

Innovation Systems and Culture in Oxford University

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Oxford University is very old

- > Teaching in Oxford since 1096
- > Developed rapidly from 1197
 - > Henry II banned English students from University of Paris
 - > An early example of restriction of trade
- > Oxford University has always welcomed overseas students
 - > Emo of Friesland 1197
- > Alternative History
 - > Students came to Oxford from Paris to avoid the traffic
 - > later some went from Oxford to Cambridge
 - > for the same reason
 - > in which case it was all a waste of time

www.cam.ac.uk

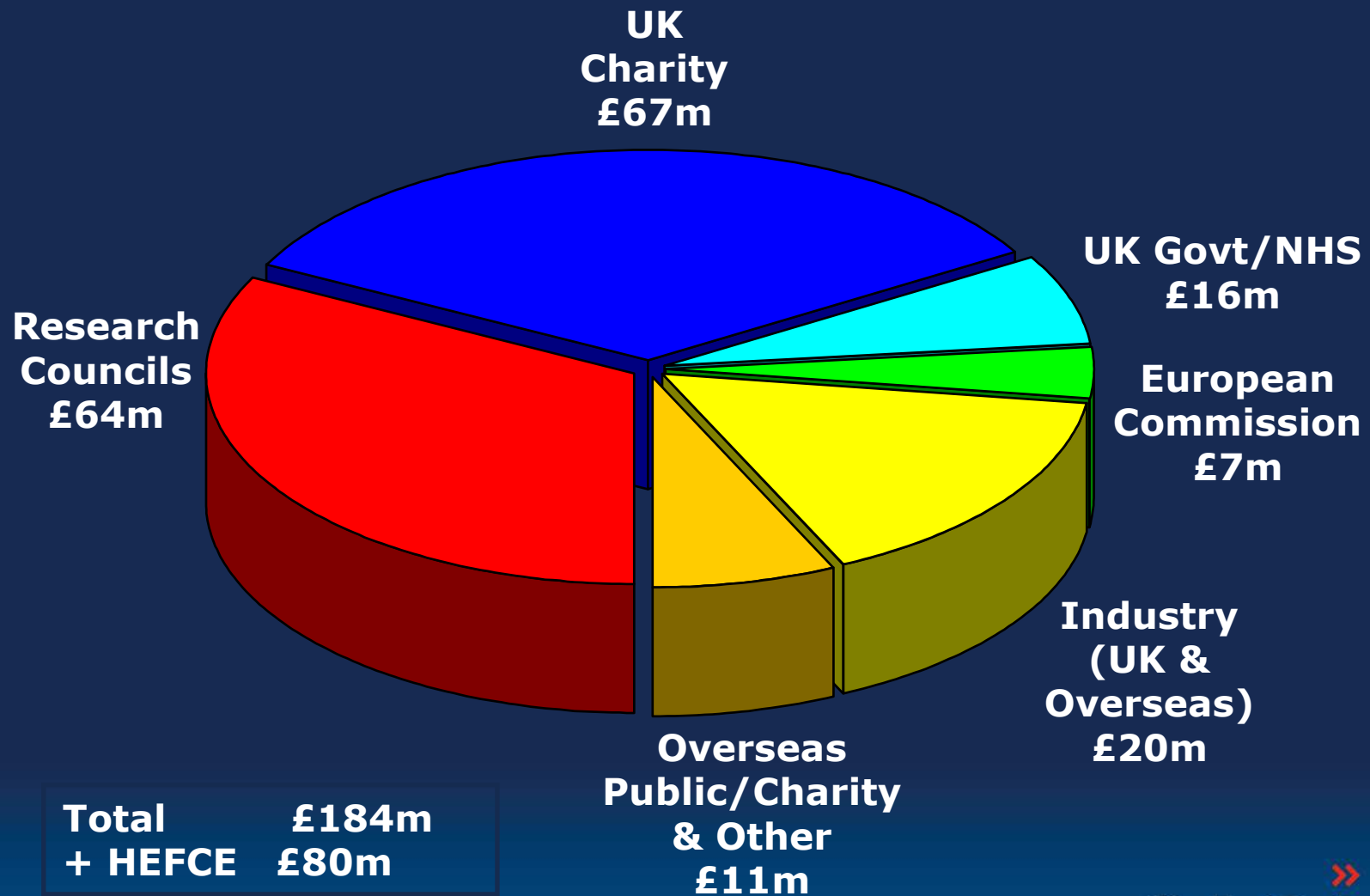
“in 1209 scholars taking refuge from hostile townsmen in Oxford migrated to Cambridge and settled there.”

