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Metrics for Technology Transfer - Measuring Engagement and Impact

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Metrics for Technology Transfer - Measuring Engagement and Impact

Speakers:

Kevin Cullen, *PhD, RTTP, Chief Executive Officer
UNSW Innovations, Australia*

John Ritter, *MBA, JD, Director, Office of Technology Licensing
Princeton University*

August 30, 2016



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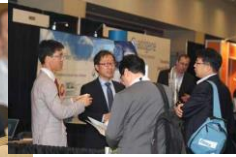
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- AUTM Salary Survey
- AUTM Technology Transfer Practice Manual
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Kevin Cullen, PhD, RTTP,
UNSW Innovations, Australia



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John F. Ritter, JD, MBA,
Princeton University



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**Engagement Metrics to Measure Technology
Transfer Office Performance PART II**

Kevin Cullen, PhD., RTTP

Chief Executive Officer
UNSW Innovations
UNSW Australia

John F. Ritter M.B.A. , J.D.

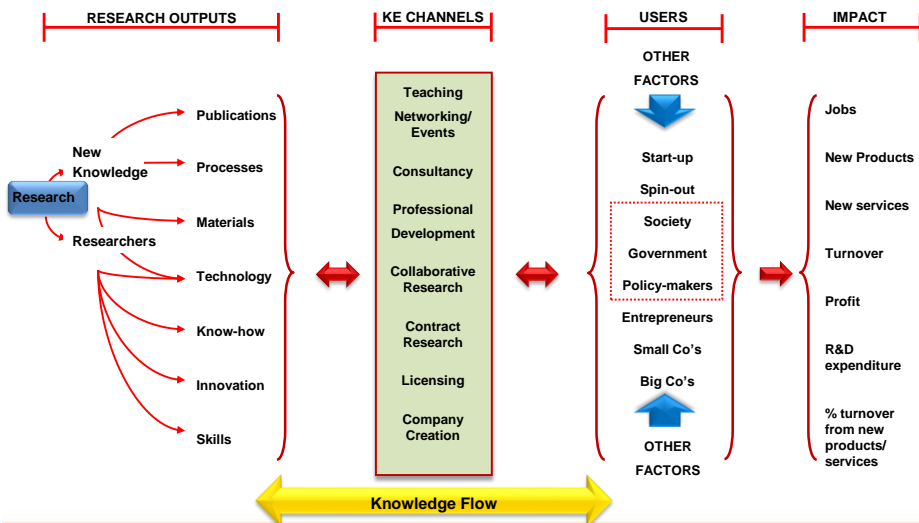
Director, Office of Technology Licensing
Immediate Past Vice President, Metrics and Surveys, AUTM
Princeton University

Metrics - Measuring What ?

- Technology Transfer Metrics have been a subject of intense discussion for decades.
- Everyone believes we should be measuring Tech Transfer, but there is not yet consensus on what the measures should be:
 - Activity?
 - Money?
 - Impact?

..... Looking at the system

Knowledge Exchange Model

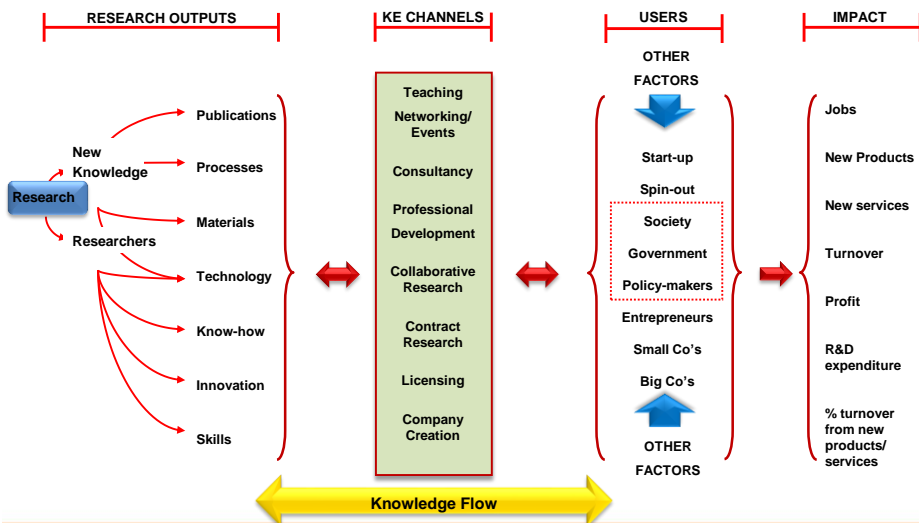


What to Measure?

