



# Public – private R&D shared valuation

Measuring the success of public-private R&D valorisation

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# Measuring Success

## NovaUCD



# NovaUCD



- **NovaUCD launched in 2003** – purpose built centre - supportive environment - incubation facilities to assist innovators and entrepreneurs
- **Investment:** €11 million by public/private partnership
- **Grants:** Technology Transfer – 5 years from 2007 (€4 million)



**Deloitte.**

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STOCKBROKERS

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**PROTON**  
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Innovation from Public Research

**NovaUCD**  
**The Innovation and Technology Transfer Centre**



# Integrated Support Programme

NovaUCD's main objectives is to maximise technology transfer from UCD by:

- Developing a **culture** of innovation and entrepreneurship (training, supportive policies, networks, etc)
- Increasing quality, early identification, capture and protection and commercialisation of valuable **IP and innovative ideas**
- Developing **partnerships with industry** (maximise opportunities for collaborative research and licensing)
- Supporting **entrepreneurship and campus companies** (spin-ins and spin-outs)



# The Sponsors – requirements/measures of success

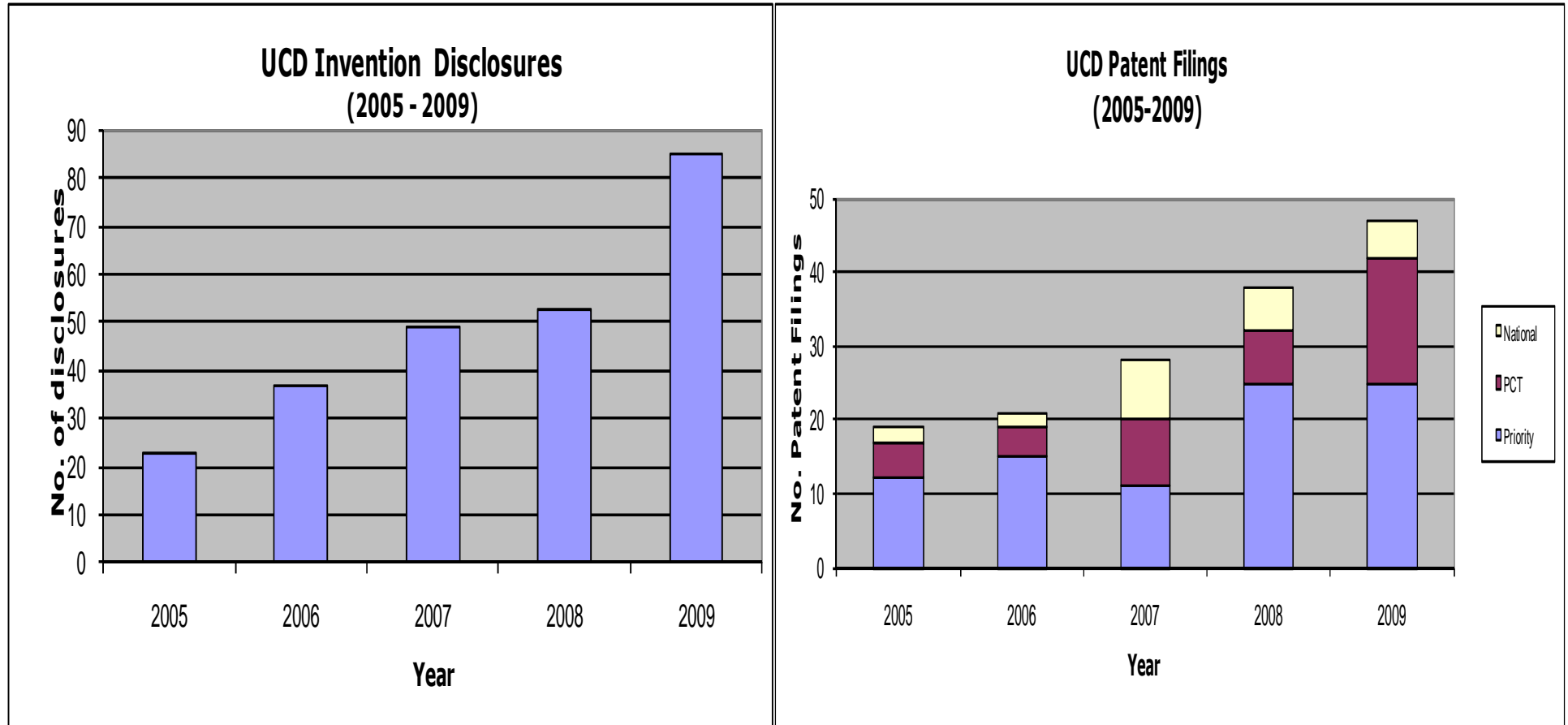
Technology, Finance, Legal/accounting

- PR/Marketing/Communications
- Return on Investment – clarification of expectations
- Access to clients (start-ups and entrepreneurs)
- Access to graduates and research collaboration/outputs

