

JORNADA SOBRE VALORIZACIÓN DE RESULTADOS DE INVESTIGACIÓN
Proof-of-Concept & Seed Funding at Oxford
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Isis Innovation Ltd

>A profitable 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, Oxford
University Hospitals NHS Trust



>Oxford Expertise
Consulting, Services



>Isis Consulting Business
Technology Transfer and
Innovation Management

Oxford University & Isis Innovation Ltd

- Oxford University is the oldest university in the English-speaking world (founded c.1188), and a leader in learning, teaching and research
- Today - Most Powerful UK Research University
 - Research Fortnight, December 2008 Research Assessment Exercise
- Highest University Research Spend in UK
 - £501 million (2010/2011)
- Isis Innovation Ltd is a company 100% owned by the University of Oxford, established in 1987
- Isis *helps* researchers *who wish to* commercialise the results of their research
- A world-class Technology Innovation business
 - Isis 9th highest British filer of PCT patent applications (WIPO Data, 2010)
 - Highest European University PCT applicant (WIPO Data, 2010)



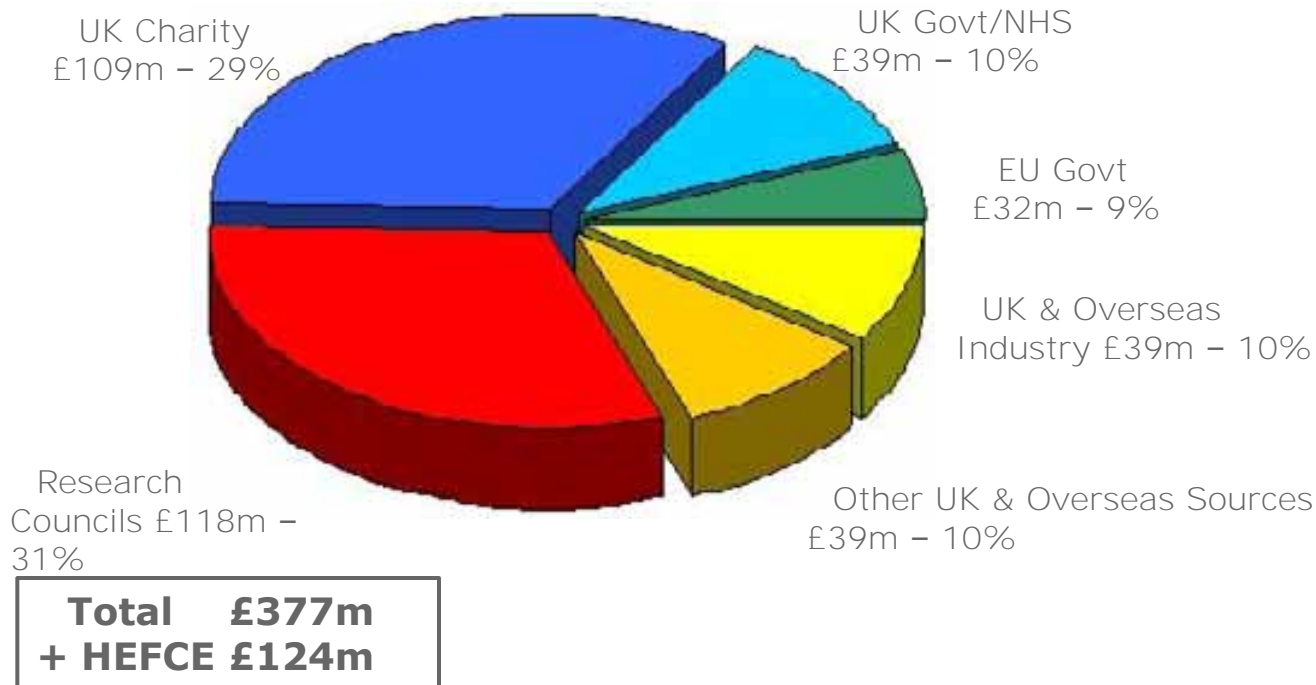
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Oxford



