

**How well we are doing at Tech Transfer...
and how do we know?**

Copenmind

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- Everyone wants to measure us – including us.
- There are a wide range of views on what should be measured and what can be measured.
- Today I will talk about
 - what we currently measure
 - what we should be measuring
 - what we can measure

- KT/Licensing Survey
 - AUTM started it a long time ago
 - As commercialisation has developed, other people around the world developed similar things (disclosures, patents, licences, start-ups).
 - We developed the ASTP survey

ASTP Survey for Fiscal Year 2007

Draft August 2008

by

Anthony Arundel, Catalina Bordoy and Minna Kanerva

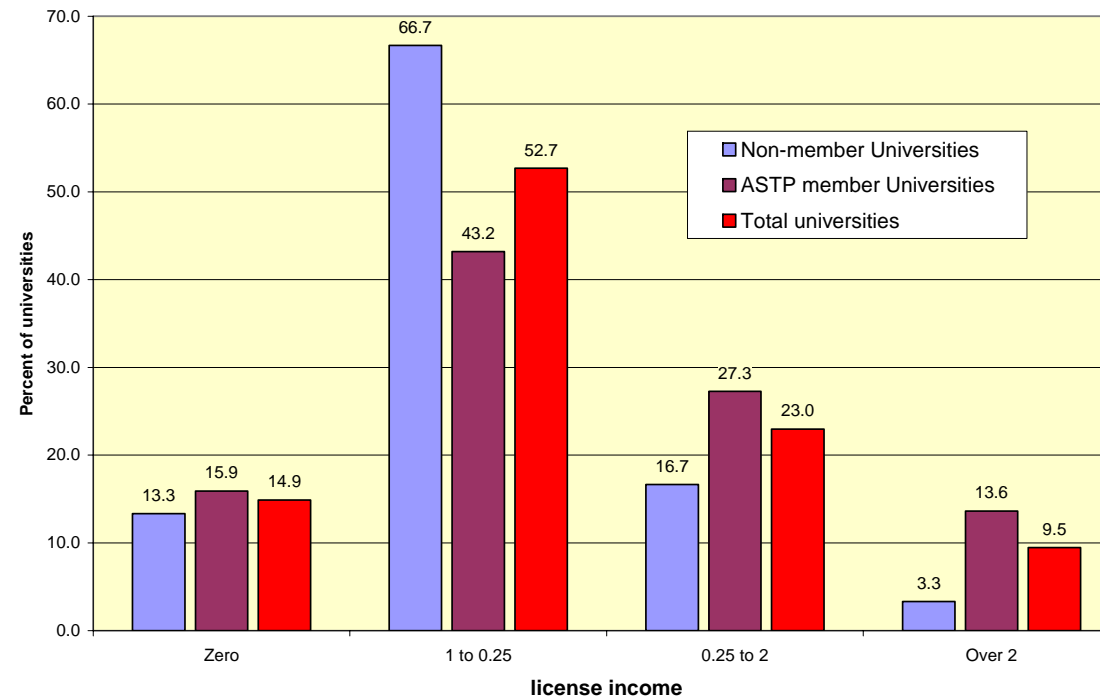
We do not yet have the historical analysis or comparisons versus AUTM data – but they are coming.

Survey looked at

- R&D agreements.
- Invention disclosures.
- Patent applications and grants
- Technically unique patent grants.
- License or option agreements.
- Start-ups established.

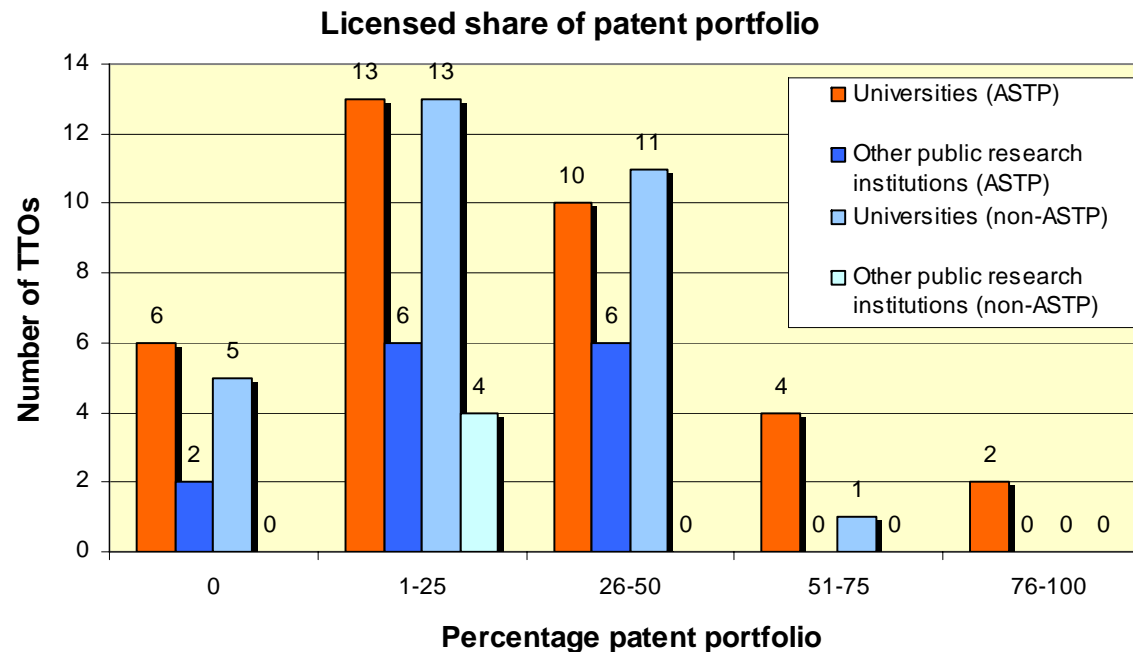
...some points worth noting:

Distribution of license revenue (million PPP\$) for universities



- Most universities make less than \$2m per annum
- 2/3 make less than \$0.25m
- If you make anything at all, you're doing ok

Share of Portfolio Licenced



- The vast majority licence less than half of their patents.
- That so many manage to licence between a quarter and half of all patents is quite an achievement.

Who we licence to

Table 3.4 Licences and option agreements granted to start-ups and to firms with less than or more than 250 employees (2007)¹

	Total licences	Distribution of licences			
		Start ups	Other firms < 250 employees	Firms with > 250 employees	
Universities					
Other TTOs	243	20%	38%	42%	100%
ASTP members	483	24%	38%	38%	100%
<i>Total</i>	726	22%	38%	39%	100%

- Almost a quarter of licences are to start-ups
- Less than a half are to big companies
- Almost 40% to SMEs - we are doing what policy-makers want to see.

Efficiency Measures?

Table 4.2 Unit outcome costs in million PPP\$ of research expenditure, 2007

	Universities		
	ASTP members	Other TTOs	Total
Invention disclosures	3.3	2.1	3
Patent applications	9.1	4.6	7.6
Patent grants	23.4	15.3	21
USPTO patent grants	54	107.1	61
License agreements	10.8	9	10.4
License income ²	76.0 m PPP\$	122.2 m PPP\$	82.9 m PPP\$
Start-ups established	34.9	32.2	34.4
Research agreements	0.5	0.2	0.8

- Are these efficiency measures???
- This is where mischief can occur – a causal link is assumed.
- Double my research income and all my numbers get worse

- So we see lots of activity on patenting and licensing and that is all good.
- the survey tells us what is happening in terms of commercialising IP.

Is that enough?

- NO!
- Almost everyone would agree that licensing activity data, whilst useful, does not tell the whole story.
- It does not capture many of the benefits that derive from University Knowledge Transfer.

....but why is that?

....but why is that?

- Because it is “not all about the money”!
- So what is it about then?
- Unless we know what it is all about and what we are actually trying to do, we’re not really going to be able to say whether or not we’re doing it well.....are we?
- This is the big metrics conundrum. Everyone wants to measure how successful we are, but no one is really sure what success is.
- I work for a University, so, if I want to measure how well I’m performing, I need to know what I’m trying to achieve....right?

**So, what is the university trying to
achieve**

Well, the University exists to:

- **Create knowledge**
- **Disseminate knowledge**

- Publication - dissemination to academic peers
- Teaching – dissemination to students
- Knowledge Transfer – dissemination to industry/society/economy

so...Knowledge transfer can be viewed simply as the 3rd Dissemination channel, alongside publication and teaching. It fits comfortably within the university mission.

- KT Fits in the University mission, but what does success look like?
- If we are disseminating knowledge successfully, what results from it?
- From our point of view success results in EITHER
 - A public good being delivered OR
 - The University makes money from it
- Both of these are successes, but they are very different in their nature (and the way we manage them).

