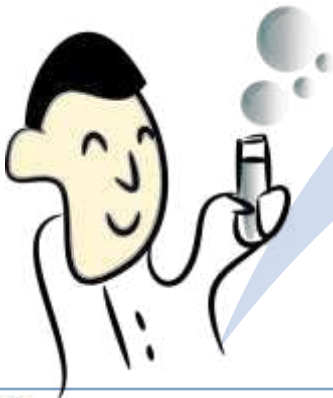
# Supporting Entrepreneurs and Innovators



Innovative research

Translating ideas to business propositions

Successful innovative businesses

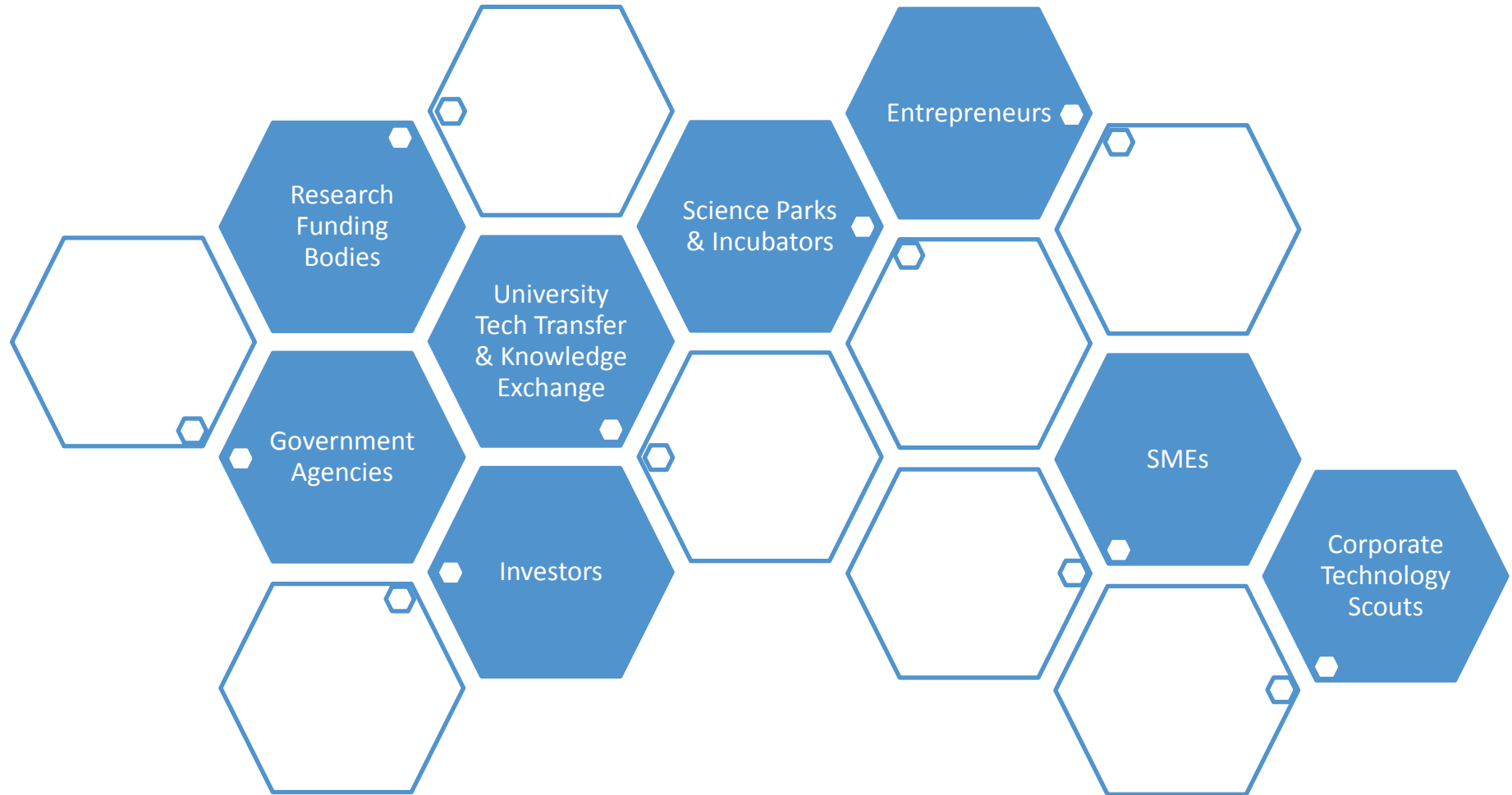




# Worldwide Activities

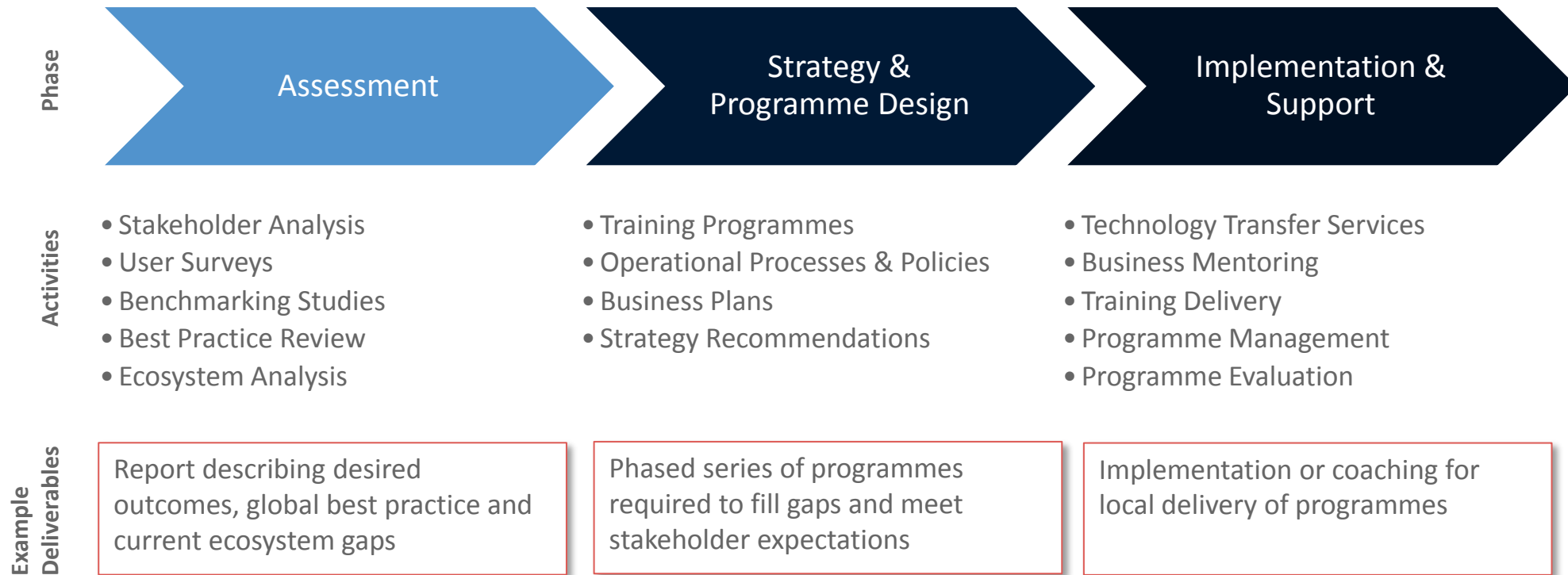


# Our Clients & Partners



# Our Method for Innovation Strategy and Planning

- Isis Enterprise works with governments, regional development agencies, and science/technology parks, universities, to **analyse the needs of the local ecosystem** and develop tailored Technology Transfer Partnerships, training, and other entrepreneurship and innovation programmes.



# Entrepreneurship & Innovation Offerings

## SME Growth Programmes

Supporting local or national SMEs in their business planning, marketing, supply chain, and operations through peer-to-peer coaching, mentoring and bespoke training courses to address capability gaps

## Incubators & Innovation Centres

Ecosystem assessment, design and implementation of processes and policies necessary for a successful start-up incubator (including biotech, software or med-tech incubator facilities). Design and implementation of coaching/training workshops for incubatees.

## Entrepreneurship Courses

A range of bespoke entrepreneurship courses are available from 2 days to complete multi-week programmes, with specialisations in technology commercialisation, software, biotech or nanotechnology.

## Open Innovation Programmes

Targeting medium to large companies, open innovation programmes communicate the benefits of licensing technologies from universities or research institutes, explore gaps in R&D pipelines, and can assist in scouting for technologies to fill these gaps.

# Entrepreneurship & Innovation Offerings – Example Projects

## SME Growth Programmes

- Carbon Trust
- Oxfordshire Innovation & Growth Team Programme
- SME Corp Malaysia
- BioTech Corp Malaysia

## Incubators & Innovation Centres

- Leiden Centre for Entrepreneurship & Innovation
- Andalucia TECH LINK Incubator
- Cranfield Software Incubator
- Isis Start-up Incubator

## Entrepreneurship Courses

- SME Corp Malaysia
- Poland Top 500
- Leaders in Innovation Fellows

## Innovation Ecosystem Review

- Malta University
- Cyprus Research Promotion Foundation
- EU-Indonesia TCF Project

# Thank you!

Please feel free to contact us to discuss how Isis Enterprise can best assist your organisation.

Managing innovation

Seeking technology

Innovation ecosystem  
development

Impact reviews

Partner in technology  
commercialisation

Policy and  
benchmarking studies

Technology & market  
due diligence

Training

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