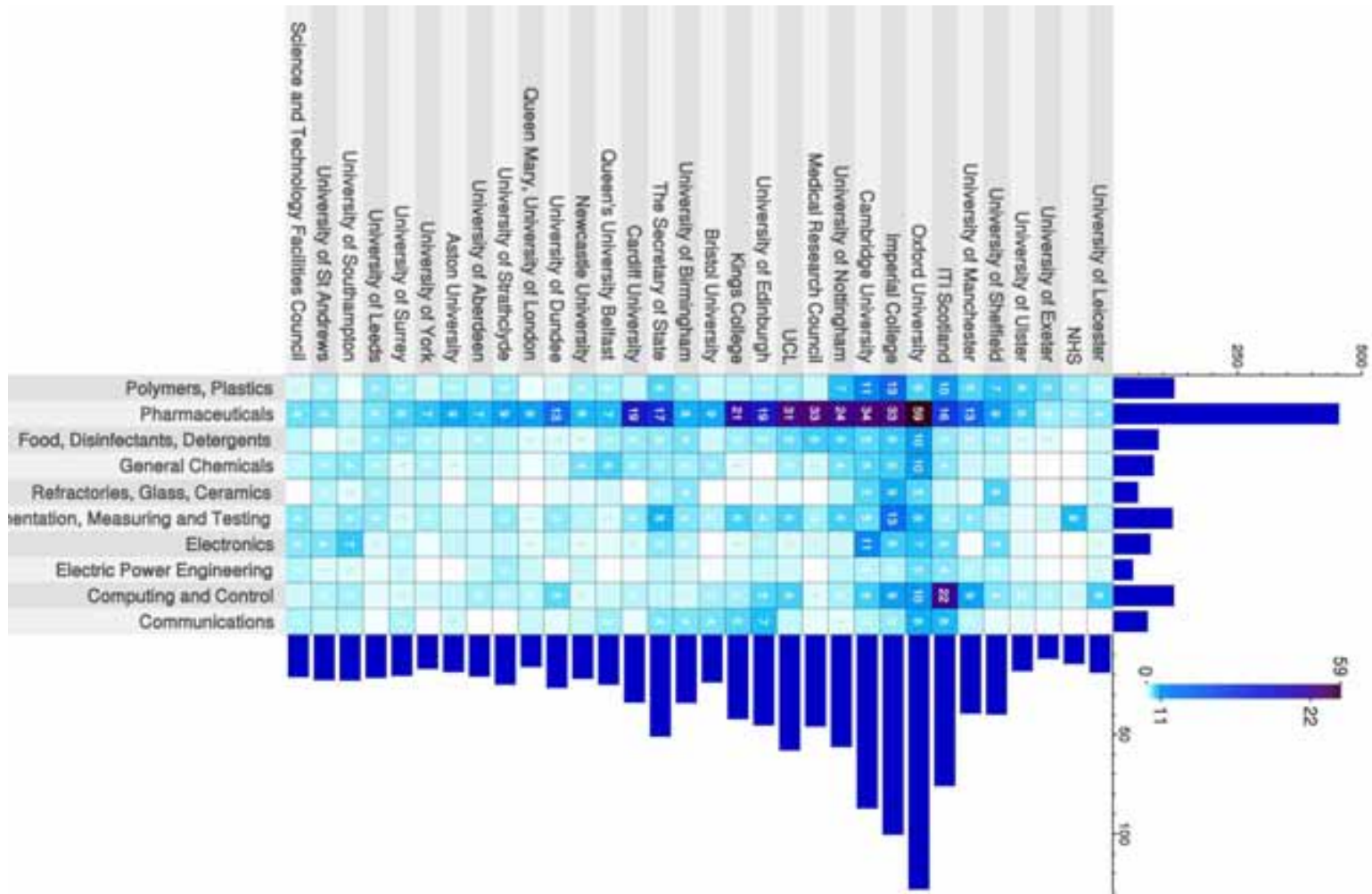
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Oxford

Oxford Research Funding 2010-2011 £501million

- Highest University Research Spend in UK
- 4,700 researchers and 8,700 postgraduate students
- R & D Spend by UK Companies, Oxford would be ranked 9th 2009 EU Industrial R&D Investment Scoreboard
- Most Powerful UK Research University - 2008 Research Assessment Exercise Research Fortnight



Isis Innovation leads patent league table



Isis Innovation 2000 - 2011

Year Ending Mar:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
University Investment	£1m	£1m	£1m	£1m	£1m	£1.2m	£1.2m	£1.2m	£1.2m	£2.5m	£2.5m	£2.5m	£2.5m
Staff	17	21	23	34	36	36	36	37	44	54	65	68	80
Open Projects	319	415	476	629	725	764	784	841	978	1112	1182	1321	1501
Patents filed (pa)	55	63	82	65	52	55	57	49	68	64	73	66	100
Licence Deals (pa)	21	36	42	37	31	38	45	50	74	69	93	107	113
Consultancy (pa)				34	50	48	59	89	102	151	157	185	243
Spin-outs (pa)	6	8	8	7	3	4	6	7	4	4	3	4	5
Annual T/O £	£0.9m	1.2m	1.7m	2.0m	2.3m	2.7m	2.9m	3.6m	4.8m	5.6m	7.4m	8.4m	10.1m

Intellectual Property Policy (from October 2000)