Research at Oxford

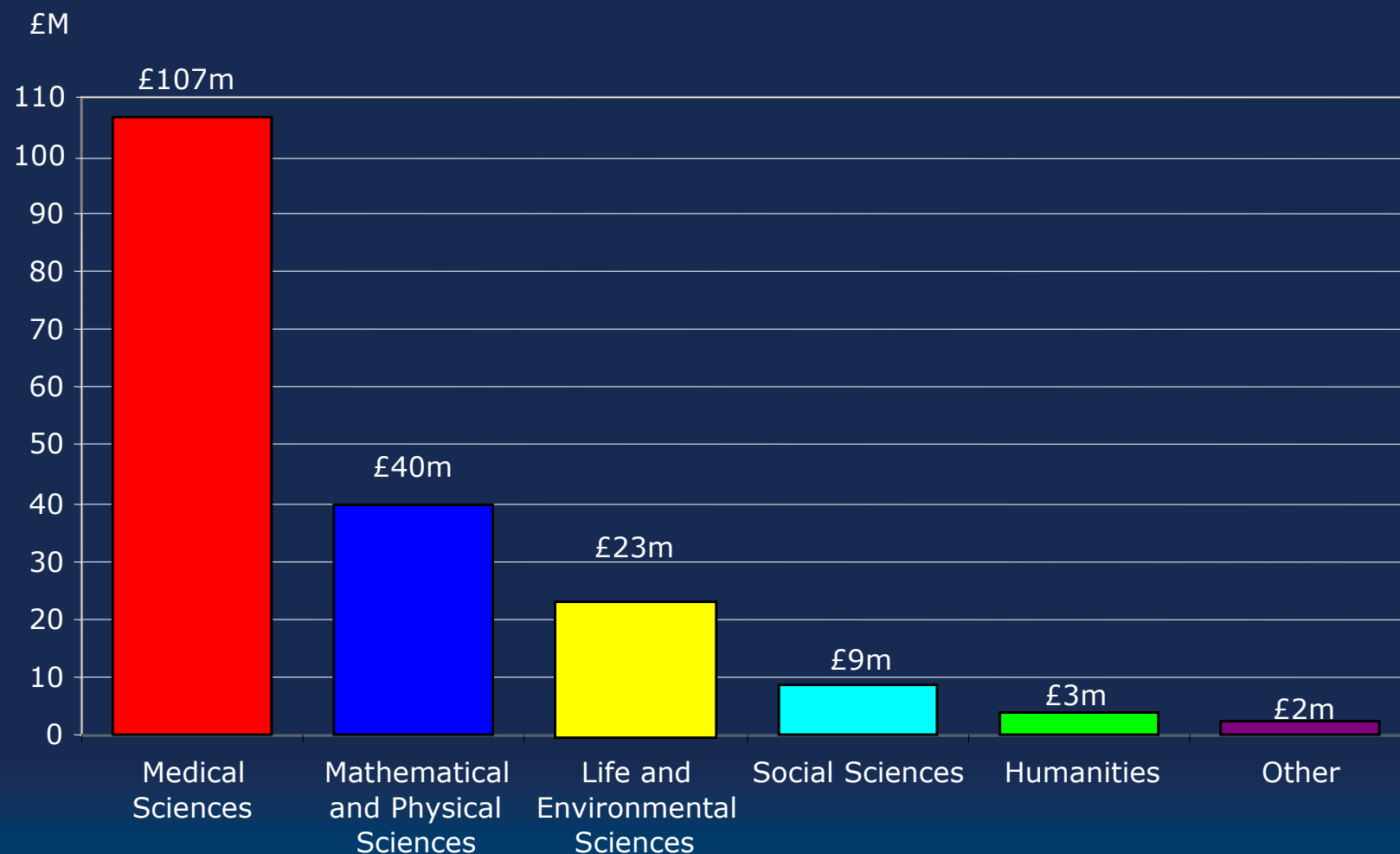
- > 3,700 researchers
- > 5,000 graduate students
- > Most Powerful UK Research University
 - > Research Fortnight
- > Most Innovative UK University
 - > Cross Atlantic Capital Competition
- > Research Spend
 - > £264 million (2004/2005)

Research Funding 2004-2005

£264 million [1993 £83m]



External research income by Academic Division 2004-2005



Total £184 million

What is a University?

- > A great University is defined by great academics
 - > Great researchers
 - > Great thinkers
 - > Great teachers
- > Not
 - > Great administrators
 - > Great technology transferors
 - > Or even great leaders
- > Although list two helps recruit and retain list one

What is a University for?

- > Principle products - Teaching and Research
 - > There are few alternative sources of either of these
- > Valuable by-product – commercialisable inventions
 - > There are many other sources of commercialisable inventions
- > It is an error to design a production plant to maximise the output of the by-product
- > Technology transfer comes at the end of the research
 - > The value then extracted must be maximised but not at the expense of the prime mission
- > Ignoring this could turn some great universities into “not-so-great” contract research companies

Technology Transfer

- > Technology transfer is about stimulating communication between two very different cultures (academia & industry)
- > The two cultures will not spontaneously understand one other
 - > Although there has always been the occasional multi linguist!
- > Therefore intermediaries are required
 - > at least to start with
- > It only works if the intermediaries have a **real** understanding of both cultures
- > There is not a single recipe that always works
 - > National legal framework is a major influence
 - > But there are some underlying principles

The Challenge

Commerce

- > Driven by external needs
- > Clear goals with shareholder commitments
- > Commercial confidentiality

Researcher

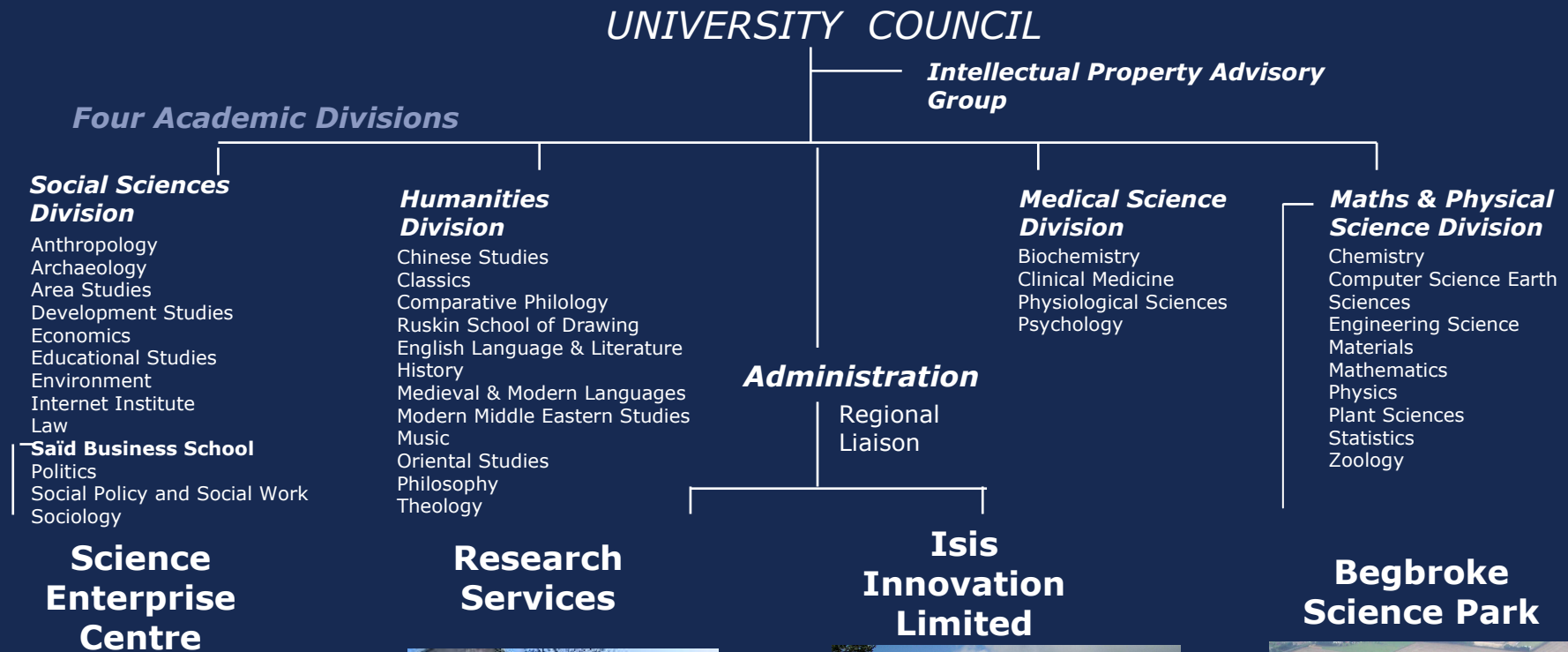
- > Self directed
- > Next step defined by yesterday's results
- > Free exchange of ideas

