

# Industry view of Government support for industry & university collaboration

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## Technology Readiness Levels Description

- TRL1 Basic principles observed
- TRL2 Technology concept formulated
- TRL3 Experiment proof of concept
- TRL4 Technology validated in lab
- TRL5 Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL6 Technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL7 System prototype demonstration in operational environment
- TRL8 System complete and qualified
- TRL9 Actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies, or in space)

## Technology Readiness Levels – Description space for industry & university collaboration

- TRL1 Basic principles observed
- TRL2 Technology concept formulated
- TRL3 Experiment a proof of concept
- TRL4 Technology validated in laboratory
- TRL5 Technology validated at scale in relevant environment
- TRL6 Technology demonstrated in relevant environment as part of complete system
- TRL7 System prototype demonstration in operational environment
- TRL8 System complete and qualified
- TRL9 Actual system proven in operational environment

# Dowlingreport – UKfundingcomplexitymap

# Engineering and Physical Sciences Research Council

- The majority of EPSRC money is used to fund research directly with the Universities
- However, there are key schemes that support B U\* engagement
  - CASE PhD studentship (Cooperative Award in Science and Engineering)
  - DTQ (Doctoral Training Centres)
  - IDTQ (Industrial doctoral training centres)
  - EngD – Engineering Doctorate
  - Strategic alliance

\*Business to University

# InnovateUK

- InnovateUK
  - Originally the “Technology Strategy Board”
  - Created to promote collaborative research.
- Grants support the research programme with up to 50% funding
- More than half the total funding flows to Universities
- Can fund B B (Business to Business) or B U (Business to University) programmes

# UK Catapults

- A new construct designed to create industrially relevant research centres with strong ties to Universities
  - Modelled on the German Fraunhofer Institutes
- Funding model was 1/3 1/3 1/3
  - One third direct Government grants
  - One third funding won competitively
  - One third industry funded

# UKCatapults

- Currentcatapults



# Royal Academy & Royal Society

- Professional bodies have their own schemes
- Royal Academy Research Chairs and Senior Research Fellowship
- RA Industrial Secondments Scheme
- Royal Society Industrial Fellowships

# European Horizon2020

- The latest of the European “Framework Programmes”
- Seven year programme starting in 2015
- €80Bn
- Funding can be 100% of direct cost plus 25% of overheads