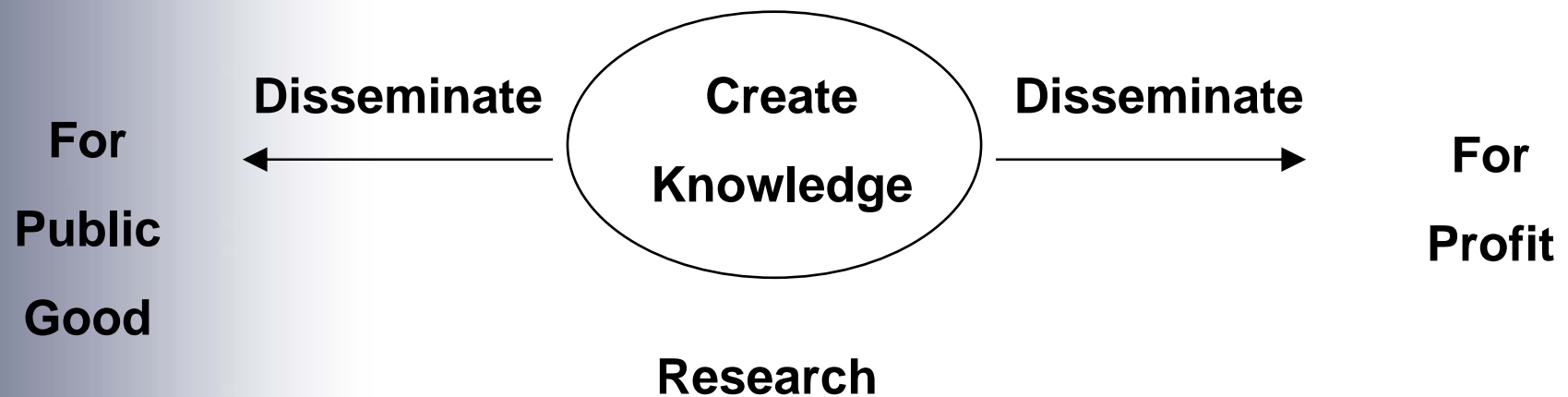
Examples

	Public Good	Academic reasons	Revenue/Profit
Student Placements	yes	-	no
Licences	no	-	yes
Contract Research	no	-	yes
Spin-outs	no	-	yes
SME Networks	yes	-	no
Student enterprise	yes	-	no

- In our model we decide, on a project by project basis, whether the PRIMARY objective is to make money or to deliver a public good.
- It is very important to decide, because failing to decide will cause problems later on...and I'll come back to that.

In our model....

In our Model:



Outreach

**SME support/
Student
support**

Research

**Collab/
Contract
Research**

Outcome

**Licensing
Spin-outs**



A coherent spectrum of objectives, activities and beneficiaries

	Outreach	Research	Outcome
Objectives	Public Good	Create	Profit
Partners	EDA	Research Funders	Investors
Financial returns	None	Cover costs	Can be significant
Beneficiaries	Students, Small Co's, Society, Economy	Knowledge Base	University

The financial profile changes across the spectrum....

Financial Profile Across the Spectrum

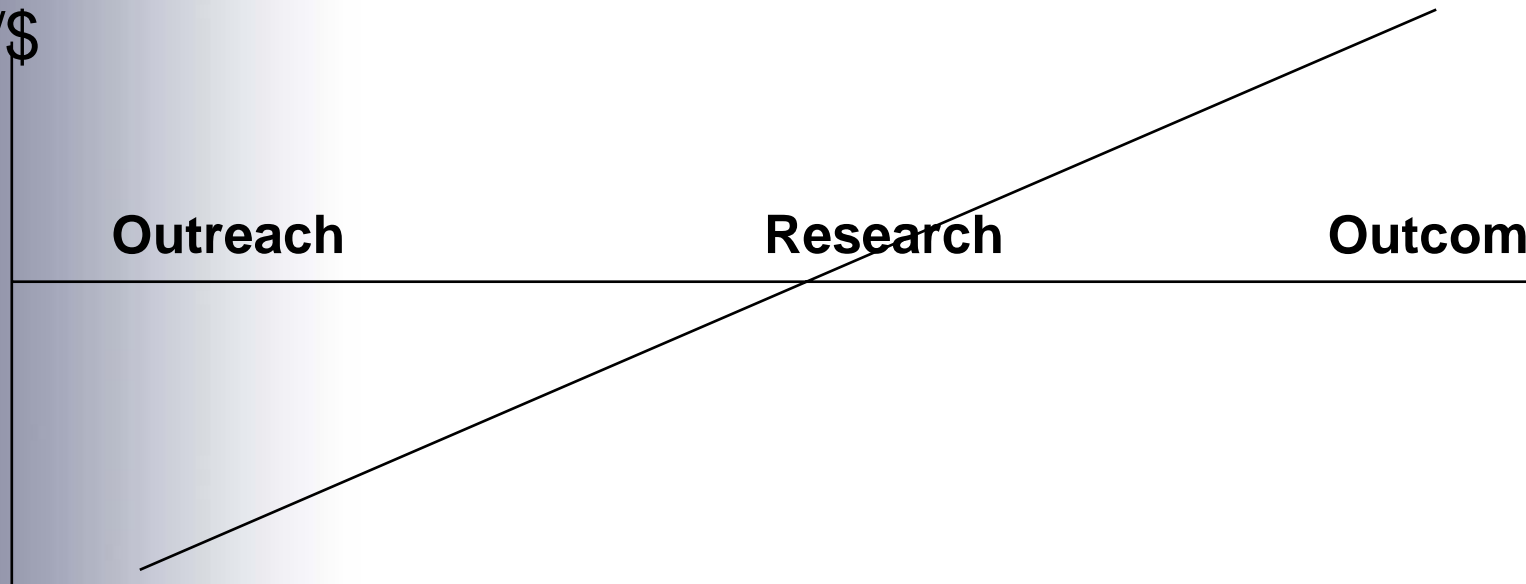
Return to University

£/\$

Outreach

Research

Outcome



- At the left we are behaving like agents of economic development.
- At the right we are behaving like venturers/entrepreneurs.
- Both are legitimate, but they look and feel different – and have different types of success.

....examples to think about.

Example 1

Opto-electronic device manufacture

- £8m VC investment for £14m valuation
- University retains 25% equity
- 3% Royalty stream
- Company setting up in Far East
- Acquiring two Scottish consultancies to build Far East research base

Is this success?

Example 2

Interactive web-design consultancy

- **Two RAs working from incubator**
- **Applying for SMART Award (£45k)**
- **Help with marketing/networks/workspace**
- **University has no equity or licence position**
- **Winner of young design entrepreneur award**
- **Invited to speak at schools enterprise workshop**

Is this success?

Note that:

- economic development done well will result in people making money
- people making money will result in economic development

BUT

- economic developers are not measured on how much money they make and
- businesses are not measured on how much economic development they do.

We must not fall into the trap of saying we can make money and do economic development at the same time....there will always be a choice to make.

- So, as we move across this spectrum, we need measures for these different types of activities.
- At the money-making end, commercial measures make sense.
- At the other end it becomes more tricky.
- In all cases though we would like to measure...

- Volume of Activity
- Quality
- Impact

Outreach



Outcome

	Outreach Activities	Research & Technology Dev., Contract Research	Licensing	Venturing
Activity	No. of: <ul style="list-style-type: none"> • SMEs worked with • Student placements • Companies created • Networking events 	No. of: <ul style="list-style-type: none"> • Research Awards • Consultancy • CPD • Proof of Concept 	No. of: <ul style="list-style-type: none"> • Disclosures • Patent Applications • Patents Granted • Options Granted 	No. of: <ul style="list-style-type: none"> • Business Plans • Joint Ventures • Companies leveraging in external investments
Quality	Income in support of activities and feedback	Income: <ul style="list-style-type: none"> • Research (HESA) • Consultancy • Etc. 	Income from licensing, cash or equity value upon realisation	Value of equity realisation
Impact	Longitudinal and difficult to track	No. of jobs created in HEIs	Export income, no. of jobs created in HEIs	No of jobs created, turnover and realisation of equity

- Volume is pretty easy - counting stuff
- Quality is tricky - measuring quality always is
- Impact – the most important, but long term and difficult to track.

The best metrics systems I have seen tend to end up based on income/revenues (not profit), because income gives some sort of proxy for volume x quality.

....but what about impact?!

- Most people would agree that impact measures would be the best.
- Why has no-one come up with reasonable impact measures for Univ KT?
- Surely it can't be that difficult?