■ “Academics never deliver”

■ “Industry is out to cheat us”

■ So we can expect it will be challenging to build a mutually trusting relationship

Reporting Structure (partial)

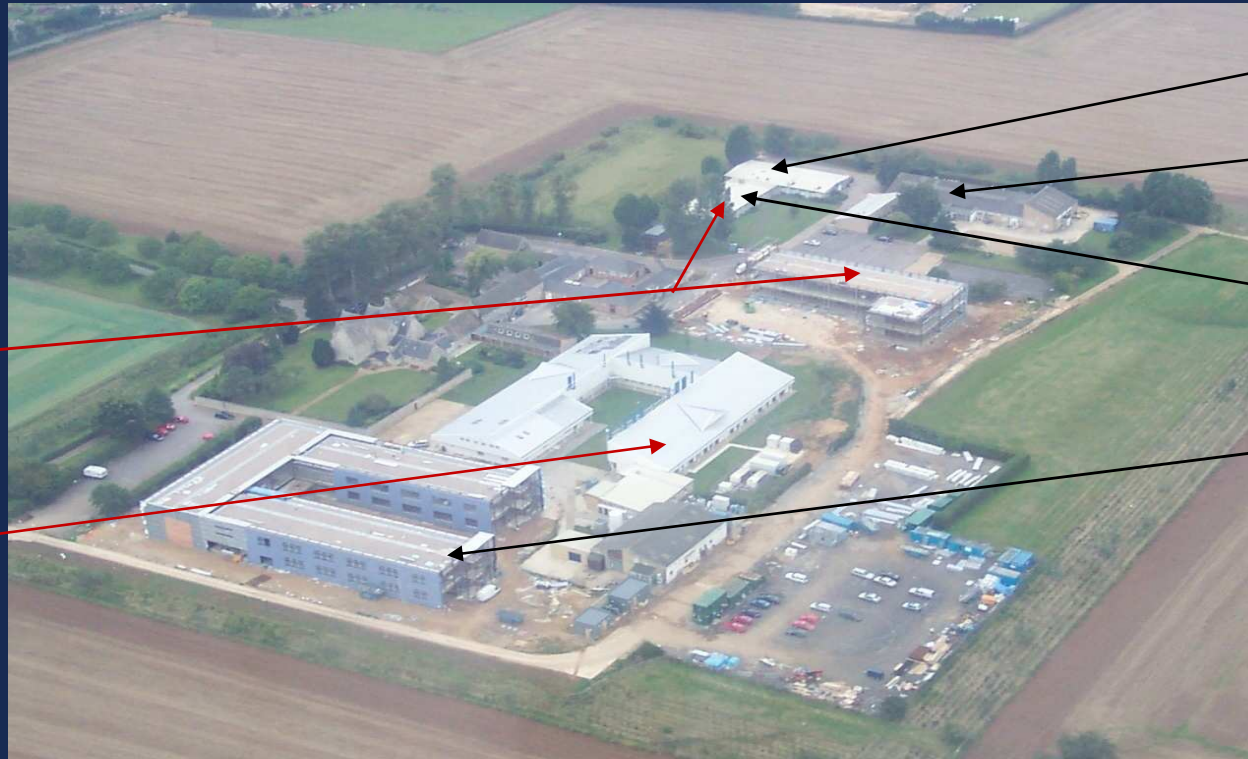


ISIS
INNOVATION

Begbroke Science & Business Park

**Innovation
Centres**

**Dept. of
Materials**



Prolysis

Oxonica

OxLoc

**Oxford Gene
Technology**

- > Owned & operated by Oxford University
- > University research labs
- > Business Incubator & premises for new companies
- > Central meeting room and café