We will look first at what people have measured.

Then we'll look at what we should measure:

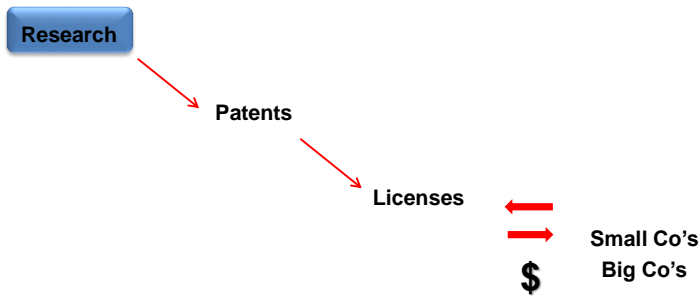
Knowledge Exchange Model



Traditionally, Government Measures



In 1991 AUTM Started Measuring (25th Anniversary this year!)



Activity Measures

- Activity is the precursor to everything
- Work out what *your* key activities are.....and count them – every institution has a different culture and places different values on different activities!!!!!!
 - invention disclosures received
 - patents filed
 - companies visited
 - new academics engaged
 - marketing materials issued
 - CDA's executed
 - new faculty inventors
- You choose your own, based on what you think is important

Slide No. 19

Activity Measures, continued

- If I can completely control the metric, it isn't useful for performance or target setting, for example:
 - patents filed versus invention disclosures
 - marketing briefs issued versus CDA's executed.
 - discussions with companies versus licenses/options executed
 - Revenues versus licenses/options executed.

Activity measures, of course, are useful as a precursor to 'Outcome Measures'

Slide No. 20

Outcome Measures

- Showing that something has come from the activity we discussed before
- More concrete and relies upon a decision by a 3rd Party – that is we do not have complete control:
 - Industry Research contracts signed
 - CDA's, MTA's signed
 - Licence/option agreements executed
 - Start-ups
 - Consultancy project funded
 - Technical training programme for the company agreed
 - Joint grant application submitted

...again, you choose the ones relevant to your business

Slide No. 21

Outcome Measures

- Should result from your activities – though not always directly
- Require a commitment by a third party – often money, but not necessarily
- Even when money is part of the commitment, it may not involve cash flowing (e.g. royalty agreement, joint grant application)
- In our model, should reflect the creation of a formal connection through one of the channels

.....given many outcomes and some time and some luck, you should hopefully be able to look at impact measures.

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Impact Metrics

When University research outcomes lead to something that affects the outside world

Economic

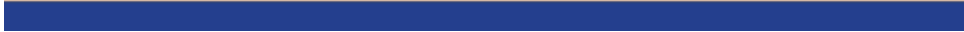
- ❖ Jobs
- ❖ Revenues
- ❖ Taxes
- ❖ Companies
- ❖ Products

Social

- ❖ Cures and Treatments for Diseases
- ❖ Reduction in Healthcare Costs
- ❖ Food Supply Improvements
- ❖ Green energy production and storage
- ❖ Public policy improvements



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And this is exactly what Governments are looking at

Research

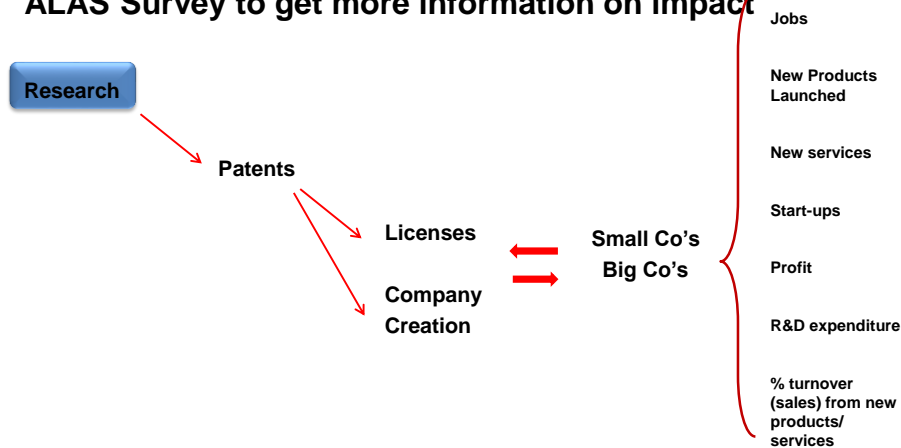
IMPACT

- Jobs
- New Products
- New services
- Turnover
- Profit
- R&D expenditure
- % turnover from new products/ services