- Again, let's go back to basics and look at the system/ecosystem that we operate within.
- From that we may see what the measures should be.

- The University is a key actor in the innovation ecosystem.

BUT

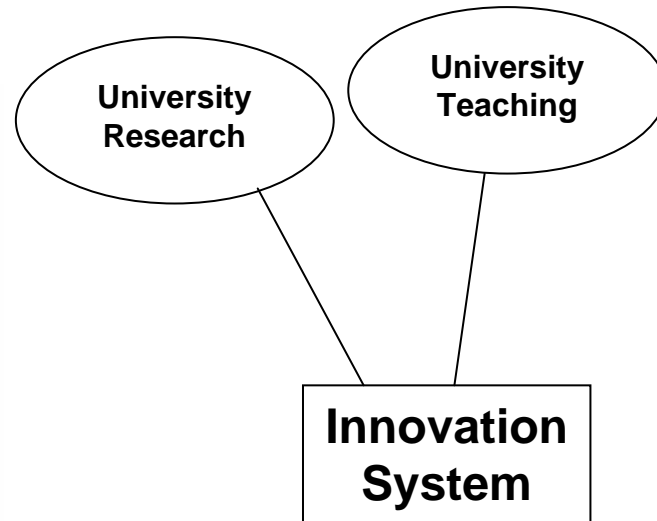
- The University is only part of the system.

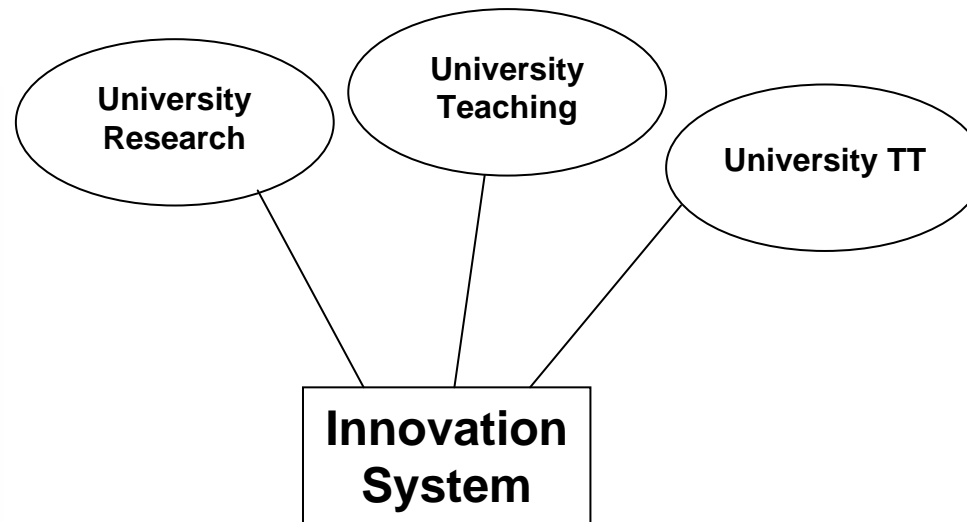


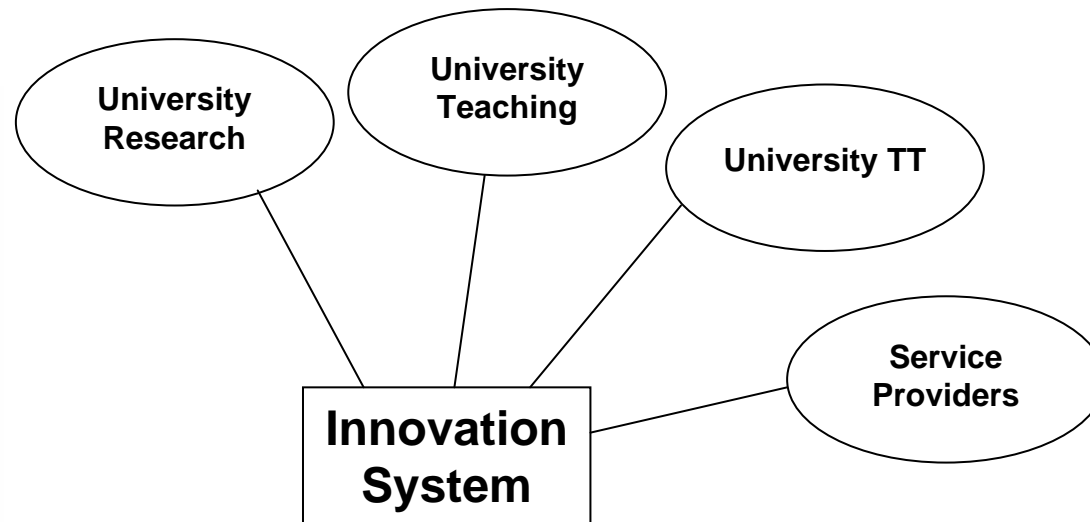
University
Research

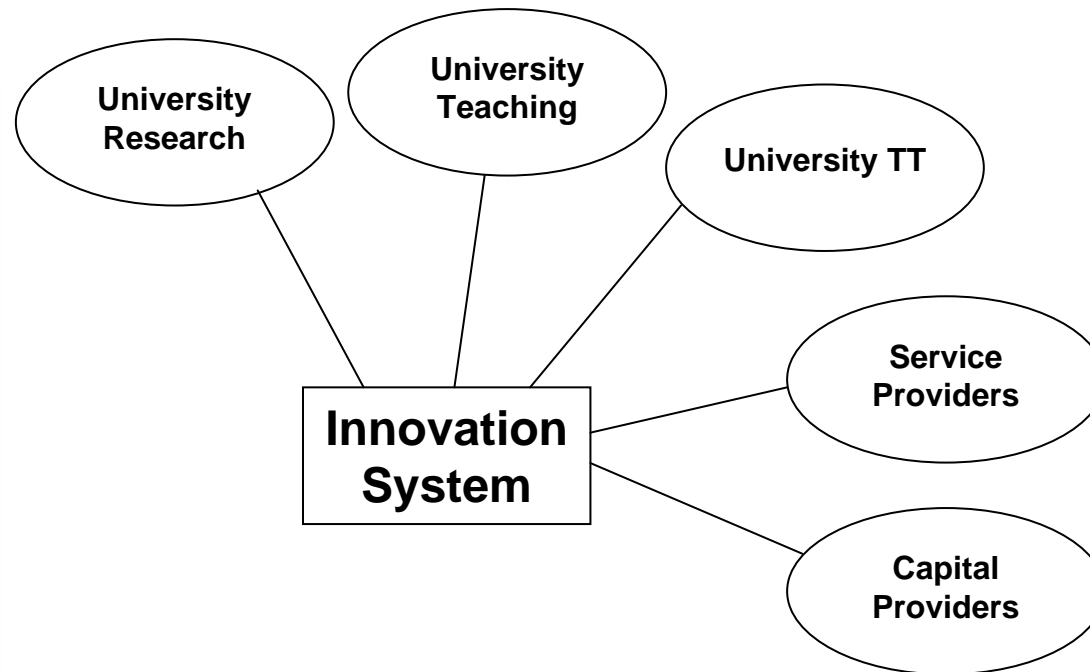
The diagram consists of a white oval containing the text 'University Research'. A thin black line extends from the bottom of the oval to the top-left corner of a white rectangular box containing the text 'Innovation System'. The entire diagram is set against a white background with a dark blue border on the top, bottom, and right sides, and a dark blue vertical bar on the left side.