Intellectual Property Policy

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

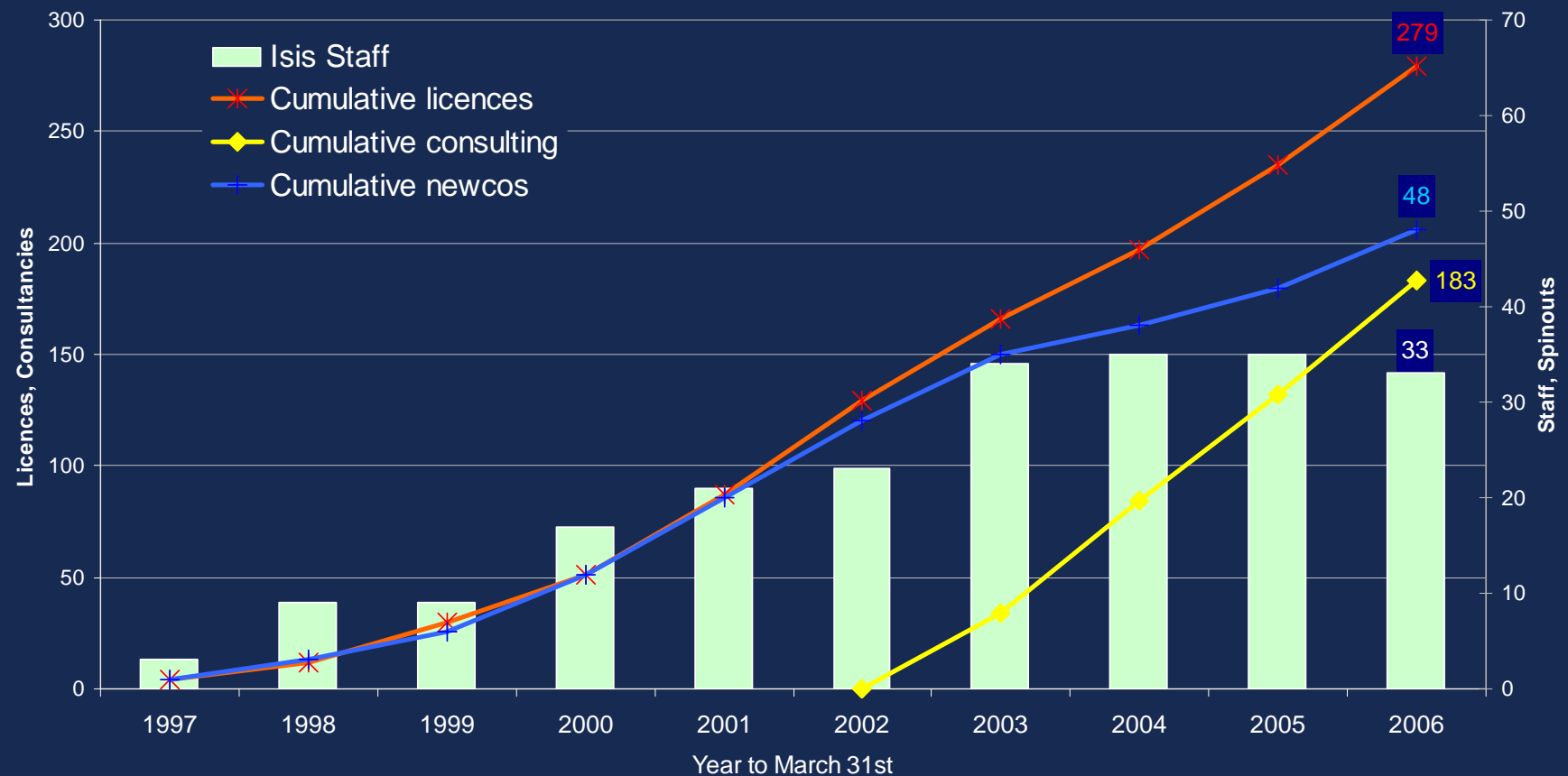
Isis Innovation

- > A company owned by the University of Oxford
- > To help researchers commercialise the results of their research

Activities

■ Patenting	50 p.a.
■ Licensing of intellectual property	30 p.a.
■ Consulting and service contracts	50 p.a.
■ Formation of new companies	8 p.a.

Isis staff, spinouts, licences & consultancies



Isis Innovation People

Administration (12)	Physical Science Group (9)	Life Science Group (9)	Business Innovation & Consulting (6)
<p>Deputy Chairman Dr Tim Cook</p> <p>Managing Director Tom Hockaday</p> <p>Portfolio Manager James Mallinson</p> <p>Lawyer Stephen Brett Emma Wheatley</p> <p>Office Manager Jenny Bailey</p> <p>Marketing Cynthia Warmington</p> <p>Accounts Gemma Allnutt</p> <p>Facilities Jane Tarry</p> <p>Reception Gillian Hicks</p> <p>Isis Enterprise Dr Mark Mawhinney Dr Sarah Macnaughton</p>	<p>Head of Group Dr David Baghurst</p> <p>Project Managers Dr David Churchman Dr David Eastham Dr Jamie Ferguson Dr Mairi Gibbs Terry Pollard Dr Roger Welch Dr Tony Lewis</p> <p>Administrator tba</p>	<p>Head of Group Linda Naylor</p> <p>Project Managers Dr Fiona Begg Dr Dina Chen Dr Colin Story Dr Adam Stoten Dr Suzy Wood Dr Sarah Deakin tba</p> <p>Administrator Anna Pickvance</p>	<p>Head of Group Catherine Quinn</p> <p>Project Managers Andrew Goff Dr Rick Inwood Gill Rowe Dr Elen Wade-Martins</p> <p>Administrator Kerry Antcliffe</p>

Isis Philosophy

- > We support researchers ***who wish to*** transfer technology
- > The researcher's interests are key
- > Our most critical asset is researcher confidence
- > We generate researcher enthusiasm by
 - > Internal marketing
 - > University IP policy
 - > Employing high quality staff experienced in both research and industry

A source of New Companies

- > Between 1959 and 1997 £1billion of public companies were built by managers and investors on Oxford University technology