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AUTM has therefore been constantly tinkering with the ALAS Survey to get more information on impact



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Questions asked in recent years to get more at impact include:

- Start-ups
 - # of SBIR/STTR startups
 - Start-ups in your home state
 - Start-ups operational; not operational
 - Staffing (discontinued)
 - Names of significant start-ups
 - Additional detailed funding questions were asked 2004 – 2010 but discontinued
- Other New Companies receiving support
- Product sales
- New Products launched?
- Names of New products (discontinued)

However, it's Difficult to capture Impact Metrics!

- Impact takes a long time to come through, and links to the University can be forgotten
- Operational Outcomes must be tracked over time
- Companies don't realise this information is important to Universities
- Survey fatigue!

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So, it's more than just numbers....



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And, Put A Face On It Videos

<https://www.youtube.com/watch?v=Is83Bvf0NIg>

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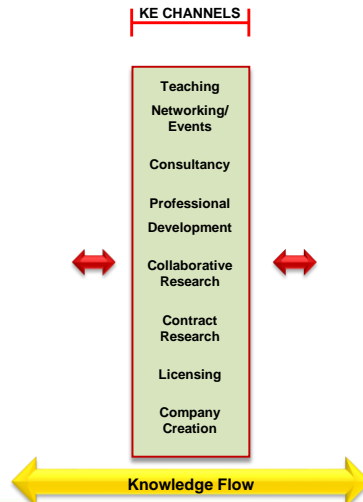
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So, we (and many others) are trying to find ways of understanding the system and the ways in which university research makes a difference

We, as Tech Transfer Professionals, have a really strong interest in understanding and demonstrating the impacts and benefits across the system

Unfortunately, the only part we control (even part of) is

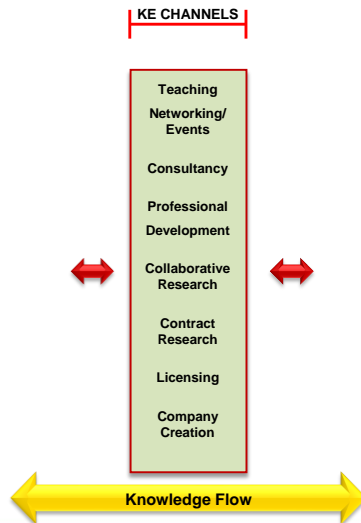


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Inherent Challenge

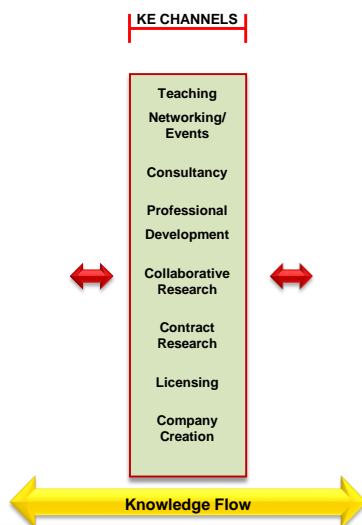
- People are measuring parts of the system and drawing conclusions that affect us.
- We argue that the most effective measure for us, as Tech Transfer Professionals, is engagement.
- Capturing the flow of money and knowledge through the 'channels' is the best proxy we have.

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- If these are the channels, then measure flow through the channels.
- \$ flow is a reasonable proxy for volume and quality of flow.
 - it is objective (3rd party decision)
 - it is auditable
 - it is very difficult to game
 - data can be collected in a reasonable timescale
 - the data already exist
 - it has been shown to be robust

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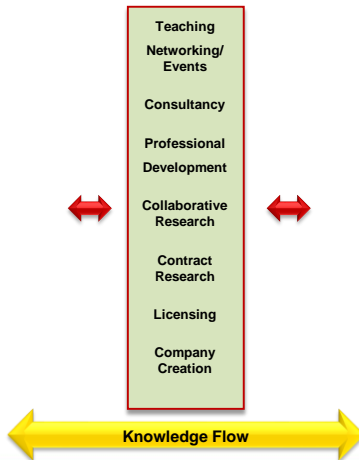


The measures are also ones that we can control – which is a key requirement for a valid measure:

- We can make them faster or slower, easier or more difficult, cheaper or more expensive....
- We can put in place strategies and mechanisms and incentives to improve or enhance flow
- If the money flow increases, that's a reasonable indication that more knowledge is being transferred.
- The numbers are also very big compared with commercialisation data, which surprises some people (in a good way)

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KE CHANNELS



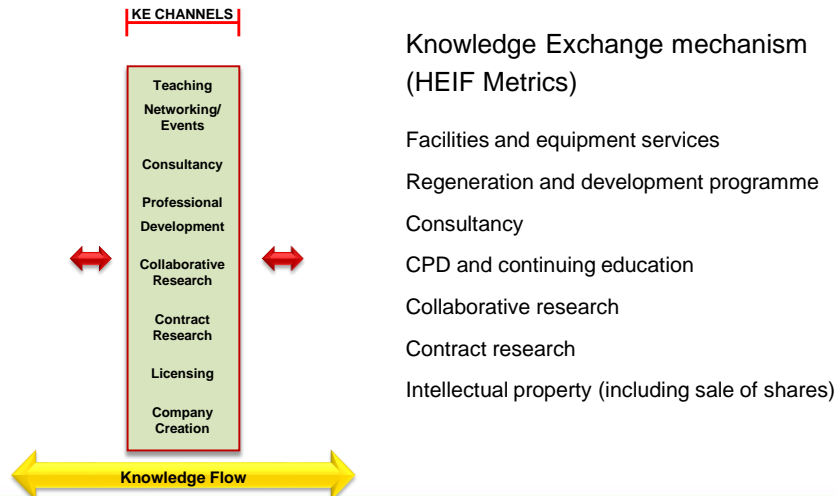
There are, of course, down-sides:

- Purely financial measures miss huge amounts of unfunded activity.
- The tech Transfer message is “it’s not all about the money”, but these metrics say that it is!
- Some worry that the Financial approach benefits some disciplines more than others (although that has not been my experience)
- My view is that the benefits outweigh the disadvantages:
- A robust, rational and auditable measure
- Quantitatively shows the large scale of University of Knowledge Transfer

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- Accepting that there will always be pros and cons to any metric, lets look at Engagement Metrics data.

Knowledge Exchange Channels



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Knowledge Exchange Channels

	Knowledge Exchange mechanism	% Revenue
Teaching Networking/ Events	Facilities and equipment services	4
Consultancy	Regeneration and development programmes	5
Professional Development	Consultancy	11
Collaborative Research	CPD and continuing education	20
Contract Research	Collaborative research	23
Licensing	Contract research	34
Company Creation	Intellectual property (including sale of shares)	2

TOMAS COATES ULRICHSEN: Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector Report for HEFCE April 2014

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Knowledge Exchange Channels

Soooooooo.....

IP is in fact the smallest channel in the UK – 2% of revenue.

2% of Revenue, but made up 98% of the policy debate.....until
Engagement Metrics!

But surely that doesn't mean it's the same elsewhere?

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Knowledge Exchange Channels Australia

Knowledge exchange mechanism % Revenue

- All other Engagement mechanisms measured 95.5
- Intellectual property (including sale of shares) 4.5

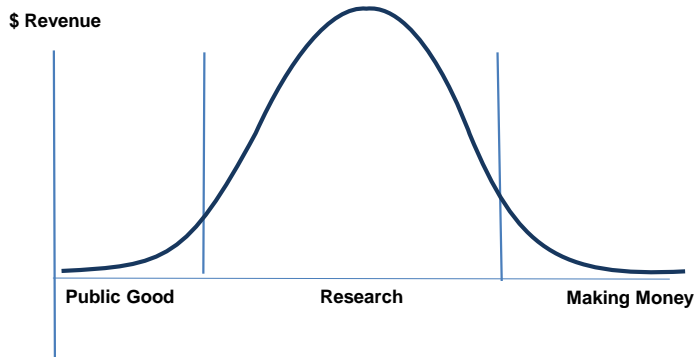
NSRC Data for 2014, released May 2016

It's the same order of magnitude.