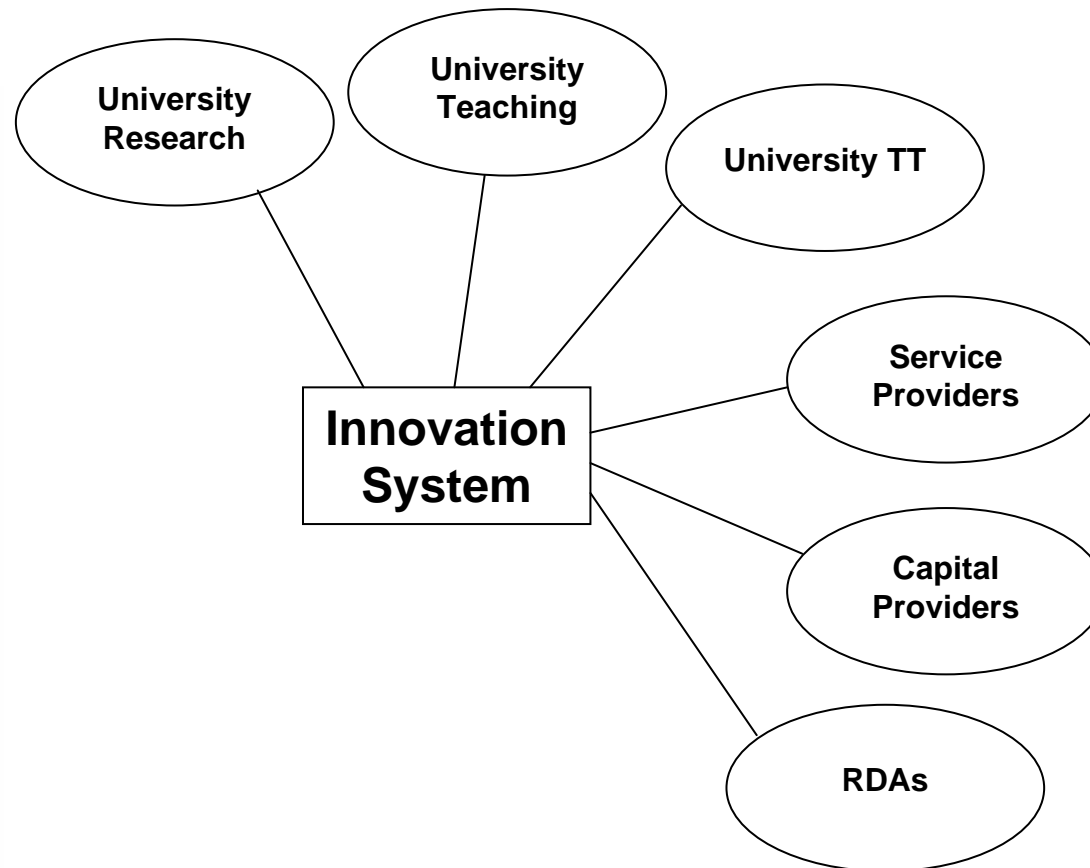
**Innovation
System**

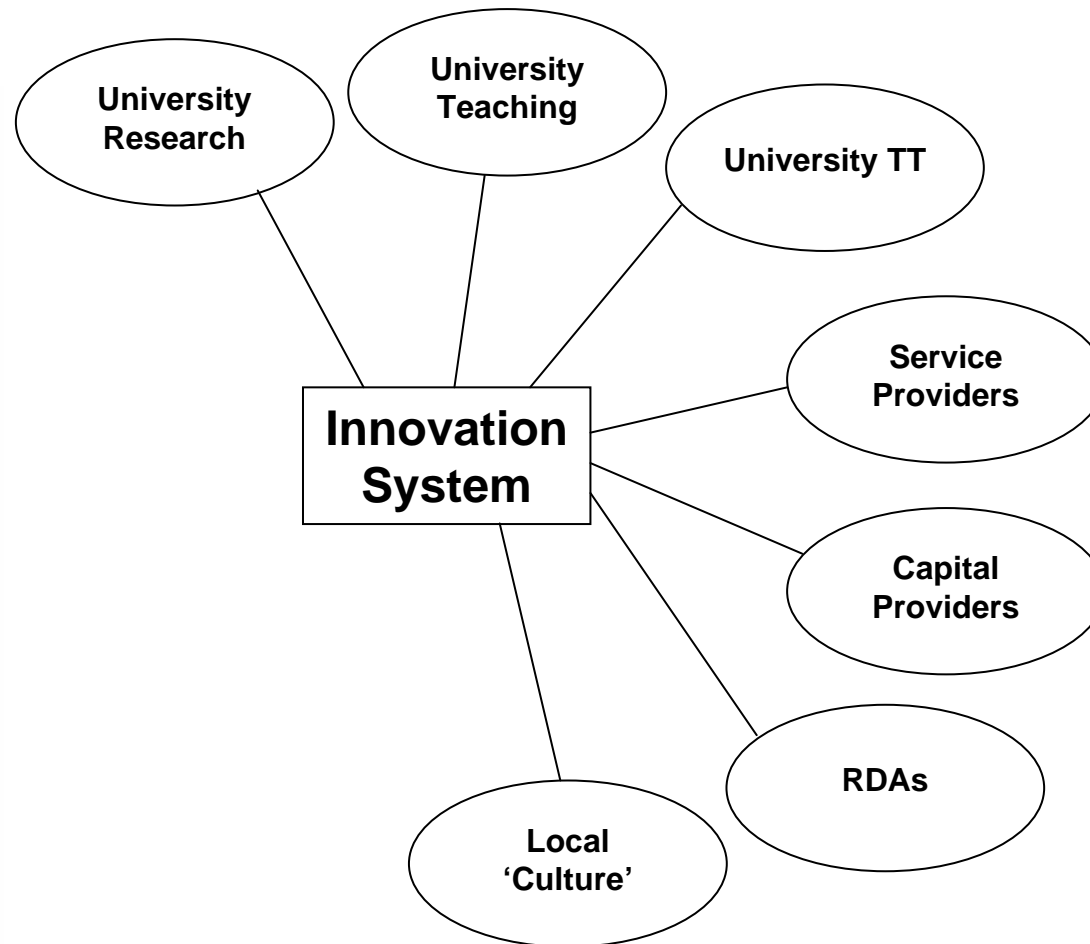


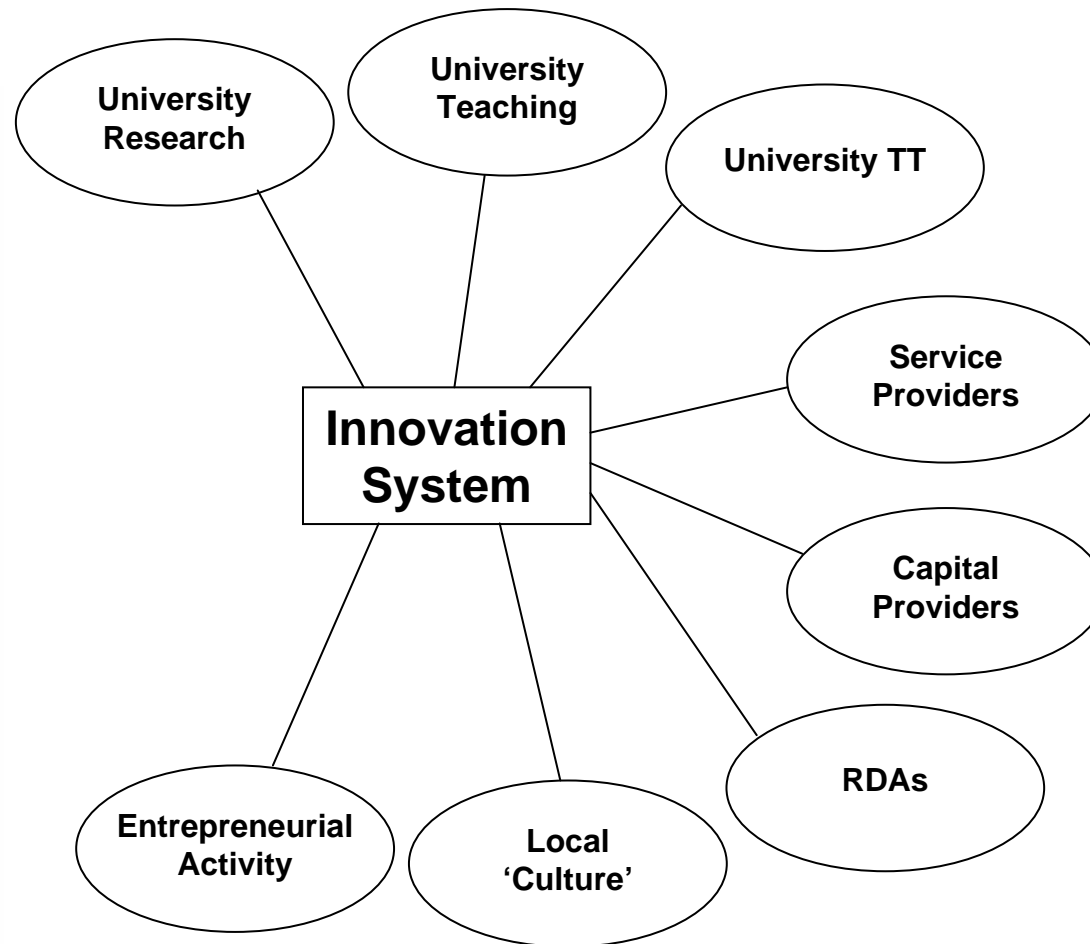


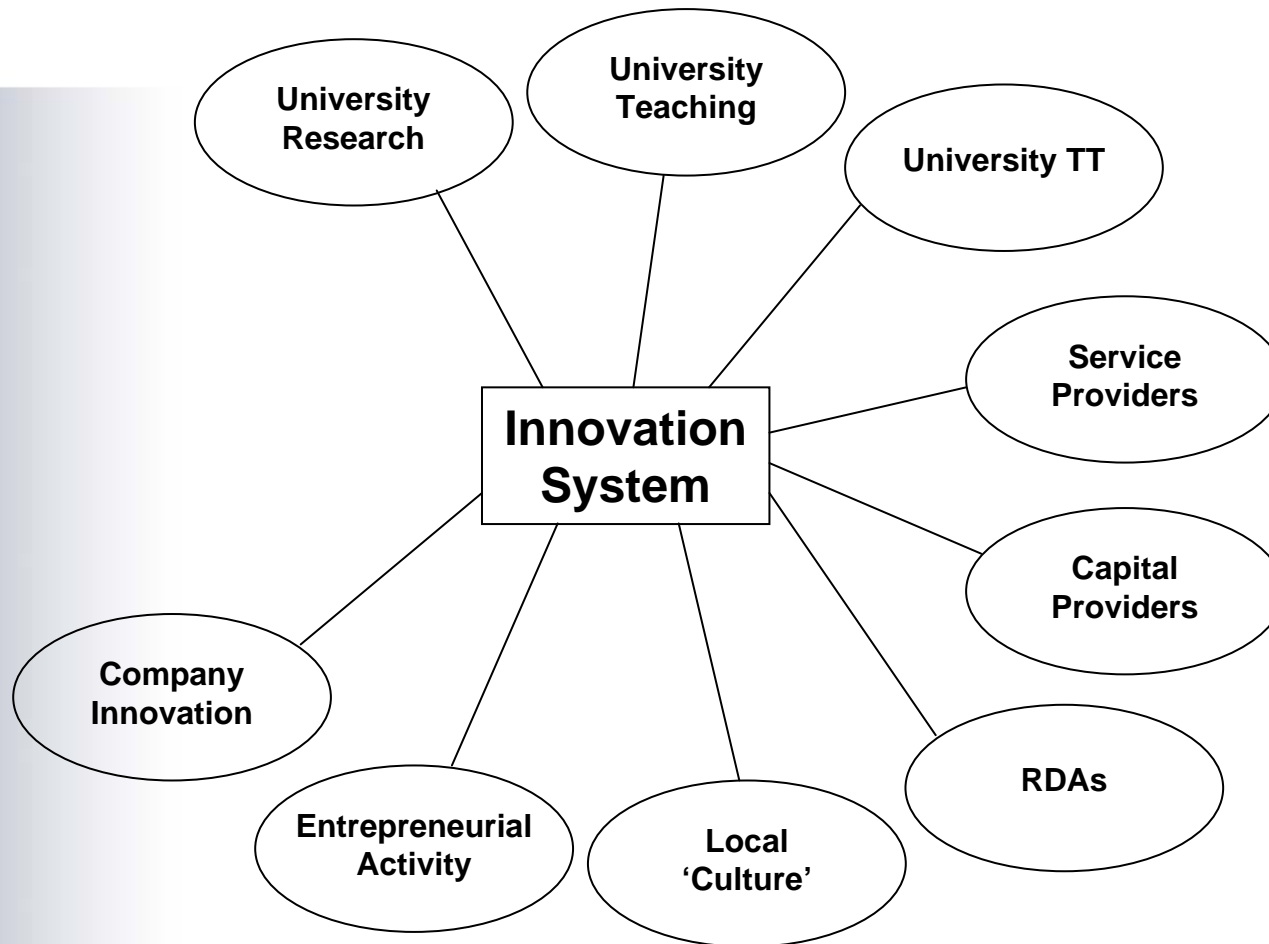