Oxford Spin-outs Pre 1998

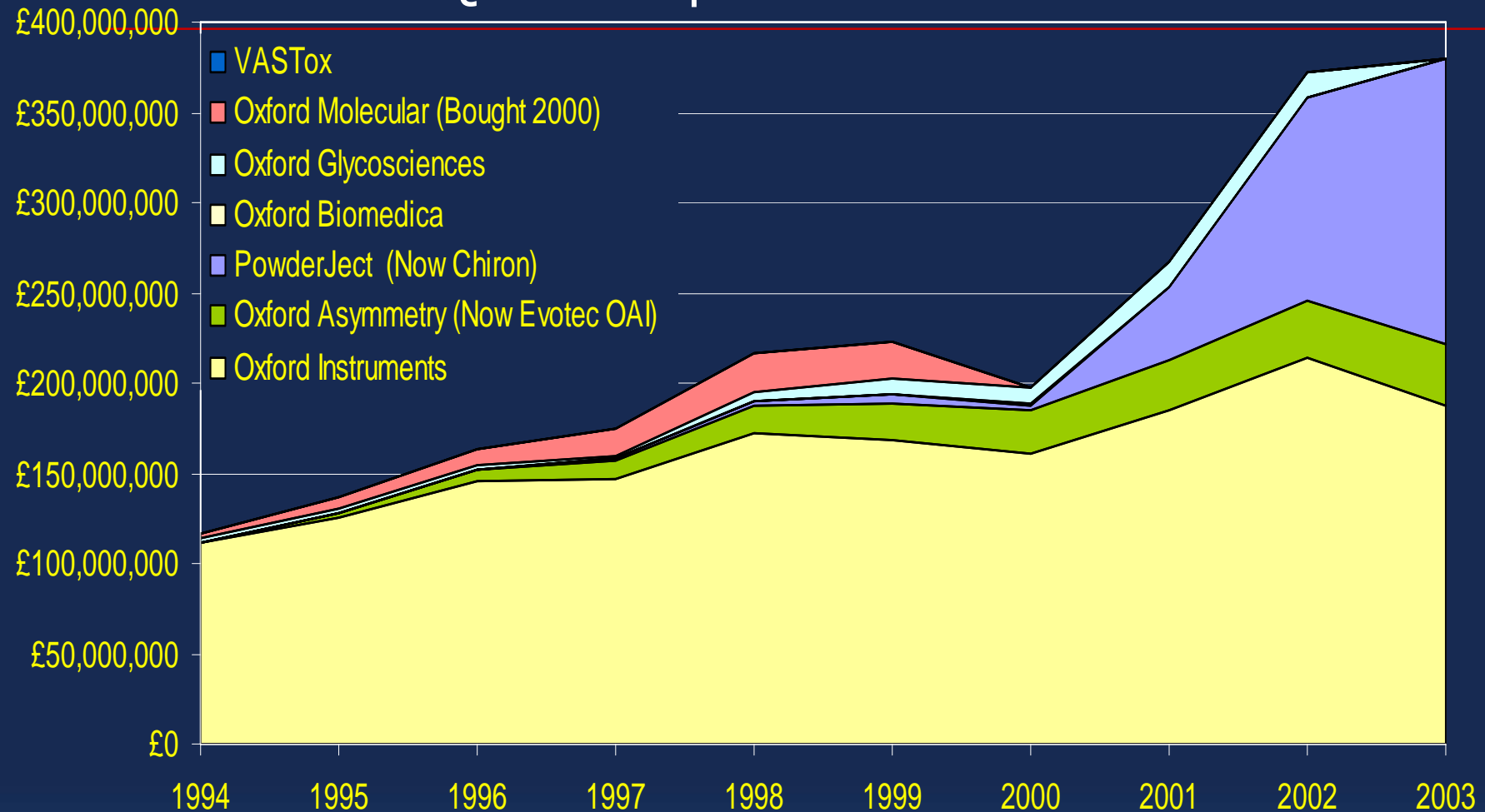
		Capital	Equity	Main Business
1959	Oxford Instruments	£100m	-	Scientific Instruments
1977	Oxford Lasers		-	Lasers
1988	Oxford GlycoSciences	£102m*	Yes	Glycobiology
1989	Oxford Molecular	£53m*	Yes	Drug design
1992	Oxford Asymmetry	£316m*	Yes	Chemistry
1994	PowderJect	£542m*	Yes	Drug delivery
1996	Oxford BioMedica	£137m	Yes	Gene Therapy
1997	Oxagen		Yes	Genetics
1997	Oxford Gene Technology		Yes	Gene chips
Total		£1,250m		
(Quoted valuations at 3/10/2006 or at sale of company*)				

Oxford Spin-outs Post 1998

1998	Feb	Opsys	Displays	2002	Jan	Pharminox	Cancer Drugs
	Mar	Synaptica	Neurodegenerative diseases		Feb	Minervation	Health Information
	Jun	Prolysis	Antibiotics		Mar	Spinox	Artificial silk
	No	Celoxica	IT		May	Zyentia	Protein Structures
	Nov	Sense Therapeutic	Pharmaceuticals		Aug	Oxitec	Insect pest control
1999	Mar	Avidex Pharmaceuticals	Pharmaceuticals		Oct	Oxford Immunotec	TB Diagnostics
	Jun	Oxxon Pharmaccines	Pharmaceuticals		Nov	ORRA	Risk Analysis
	Jun	Dash Technologies	IT		Nov	Glycoform	Cancer drug dev't
	Aug	Oxonica	Nanotechnology		Nov	BioAnalab	Pharma Testing
	Aug	Abington Sensors	Sensors	2003	Feb	VASTOx	Pharma screening
2000	Dec	Oxford Medical Imaging	Image analysis		Jun	ReOx	Drug discovery
	Jan	Third Phase	Clinical trials management		Jul	Riotech	Hepatitis drug dev.
	Apr	Mindweavers	Sensory development	2004	Aug	OCSI	Social inclusion
	May	Oxford BioSignals	Vigilance monitoring		Jun	Oxford Medical Diagnostics	Breath Analysis
	Aug	Oxford BioSensors	Biosensors		Jun	G-Nostics	Anti-smoking test
2001	Dec	TolerRX	Immunology	2005	Nov	Surface Therapeutics	Drug development
	Dec	OXIVA	Medical software		Dec	EKB Technology	Bioprocess Eng'ring
	Dec	PharmaDM	Drug design	2006	May	Oxford Nanolabs	Biosensors
2001	Mar	OxLoc	GPS/GSM tracking		Jun	Oxford RF Sensors	Industrial Sensors
	Mar	Oxford Bee Company	Pollination		Sep	Oxbridge Pulsars	Radar/Comms
	Apr	Oxford Ancestors	Genealogy		Nov	Celleron	Drug discovery
	Apr	Novarc	Press tooling		Dec	Oxford Catalysts	Hydrogen from liquids
	May	Oxford ArchDigital	Digital archaeology	2006	Mar	TdeltaS	Metabolism
2001	Nov	NaturalMotion	Neural networks		Apr	Oxford Medistress	Stress diagnosis
	Dec	Inhibox	Drug searching		Jun	Particle Therapeutics	Drug delivery
					Jly	Aurox	Microscopy
					Sep	Oxford Advance Surfaces	Polymers