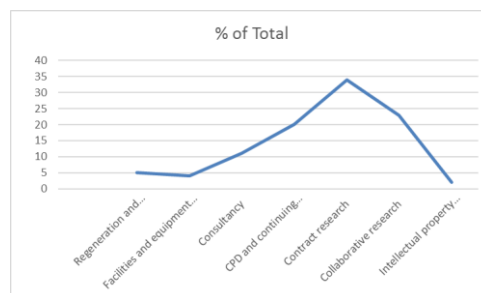
And now we have UNSW data for all the channels

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In 2005, with KE data unavailable, we predicted that the revenue curve across the range of KE activities would resemble a bell-curve, with small revenues in outreach and commercialisation and the bulk of revenue relating to Knowledge Exchange-related research activities.



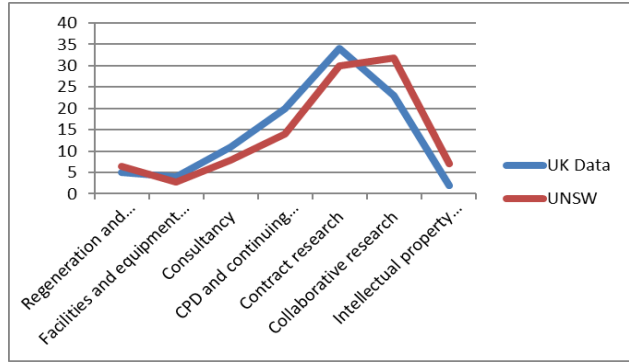
- UK Data
 - 57% of the total is represented by contract and collaborative research
 - CPD and Consultancy contribute over 30% combined
 - IP is the smallest single component





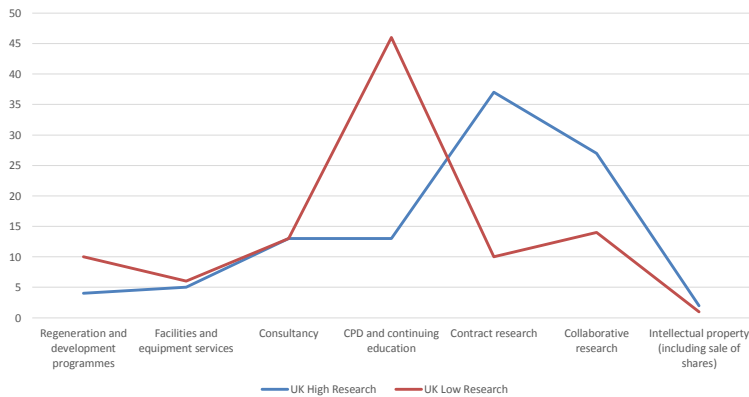
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UNSW Data compared with UK Data - the profiles are remarkably similar,



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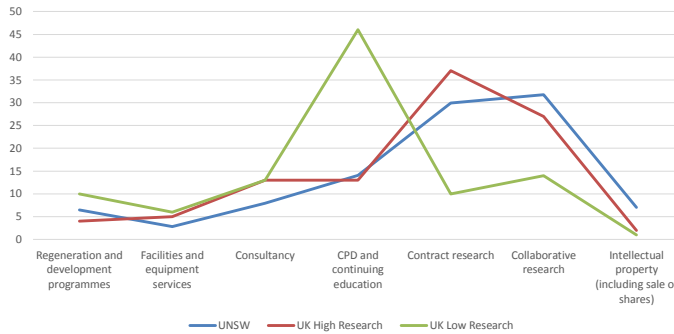
- The UK data have been broken out by Research-intensive vs non-research-intensive, which shows a distinct shift in the shape of the curve.





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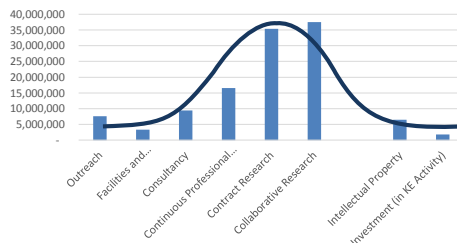
- UNSW Data maps more closely to research-intensive – which makes UNSW happy!



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In Summary

- The data correlate extremely well between UK and Australia
- The UK and UNSW Data fit reasonably well with the curve originally predicted.
- We believe that the correlation will extend across most geographies
- As Technology Managers, we must recognise that Engagement is much broader than IP commercialisation.





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Engagement Metrics

- The most appropriate short term measure/proxy for looking at Tech Transfer/Knowledge Exchange Performance.

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Thank you for listening

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Acknowledgements

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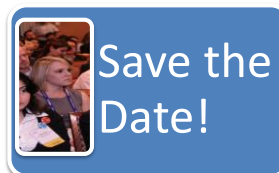
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