Enterprise Ireland - TTSI



# Measuring Success – TTSI Inventions/Patents 2005-2009





# TTSI Metrics - Comparisons with US/UK

	<b>UCD 2009</b>	<b>UCD 2009 €m Research income per metric</b>	<b>USA 2008 € m Research per metric</b>	<b>UK 07/08 €m Research per metric</b>
<b>Invention disclosure</b>	85	1.07	1.84	1.76
<b>Priority patent application</b>	25	3.66	1.96	3.36
<b>Licence agreements</b>	15	6.10	7.30	3.70
<b>Spin-outs</b>	7	13.09	62.24	29.1
<b>Research income</b>	91.6			





# NovaUCD Companies - Contribution to Economy

To date

- Over **\$200 M** in investment and realisations in UCD companies
- **800 jobs** created by CCDP promoters

Current:

- **30 companies** located in NovaUCD Units
- **> 170 employed** in companies at NovaUCD

Since 2003

- **50 companies** located in NovaUCD Units (33% spin-out)
- **50 projects** availed of desk space
- **70 projects** completed CCDP



# NovaUCD Income / Investment

- **Income and investment over €22 M**

Royalties and shares	€3.5 M
Investment in facilities	€11.1 M
Grants (TTSI, Training etc)	€4 M
Income from facilities and services	€3.5 M

- **Income for innovation**
- **New Building**

**BiancaMed**



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ACCELERATING THE DISCOVERY PROCESS

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# Factors influencing decision making and negotiation Strategies



# Stakeholders

- Funding agency – conflicting objectives (FDI, PhDs, Health, etc)
- Industry – Open innovation – Dealing with universities
  - Indigenous vs Multinational
  - Industry sector
  - Start-up vs established
  - Relationship and trust (long term strategic partnerships)
- Researchers – financial and academic recognition
- Universities
  - Role of University
  - Lack of alignment – Senior management/KTO
  - Managing expectations



# Licensing as source of income for university - managing expectations

- One in a thousand licences between US universities and industry yields >\$1M to the universities – similar data for BTG (Wellings) – role of blockbusters

University of California system:

- Only 4% of licences earned more than \$100,000 per year
- Other 96% had combined income of \$100,000 per year



# Licensing as source of income for university - managing expectations

It takes time to generate income - 2008/09 earnings by year of disclosure for top 25 inventions at University of California

<b>Year of Disclosure</b>	<b>Earnings \$ 1000</b>	<b>%</b>
1980 - 1990	53,949	72
1990 - 2000	17,672	24
2000 - 2010	3,146	4
Total	74,767	100



# Negotiation strategy

Need to take account of:

- Funding agency objectives (e.g. attracting foreign investment)
- Funding agency restrictions (e.g. companies desire for exclusivity or to commercialise outside of Ireland)
- Requirements of university and other stakeholders

Pragmatic engagements

- Create partnerships – long term rewards
- Less emphasis on return

Ensure adequate breaks in contract

- Fixed terms with renewals
- Performance metrics (if appropriate)
- Avoid IP being blocked.

Established companies vs start-up companies



# Licensing to Established Companies

- FDI is seen as a priority
- Potential to build long term strategic partnerships and to facilitate flow of funds for research vs financial return
- Depending on company and IP, terms may include:
  - Upfront payments
  - Annual Payments
  - Royalties (with minimum payments)
- ICT focus on NERFs
- Transparency is major issue





# Licensing to New Ventures

- IP may be key for start-up
- No payments (down payment, milestone payment) until company is cash positive
- Shareholding in Spin-outs (current debate)
- Spin-in model – Economic climate - business expertise and funding – potential to licence/collaborate – no shareholding
- Performance milestones are important
  - Prevent IP from being locked up if company fails
  - VC requirement for assignment – link to milestones



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# New Thinking on Metrics



# International Trends

- UK - Impact on economy, society and health
- US - Initial focus on licensing income to university but ...
  - core mission of university is education, research and community service
  - Losses accepted provided TT has positive impact on community ?
  - Recognition that licensing income is not under control of the university .... Company performance, product, market
  - Move from inputs and outputs to impacts (economic, social, health) and other benefits (even if University exercises little influence)
- Europe – Expert Group has prepared list of core metrics – reviewing possibility of a single metric



# Future Measurement of success ?

- Move from inputs and outputs to impacts (economic, social, health) and other benefits (even if University exercises little influence)
- Link metrics to age of KTO
- For example