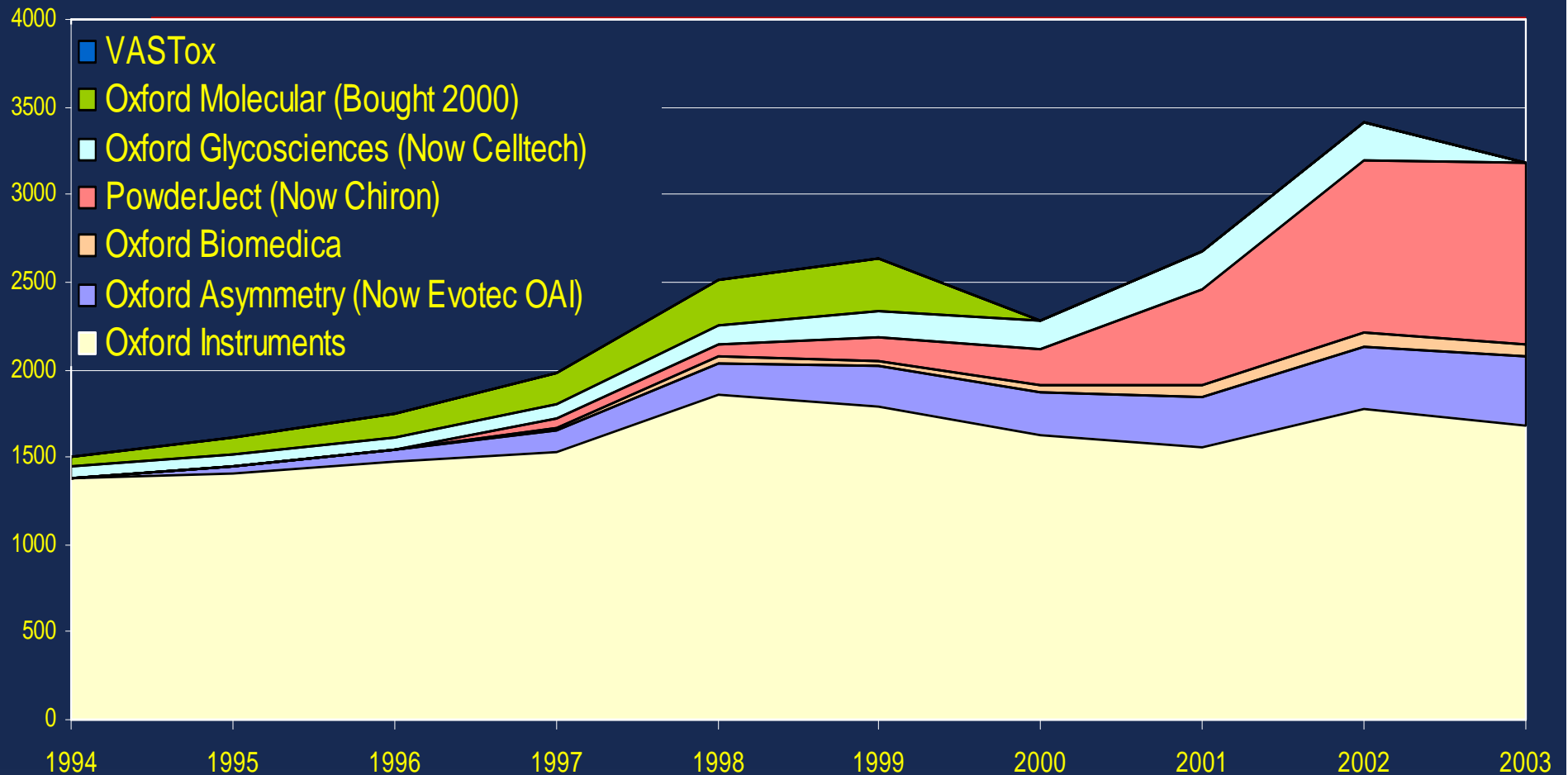
External investment £282m
£30m Seed/Business Angels &
£252 million Institutional/Venture Capital