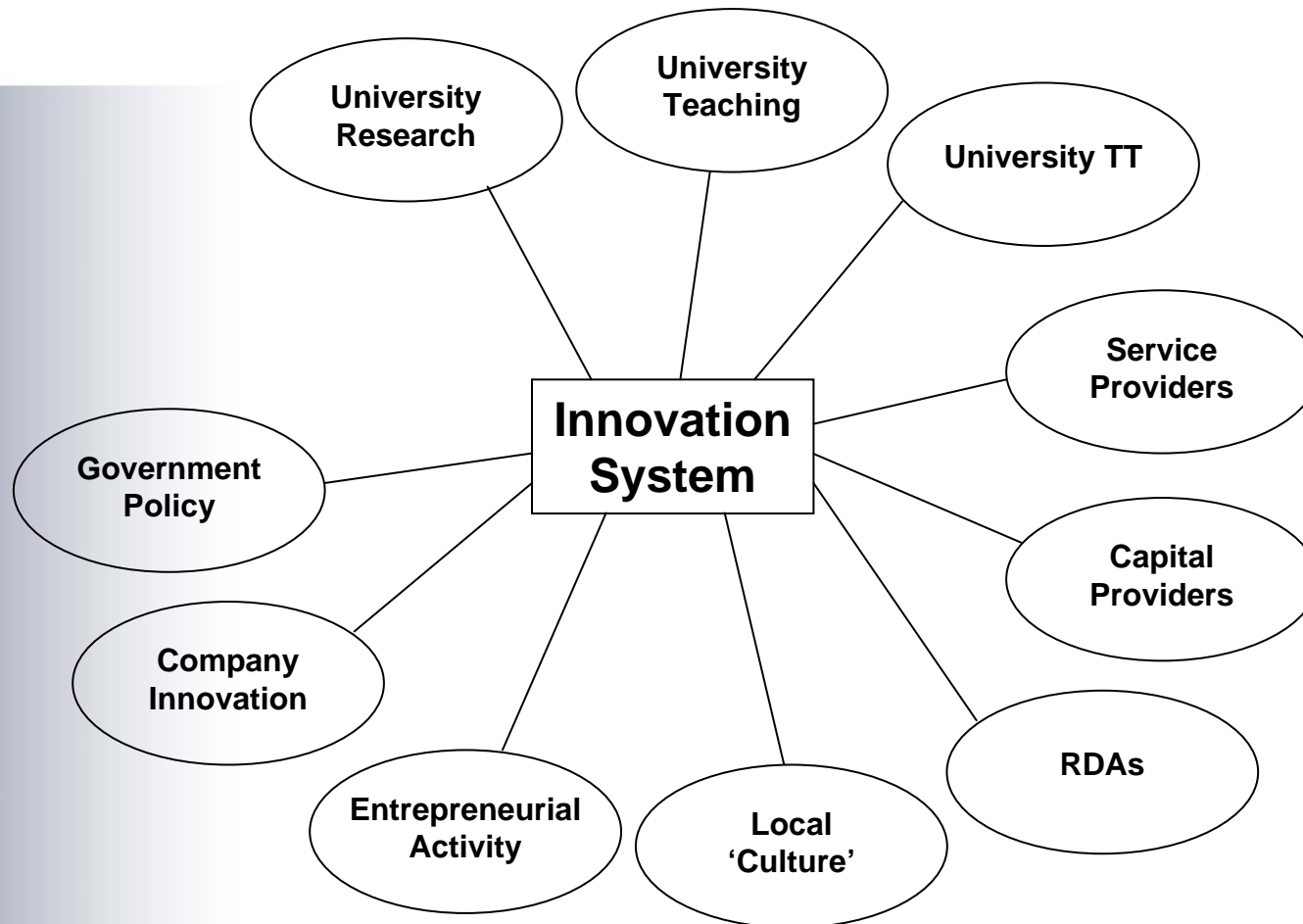


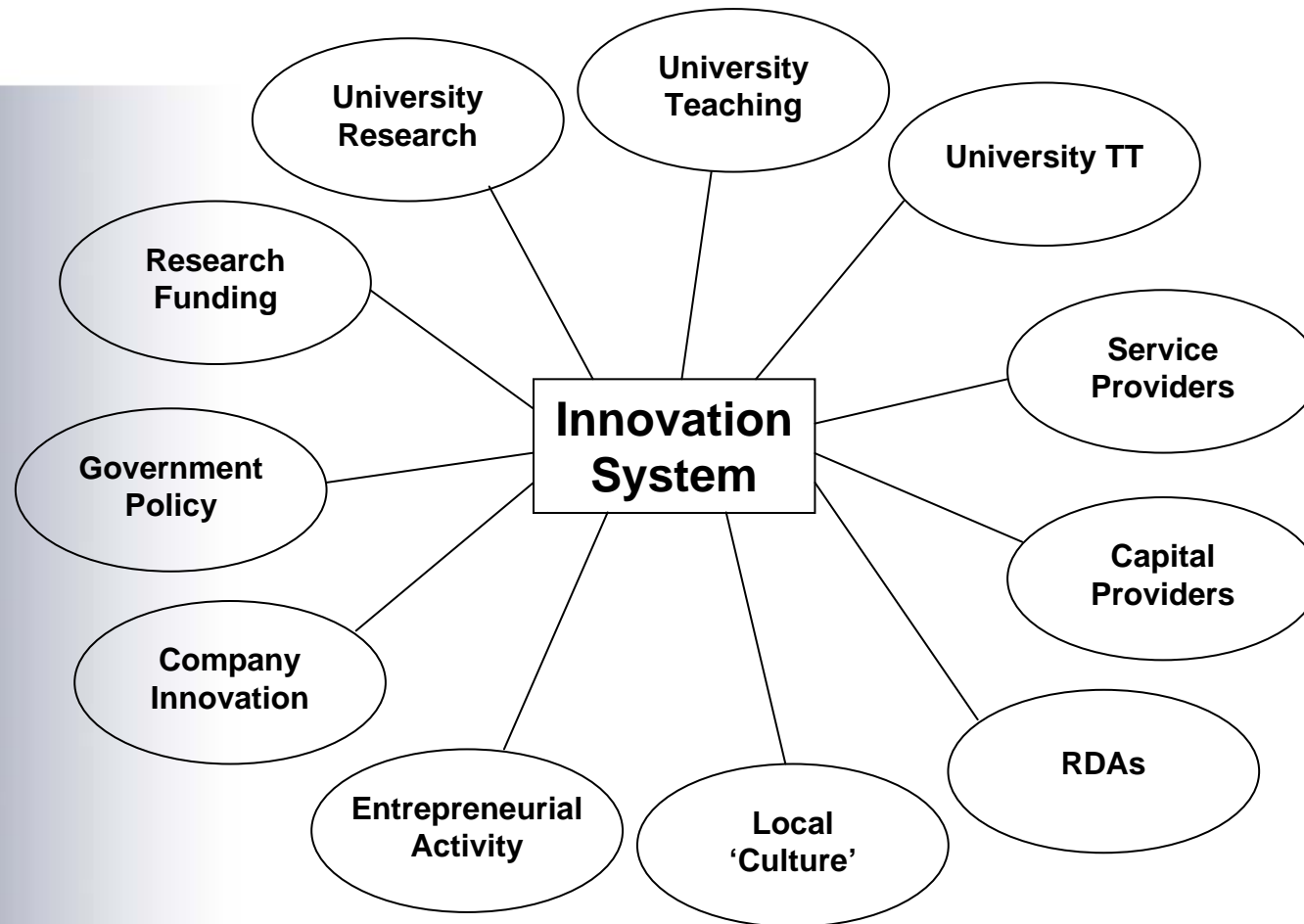






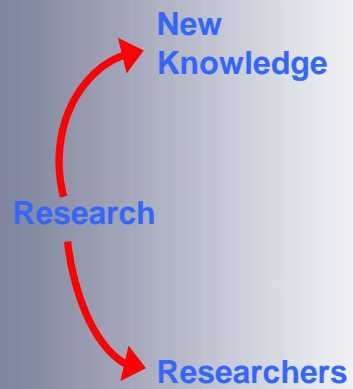




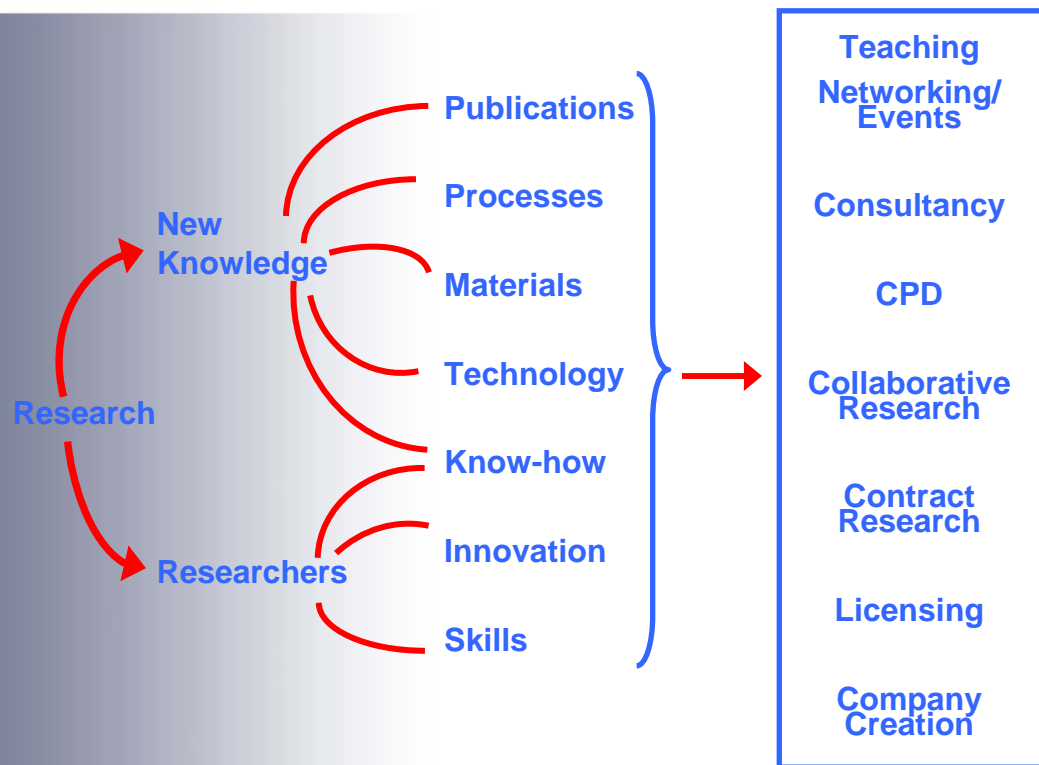


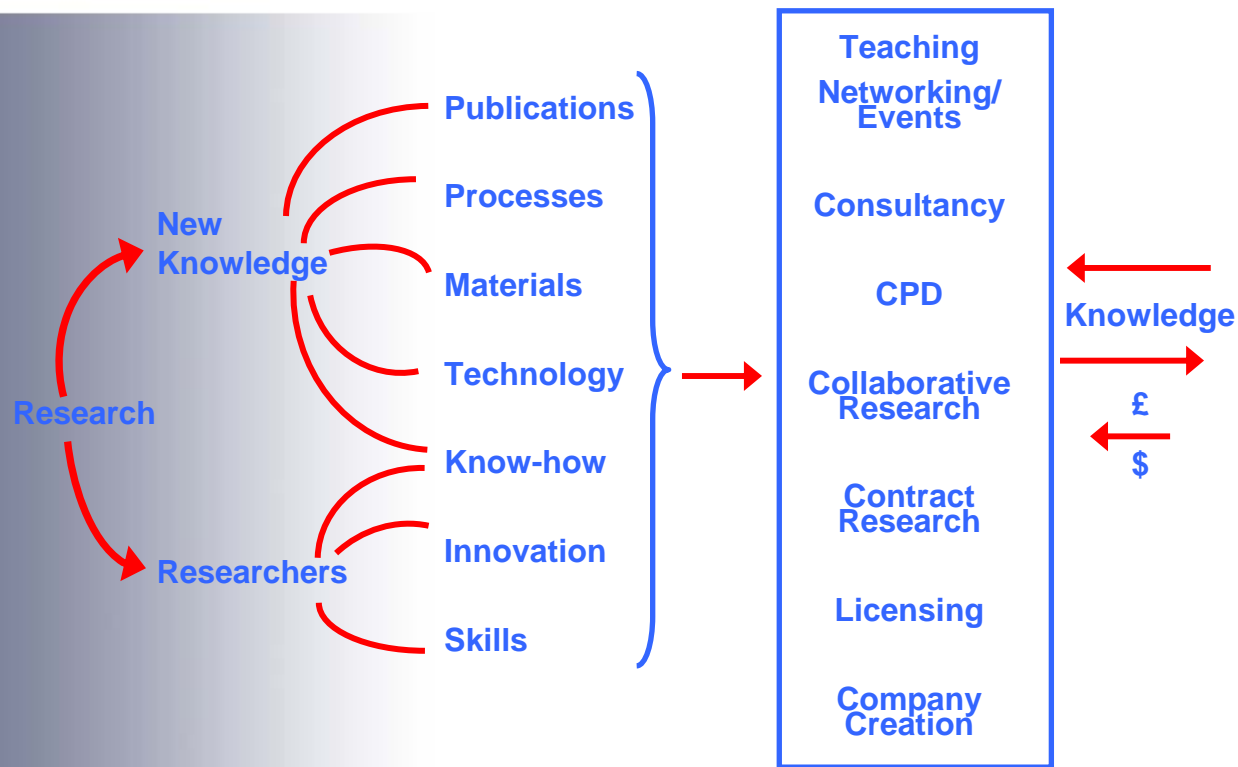
- **The University is a part of the ecosystem, but ONLY a part.**
- **We need partners and other stakeholders to take responsibility for the other parts**
- **We will take responsibility for what the University can contribute.**