<b>&lt; 5 years</b>	Invention disclosures
<b>Inputs</b>	Patents filed
	Confidentiality agreements
	Research agreements / Partnerships
	Image of university



## Future Measures of success (cont)

<b>5 – 10 years</b>	Deals signed
<b>More emphasis on</b>	Licences, options, assignments
<b>outputs</b>	Spin-outs and resulting jobs created
	Increased funding for research
	Licensing income (limited)
<b>&gt; 10 years</b>	Products and services in market place
<b>Impact</b>	Licensing income
	Investment in spin-outs
	Income from dividends or sale of shares
	Increased competitiveness
	Self sufficiency



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# Ensuring acceptance / convergence



# Acceptance of Integrative Approach

- Codes of practice/guidelines (Denmark, France, Ireland, EU)
- Standard contracts (UK (Lambert), Denmark, German, Ireland)
- Networks of KTOs (Germany Patent Exploitation Agencies, PVAs)
- Increased centralisation (Ireland – hub and spoke?)
- National strategy and role of funding agencies
- Legislation
  - Removal of Professor Privilege in Germany, Denmark, Finland
  - Bayh Dole vs Control by funding agencies
- Professionalisation of KT (IKT, EuKTS, ATTP)
- Influence of EC (Innovation Union), Role of ProTon Europe



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# Summary of issues





# Measuring Success - Summary of Issues

- Need to manage expectations – success rate and timing
- Conflicting objectives of stakeholders – Impact on resourcing of KTOs and recognition of KT profession – in all sectors
- Focus on building partnerships and economic/social impact
- Current metrics (input/output) for measuring success
  - Negative impact on performance ?
  - Quality vs quantity ?
  - Benchmarking against international averages - is it good enough ?
- Need to move from inputs to outputs to impacts depending on age of KTO
- Acceptance of integrative approach and related metrics

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Thank You

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# Measuring Success

## Trends in UK, US, Europe



# UK – Focus on Impact

## **New thinking on impact**

- HEFCE collect comprehensive data which determines third leg funding
- In future funding to be based on retrospective and future impact
- Impact on economy, society and health
- Value for money
- Managed expectations regarding direct income



# USA -Results

## AUTM Study 1991 - 2006



Research income	\$445 b	
Invention Disclosures	194,000	\$2.3m /disclosure
Patent applications	97,000	50% move forward \$4.6m /Patent app.
Issued patents	42,000	\$10.6m /Patent issued
Active licences	35,000	18% of disclosures
Start-ups	5,800	16% of licences 3% of disclosures



# USA – New thinking on Impact

## New thinking on impact

- Initial focus on licensing income to university but ...
  - core mission of university is education, research and community service
  - Losses accepted provided TT has positive impact on community ?
  - Recognition that licensing income is not under control of the university .... Company performance, product, market
  
- Thinking on criteria for success that takes account of:
  - Attraction of external research grants
  - TT budget of institution
  - Number of licensing deals signed
  - Number of products in market place
  - Number of spin-outs and jobs created
  - Financial investment in product development in company
  - Local impact of testing facilities, research parks, incubators



# USA Data

## 2008 AUTM Licensing survey

- 648 new products introduced to market from academia
- 5,680 new products between 1998 and 2008
- 5,039 licence deals in 2008 of which
  - 88% to established firms and 12% to create start-ups
- 12,600 licences generating income

## Increasing emphasis on start-ups (AUTM 2008)

- 6,800 start-ups since 1980 of which 50% are still operating
- Increase in licences to start-ups

Year	Start-ups	To small companies	Large companies
1999	12%	50%	38%
2006	15%	49%	33%

- 80% of the 30 largest research universities provide gap funding
- VCs invest less than 2% in early stage companies



# EC Expert Group on KT metrics

<b>Core Metrics</b>	<b>Supplementary Metrics</b>	<b>Data on KTOs/PROs</b>
Research agreements	KT involving SMEs	Type(s) and number of affiliated PROs
Invention disclosures	KT involving indigenous	KTO size
Patent applications	KT involving research organisation's own region	Total KTO costs
Patent grants	Exclusive licenses	Outsourcing of KTO services
Licences executed	Share of valid patent portfolio licensed	Reference year for data collected
License income earned	Patent share of license income	Research expenditure
Spin-offs established	Technology areas for patenting	Research personnel

**Future – Single metric to measure innovation**

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# Resourcing of KTO



# Implications for KTOs



- KT Offices not properly resourced (% of Research Expenditure)
- Economic downturn – consideration given to shared services /outsourcing /academic KT centres
- Stand off between university and state regarding who should fund
- Need for long term commitment
- Method of funding (third leg of block grant, based on results ?)
- Lack of professional recognition