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

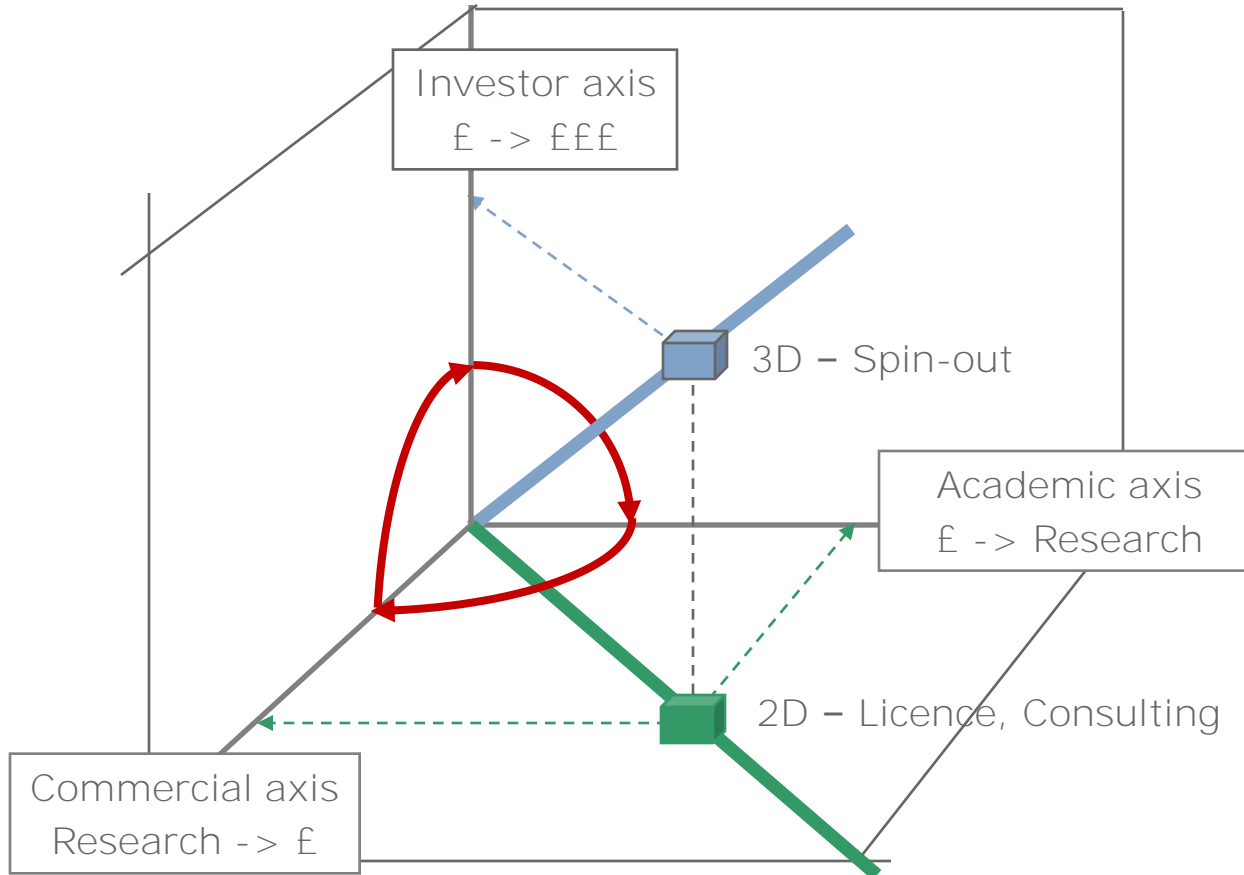
Technology Licensing

- Licensing out of University of Oxford Intellectual Property Rights
- Isis currently manages 1,320 Patents & Patent Applications; and 330 active licensing deals
- Technologies marketed to Oxford Innovation Society Members and then other companies
- Licence partners selected on
 - Resources and intent to develop technology to market
 - In healthcare, awareness of access of final products to developing countries
- Exclusive & Non-exclusive, Geographical Territory and Technology Field controls
- Fees, milestones, running royalties appropriate to technology and marketplace
- Royalties
 - Patent budget £2.5m per annum & royalties
 - Isis pays patent costs & recovers these from royalties

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

* pays National Insurance employment tax

Acting as Multi-dimensional Intermediaries



Investment Sources

Oxford University Challenge Seed Fund

- Launched with £4m in 1999
- University provided £1m; HM Treasury, Wellcome, Gatsby £3m
- £6.4m invested in 124 projects – development, seed equity
- Resulting in Equity stakes in 33 spin-outs, 4 completed licensing deals & 33 active technology projects. These 33 spin-outs have attracted £80m seed/venture investment



Oxford Invention Fund

- Donations to the University of Oxford as part of Oxford Thinking, **the University's overall fund raising Campaign**
- Invest in development of new technologies and innovation from Oxford