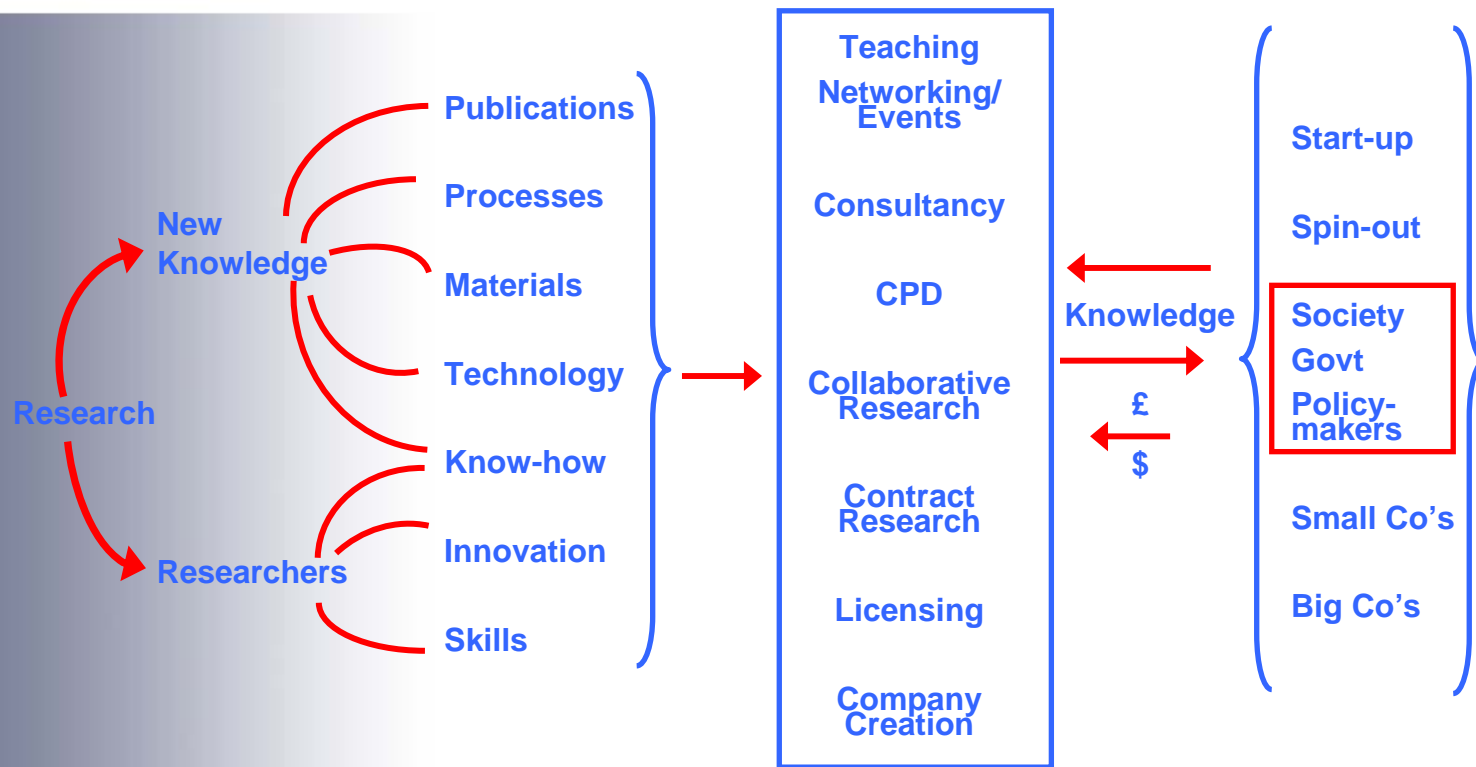
....we need to be clear on what University research contributes