Turnover of Quoted Spinouts



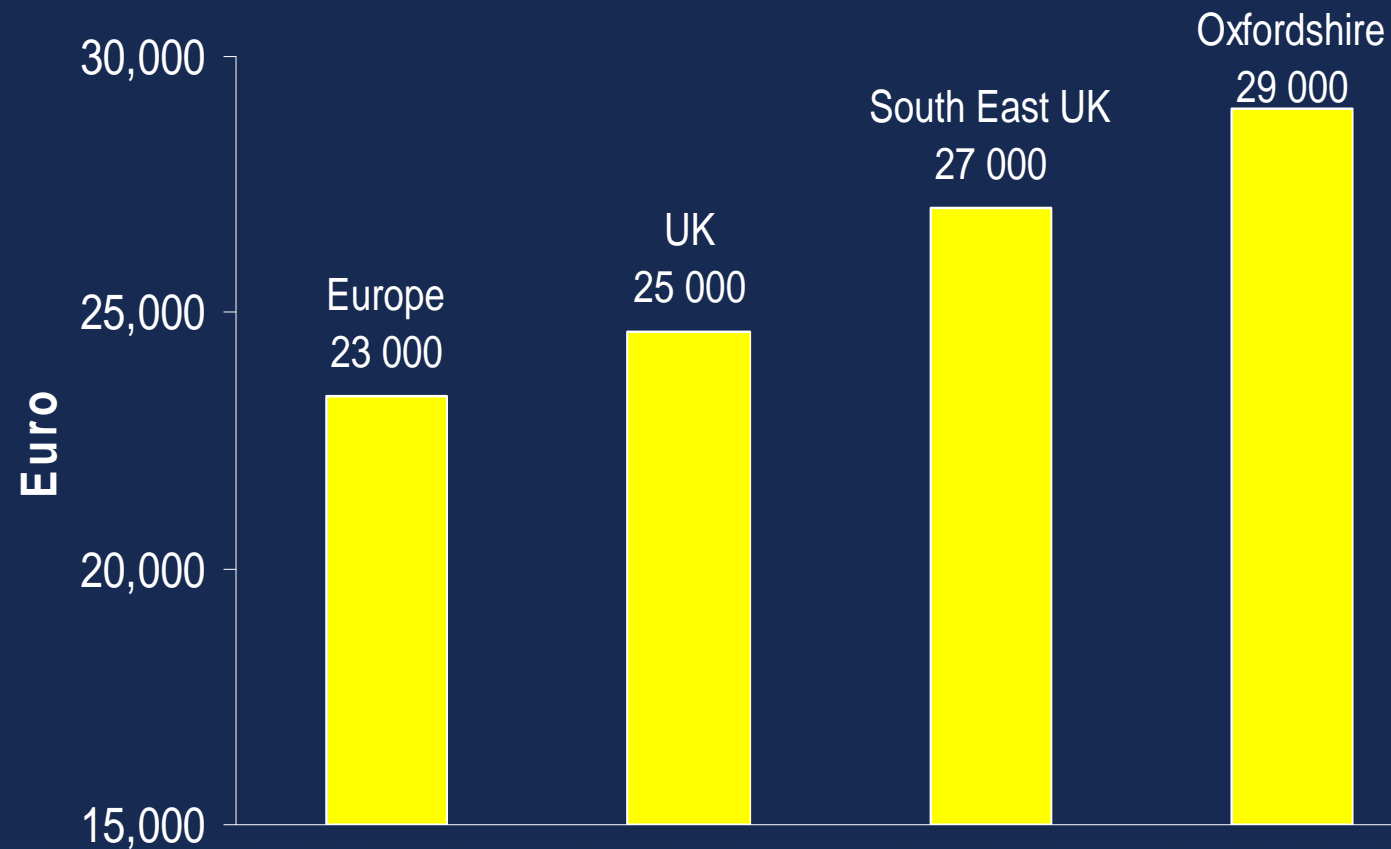
Data Oxford Economic Observatory 2004

Jobs Created by Quoted Spinouts



Data Oxford Economic Observatory 2004

Gross Value Added per head



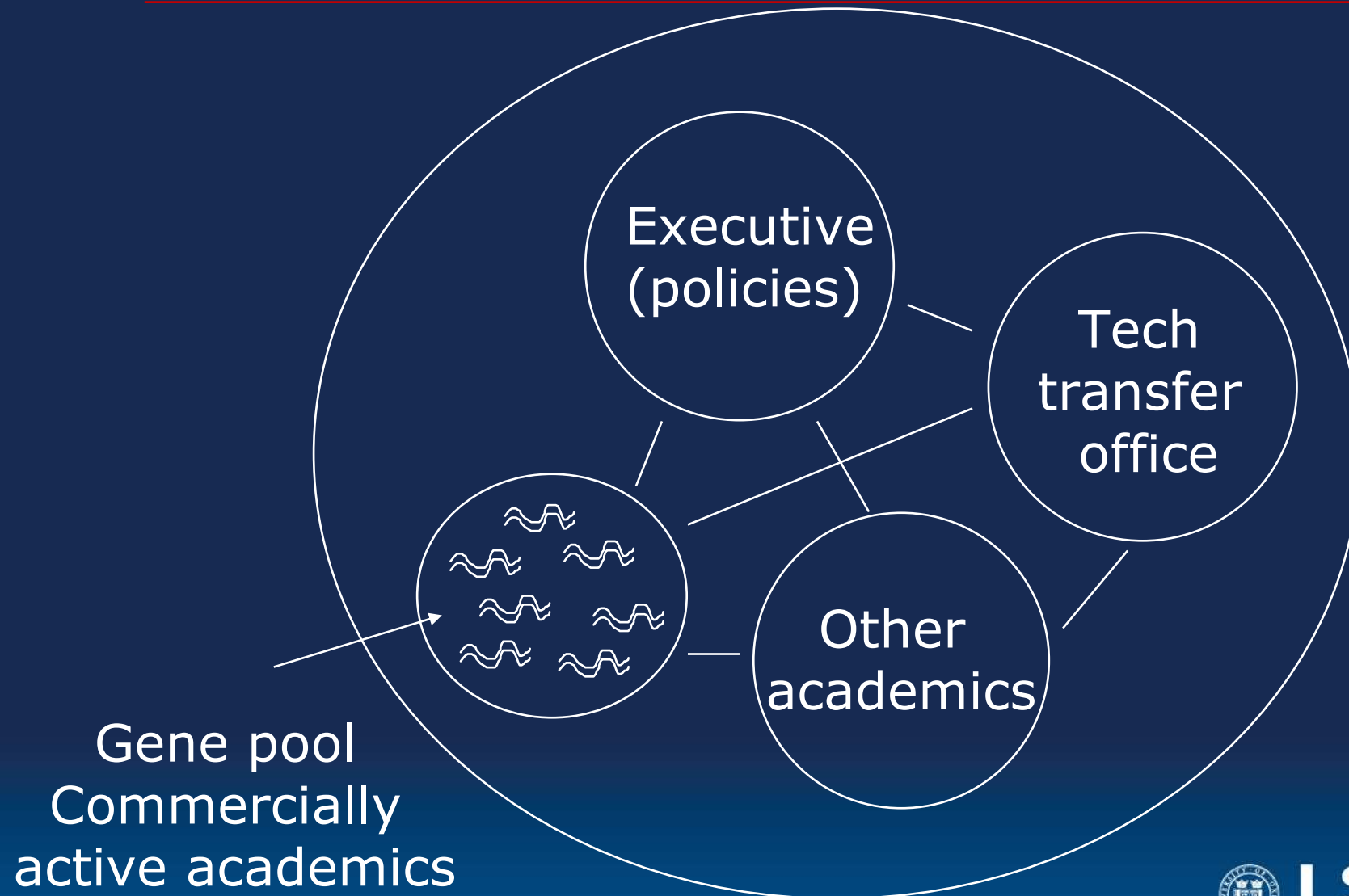
Data Oxford Economic Observatory 2001

Culture Change

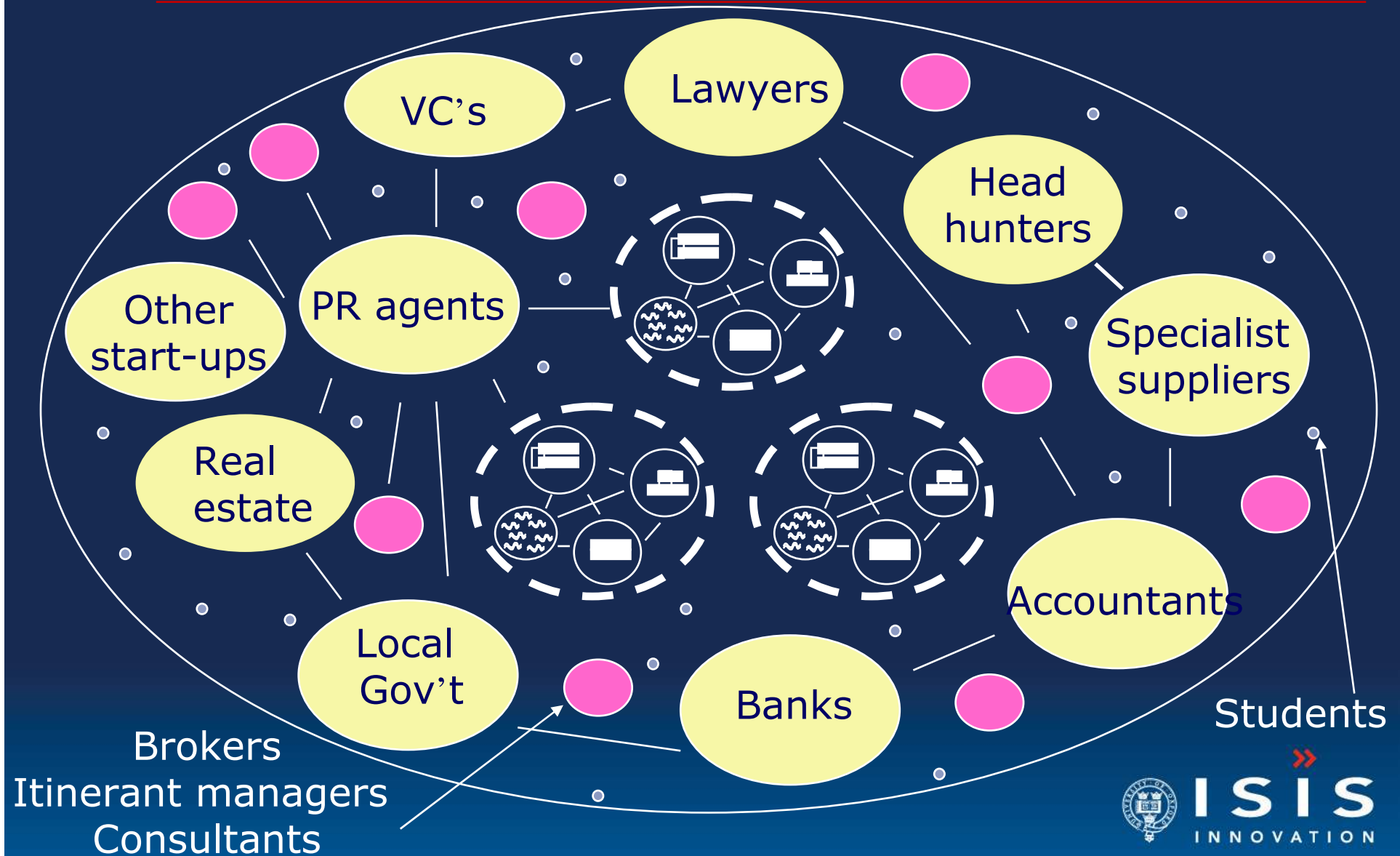


- > All three must proceed together but the University must lead the change because..
 1. The ideas are in the University
 - > If University provides TT resource, change will happen faster
Oxford pre-Isis 1 spin-out every 4 years, post Isis 8 per year
 2. If the University doesn't lead, the University may not receive its share of the benefits

The University



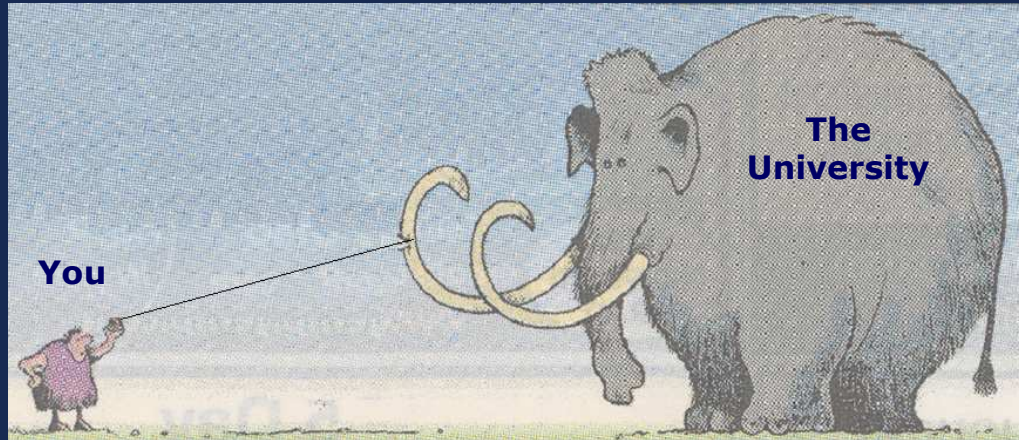
Sub-culture in a barter economy



Conclusions

- > Universities impact local economies in many ways
 - > Attracting people
 - > Educating people
 - > Generating new knowledge
 - > Commercialising via
 - > Consultancy
 - > Licences
 - > Spinouts
- > Oxford University has developed systems for all the above
- > City & University can both benefit from closer collaboration

Managing your relationship with a university



Like leading an elephant with a thin rubber band

- Walk along with the elephant
 - > In whichever direction it chooses to go
 - > Until it gets used to you
- Start to pull gently on your rubber band
- If you pull too hard or too suddenly
 - > You will break your rubber band and
 - > Have no further influence over the elephant

But

- > Don't think you will ever have complete control



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