Isis Angels Network

- Business Angels, Seed/Venture Capital
- 100 members
- Events, No Charges

University Challenge Seed Fund at Oxford

- In 1999 Oxford University was awarded one of 15 POC & seed evergreen funds that had been established as part of the **Government's** University Challenge Seed Fund Scheme
- Contributors to UCSF were charities (Wellcome Trust and Gatsby Charitable Foundation), HM Government and Oxford University.
- Commercialisation of science and engineering research outcomes in various general ways was the **Scheme's** primary focus
- Financing decisive pieces of work or key translational events is UCSF priority in order to transform good research in good business

UCSF at glance

- UCSF Fund Size in 1999: £4m
- Application since 1999: 171
- Awards: 124
- Equity positions: 33
- Licences: 54
- Value 2012: £3m
- Funds available: £246K



Oxford Invention Fund

- Isis Innovation has set up the OIF in June '11:
 - Donation fund
 - Fill the gap between research and commercial investment
 - Proof-of-concept
- Target is to raise £5m:
 - **We reached £1m in February '12**
 - We have deployed funds in six projects so far
 - Enthusiastic feedback from donors



UCSF/OIF guiding questions

- Is UCSF operating in the market failure gap?



- Is UCSF generating a translational effect?

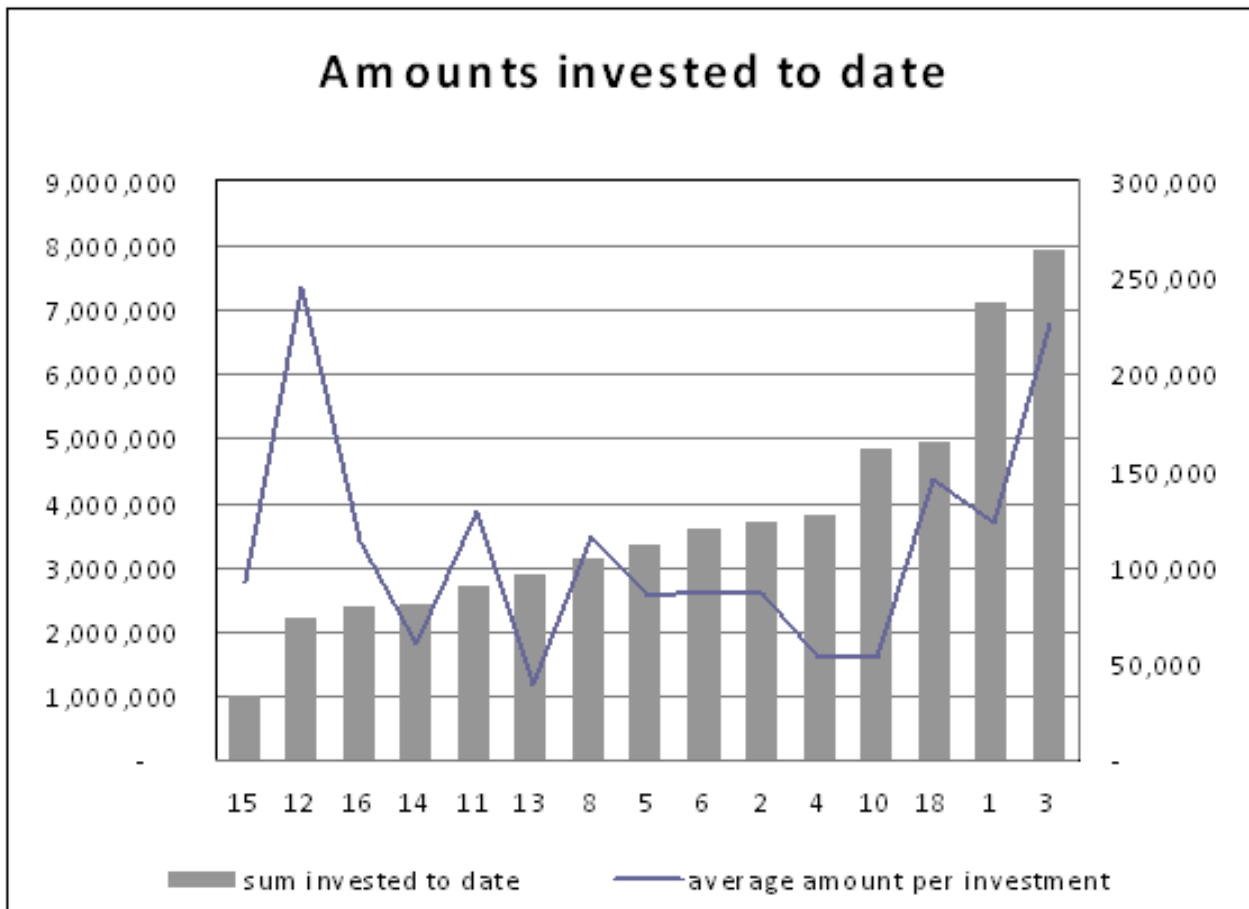


- Is there a market for the UCSF supported projects?