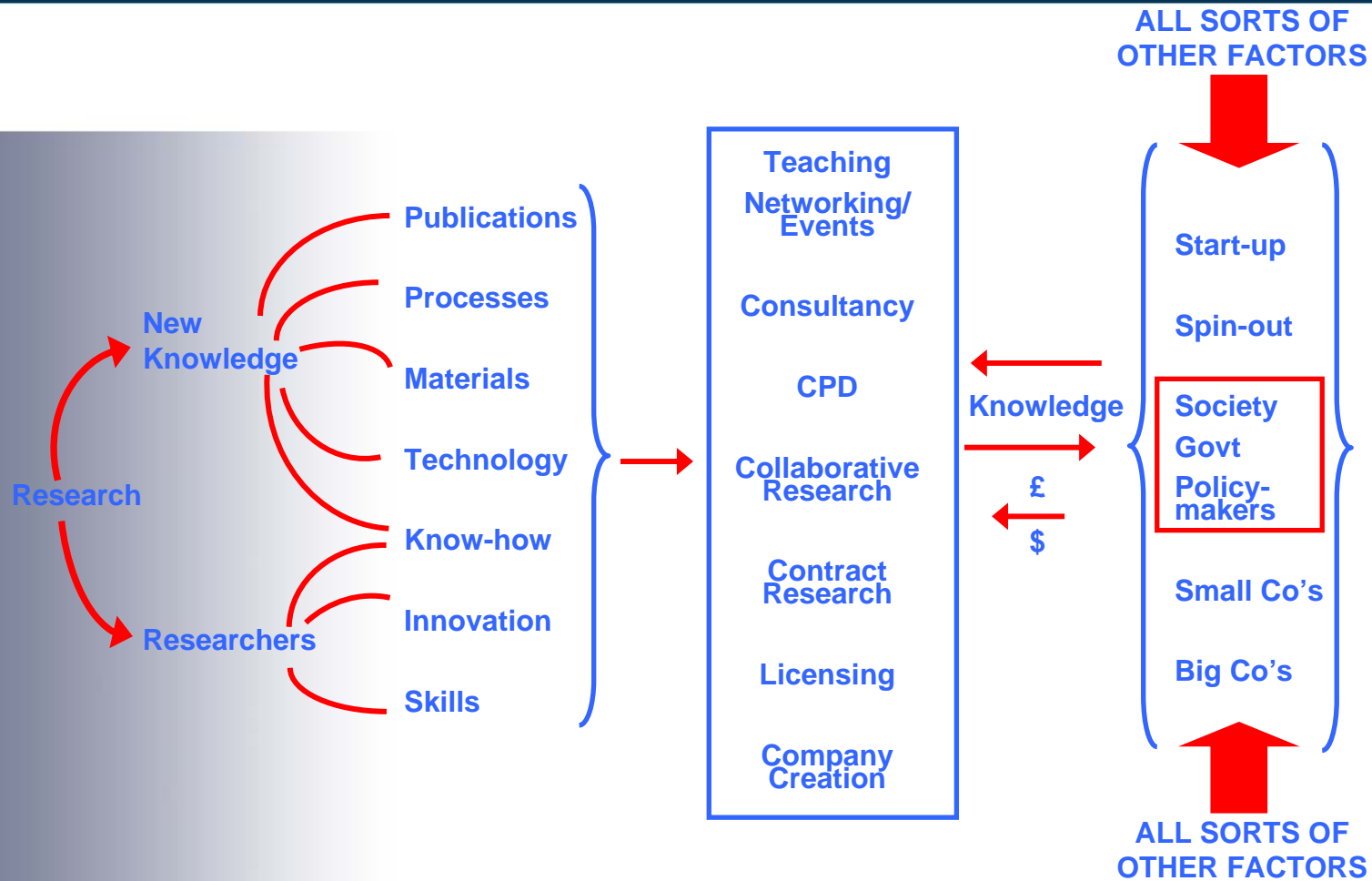


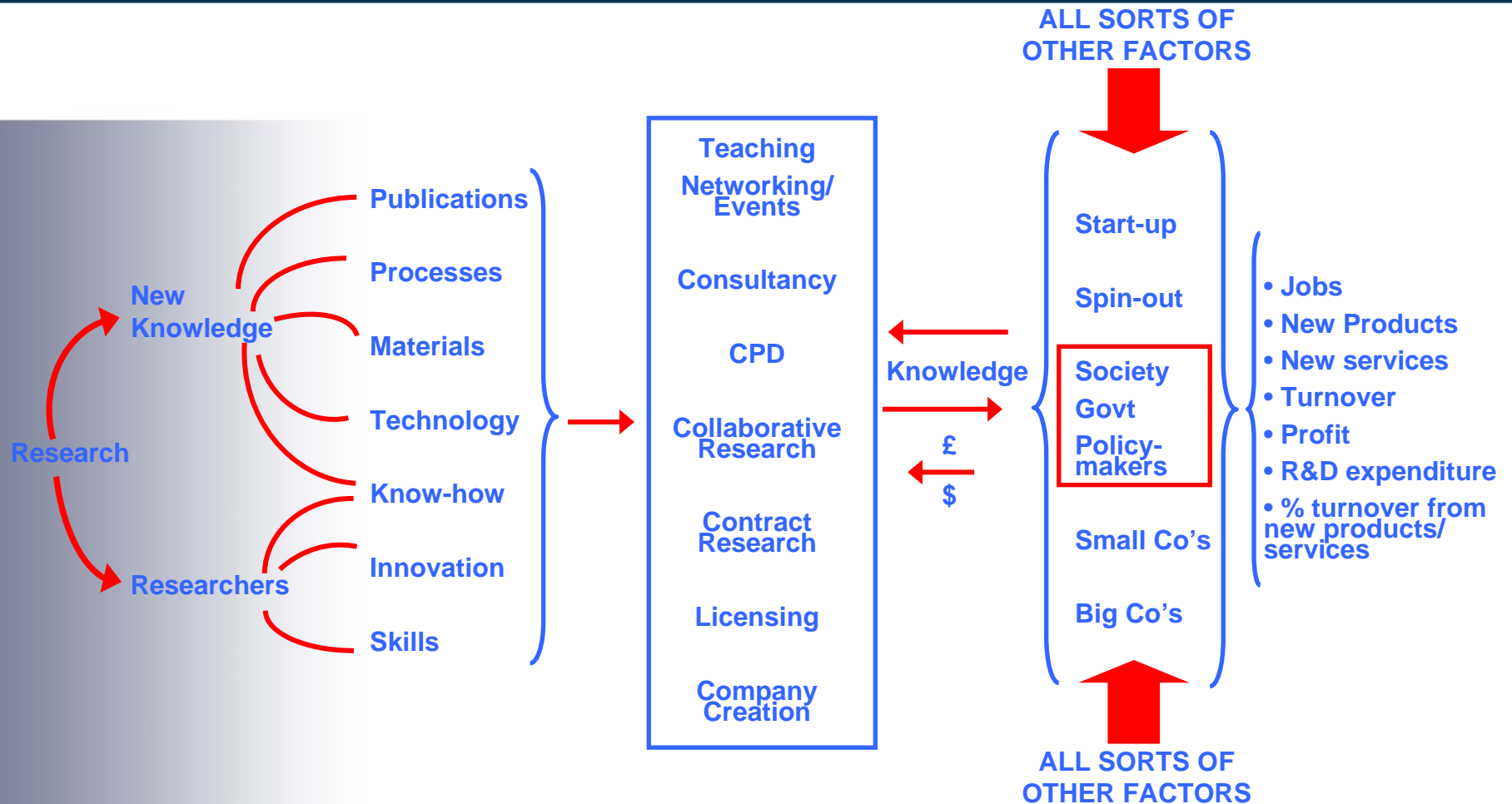


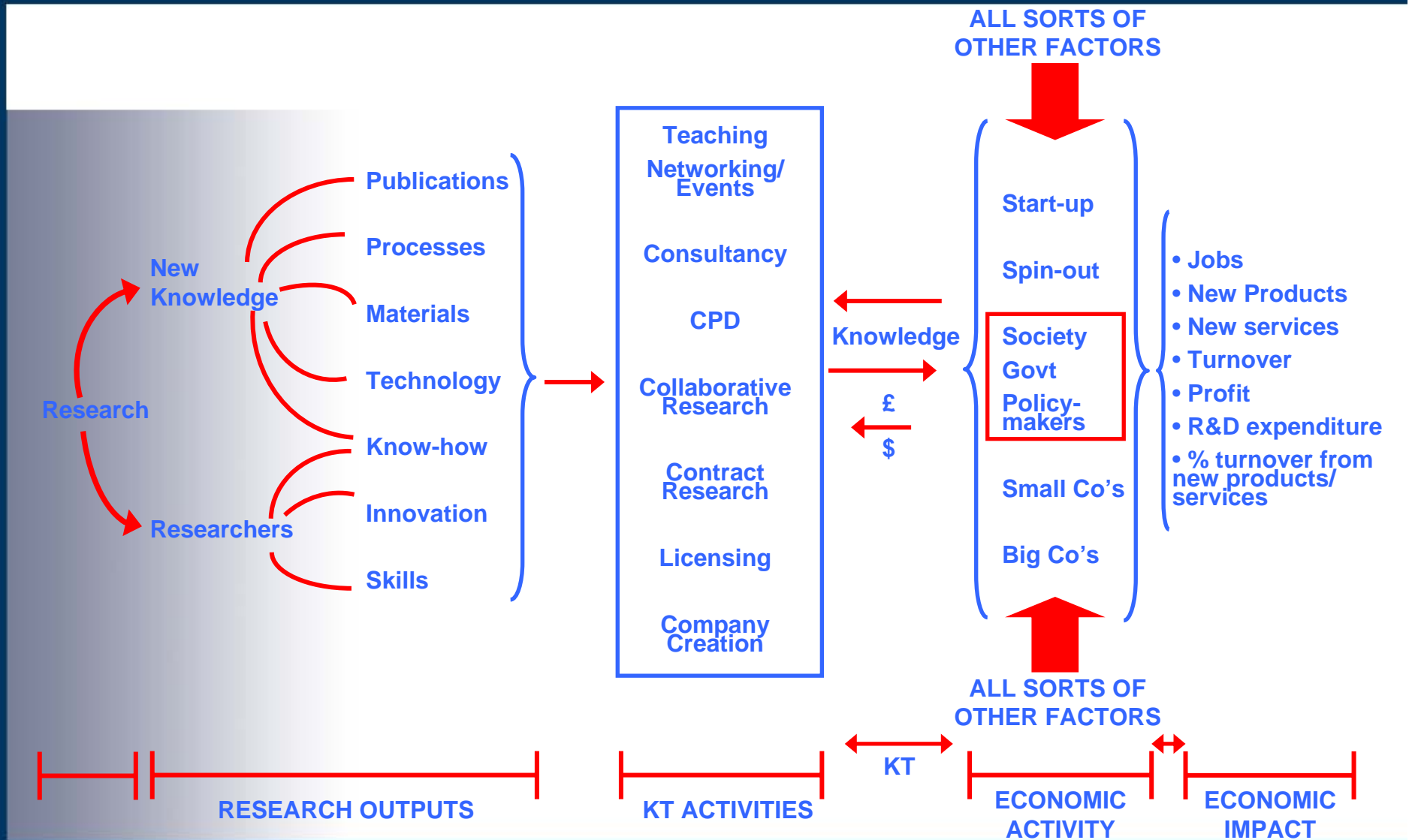












- Shows link between research and economic impact, but it is neither direct nor unidirectional.
- System is chaotic
- Timescales can be decades
- Easy to look back through the system (case studies), but impossible to predict from the input end

- Economic impact can be viewed (at the policy level) as the ultimate objective.
- It is clear that if we successfully transfer knowledge, it will help those others to create economic impact BUT
- We do not create direct economic impact
 - we help other people to do so.
 - They are hugely influenced by other, external factors and actors
- So when it comes to economic impact we cannot take all the credit, but we can't take all the blame.

- We can be held responsible for the KT activities.
- We must develop the measures for those KT activities (quantitative and qualitative)

Therefore.....

- **We should concentrate on outputs (rather than impacts).**
- **We can demonstrate the volume and quality of what we do and that should be our focus.**
- **Since we are only a contributor to the final impact, we can't use that as a reasonable measure of us.**
- **It's more than measuring licensing income, but it's less than measuring economic impact.**

So I hope we have:

- A good understanding of why we do KT and what we hope to achieve
- Developed a model that explains the different types of KT and why they need different measures (profit is not a good measure of public good)
- Explained what our role is within the wider system
- Made a good start on defining the right measures for our role.



University
of Glasgow

Thank you for listening

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