- Licencee or Spinout

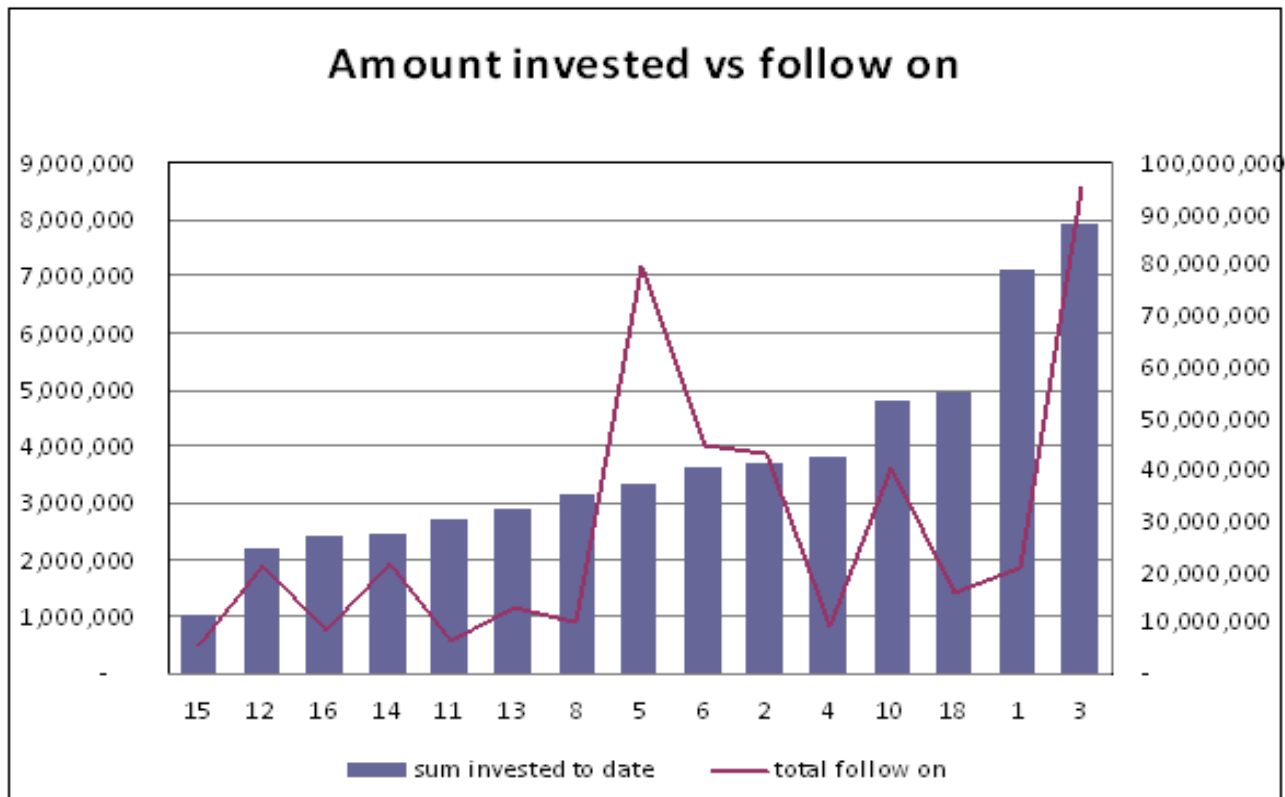
UCF initiative in the UK

- Average amount per investment: £110,000 (Oxf £56,000)



UCF initiative in the UK

- Average leverage of follow-on funding: 7.63



Spin-out Strategy

> University

> **Research Group Head**

> **Senior Scientist**

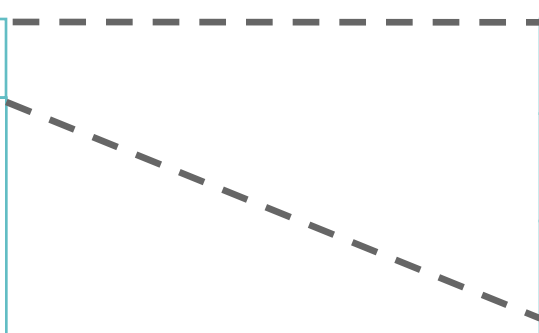
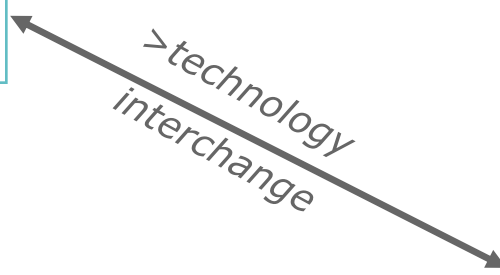
> **Support**
> **Scientists**

> New Company

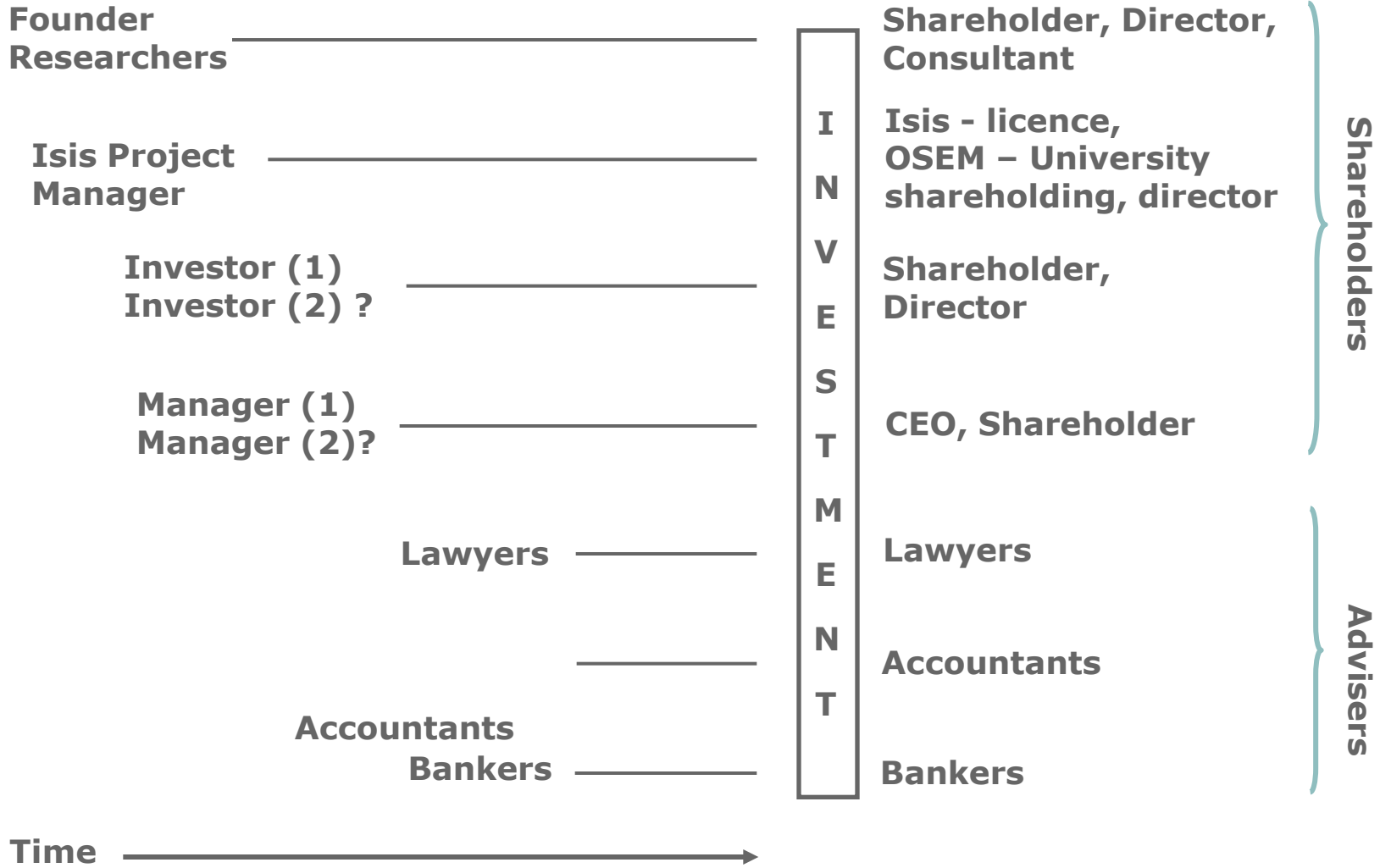
> **Experienced Managing Director**

> **Research Director**

> **Finance & Admin**
> **Sales & Marketing**
> **Production**
> **Scientists**



Spin-outs – The Players



Oxford Spin-outs (post 2000)

2000	7	Third Phase, Mindweavers, Oxford BioSignals, Oxford BioSensors, TolerRx, OXIVA, Pharma DM
2001	7	OxLoc, Oxford Bee Co, Oxford Ancestors, Novarc, Oxford ArchDigital, Natural Motion, Inhibox
2002	9	Pharminox, Minervation, Oxford Biomaterials(Spinox), Zyentia, Oxitec, Oxford Immunotec, Oxford Risk, GlycoForm, BioAnalab
2003	4	Summit(Vastox)*, ReOx, Riotech, OCSI
2004	4	Avacta(OMD)*, G-Nostics, Surface Therapeutics, EKB Technology
2005	5	Oxford Nanopore Technologies, Oxford RF Sensors, Oxbridge Pulsars, Celleron, Oxford Catalysts*
2006	7	TDeltaS, Oxford Medistress, Particle Therapeutic, Aurox, Oxford Advanced Surfaces*, Cytox, OxTox
2007	4	Eykona Technologies, Clinox, Oxford Biodynamics, Crysalin
2008	4	Semmler, Oxford-Emergent TB Consortium, Navetas(ISE), Organox
2009	3	Oxford Financial Computing, Zyoxel, Oxford Yasa Motors
2010	4	OxEms, Kepler Energy, IXO, Oxford PhotoVoltaic
2011	5	Oxyntix, Oxtex, Oxford Multi Spectral, Oxford Imaging Detectors, OCB

> Total external investment to date in 65 spin-outs since 2000: **£327m**

> £42m 1st round Seed/Business Angels – average amount invested £850k; 1/3rd > £1m invested.

> £285m follow-on Venture/Institution Capital

* stock exchange listing

Culture Change & Making Connections



>University
entrepreneur
culture

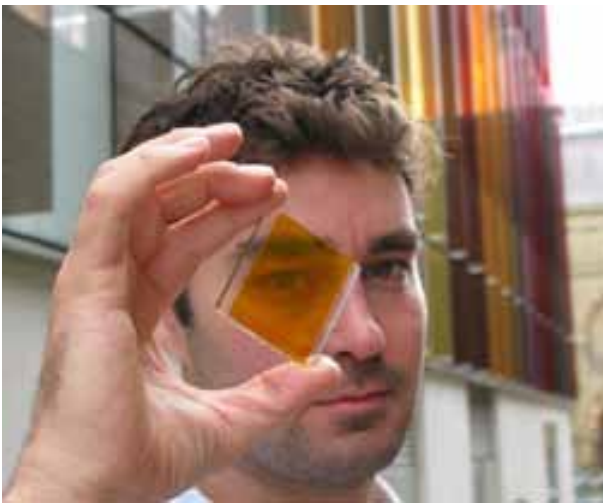
>Business &
professional
environment



- Universities and Businesses are very different; a university is not meant to be like a company, nor a company designed to be like a university; remembering this helps when trying to bring them together
- The ideas are in the University; if University provides strong TT resource, the cultures can be connected and ideas transferred
- **If the University doesn't lead, the University may not receive its share of the benefits**
- **Technology is a cost; you don't make money out of technology; you make money out of a business that successfully commercialises technology**

Isis Success Stories – UCSF

Oxford Photovoltaics Limited commercialises a low cost, stable and fully scalable (thin film) solar cell technology that combines the benefits of inexpensive abundant organic materials with simple screen printing manufacturing technology.



Oxford's thin film technology



Low Cost Solar Power Glazing for Buildings

- All "green technology" similar to photosynthesis.
- Wide range of colours and transparency options.
- June 2010 - Oxford UCSF awards £30K to the project for scale-up demonstration

Isis Success Stories – UCSF

- OXFORD YASA MOTORS
- Dr Malcolm McCulloch, head of **Oxford's Electronic Power Group**, and Dr Tim Woolmer devise the electric motor for the 2008 Morgan Lifecar.
- December 2008 - Oxford UCSF awards £75K to project for prototype production
- September 2009 - Oxford Yasa Motors is spun out by Isis securing £1.45 million from Seven Spires Investments
- Yasa has developed an electric racer -- the Lola-Drayson B12/69EV -- which can race at speeds of up to 320 km per hour.



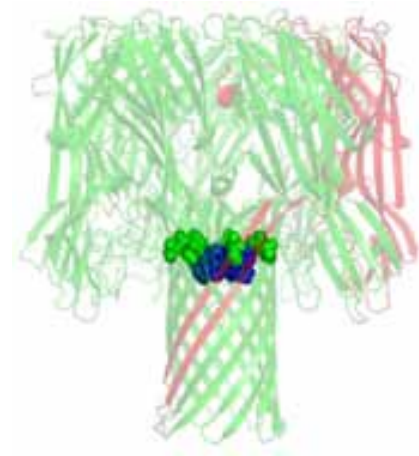
Telegraph.co.uk

Oxford electric motors turn heads as well as wheels

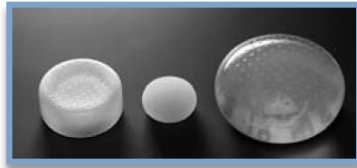
Attach two Oxford Yasa Motors to the chassis of a family saloon car, rip out most of the heavy stuff from under the bonnet and add a rechargeable electric battery and you'll have Jeremy Clarkson drooling all the way to his local dealership. These tiny, lightweight motors, really pack a punch

Nanopore – Spin out

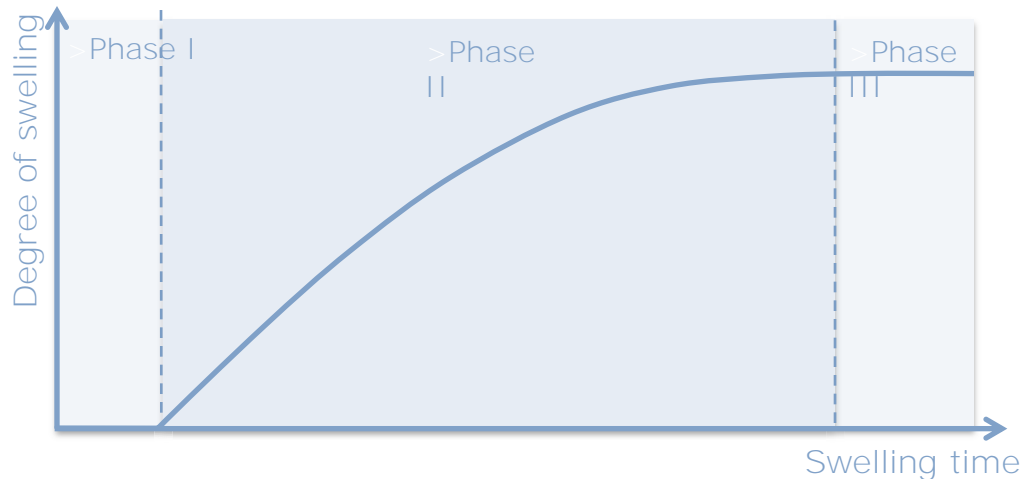
- OXFORD NANOPORE
- Molecular sensing technology using nanopores, for applications including DNA sequencing
- 2005 – Spun out by Isis raising £0.5m from seed investors
- 2008 – Raised a further £10m from institutional and private investors
- 2009 – Raised a further £13.9m from NASDAQ-listed Illumina and private investors
 - Last month Nanopore revealed that it is to produce a new DNA sequencing machine the size of a USB stick



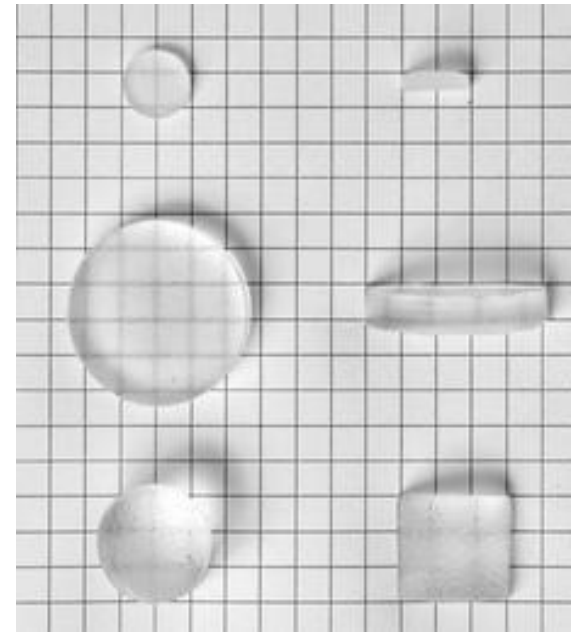
Oxtexs – OIF



Intelligent tissue expander solutions



Duration of Phase 1 and 2 can be controlled
The direction of swelling can be controlled
The implant can be shaped at the point of insertion
June 2005 – OIF awards £77K to test the technology in animals



Oxems – Spin-out

- Location and identification of underground utility assets
- The solution consists of a combination of inexpensive passive 'omega' tags plus a locator solution.
- This enables both the location and identification of an asset using a unique 'bar-code' type ID system.
- [Oxems](#)



Conclusions – How Isis Works

- Universities
 - Technology Transfer is a good thing
 - Part of University purpose; may make money for University and researchers
 - It does not happen on its own
 - You need to invest resources in People, Patent budget, Proof-of-Concept
 - You need a policy framework
 - Who owns the inventions; who shares the rewards
 - **It takes a long time ... So start and do not stop.**
- Business
 - Access to technologies, resources and expertise
 - Help understand universities
 - Help your business innovate
- Investors
 - Source of investment opportunities
 - Home for entrepreneurs
- Government
 - Stimulates innovation and enterprise
 - Improves society

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Seed Investment Manager

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