# Horizon2020Example- CleanSky

# **ROLLS ROYCE CASE STUDY**

*£1.25bn*

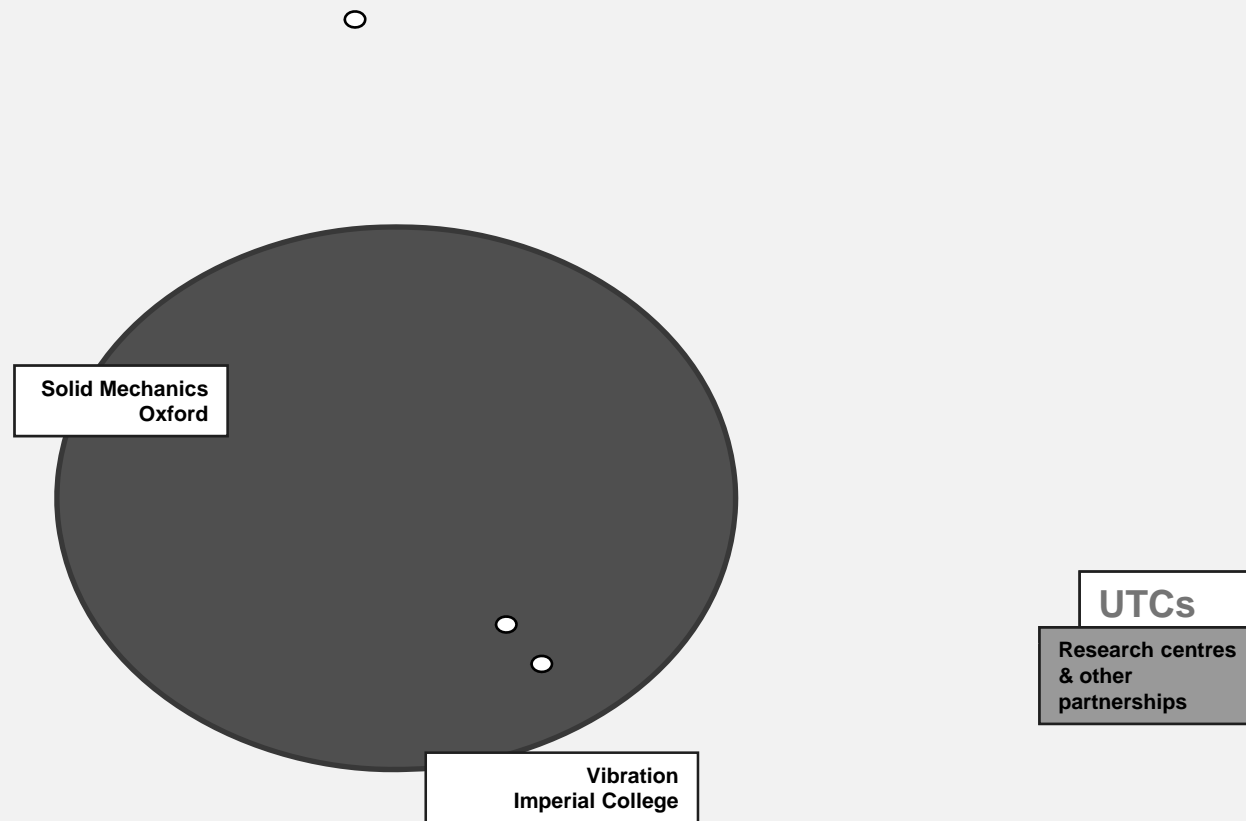
2015

650

2015

31

# Research Network 1990



# Benefits of University Research Environment

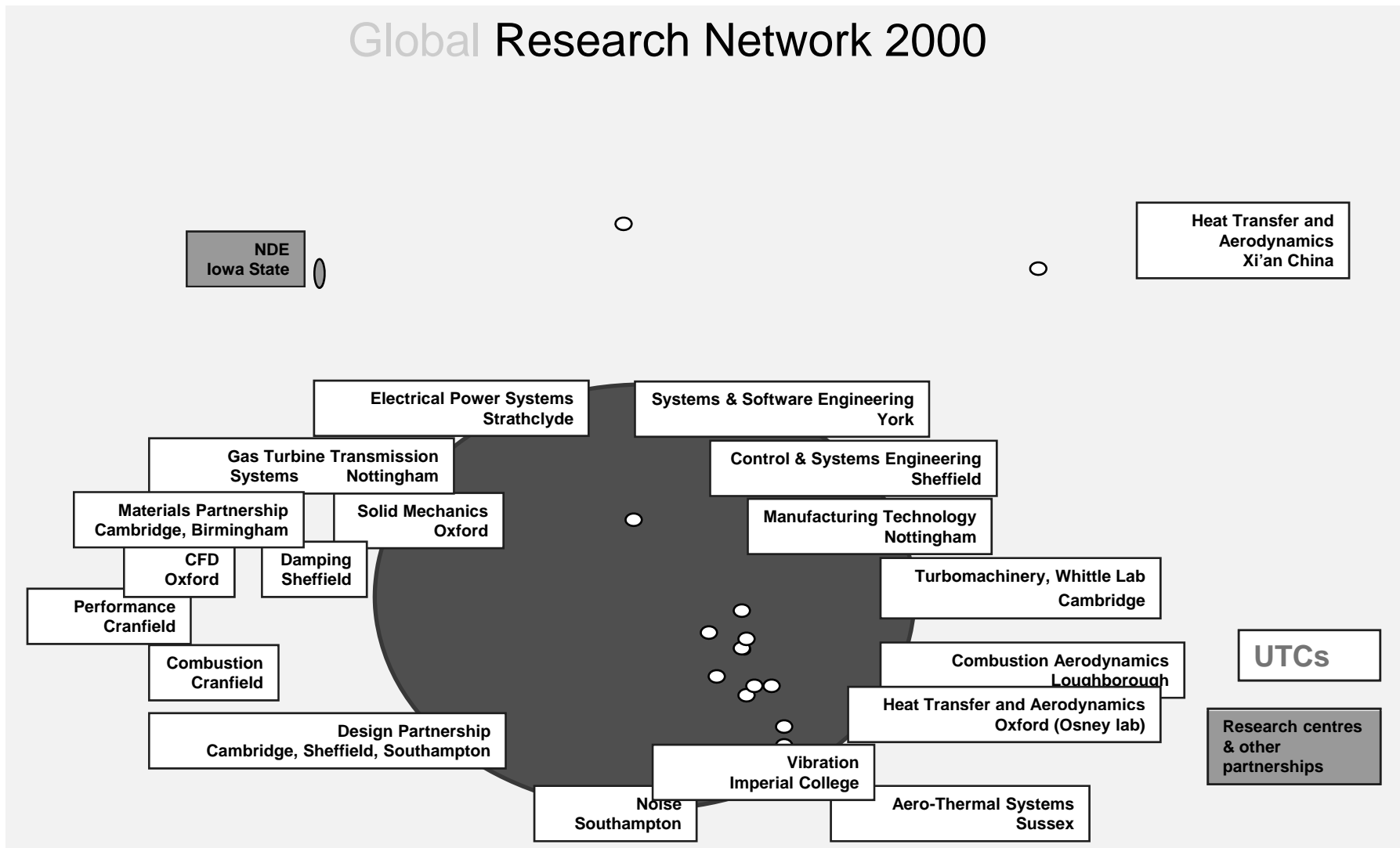
- Specialised skills
- 'Time to think'
  - Escape from short term problems
- Challenge and dialogue
  - Multi sectoral perspective
- Long term capability development
  - Recruitment & training skilled personnel

# Critical success factors

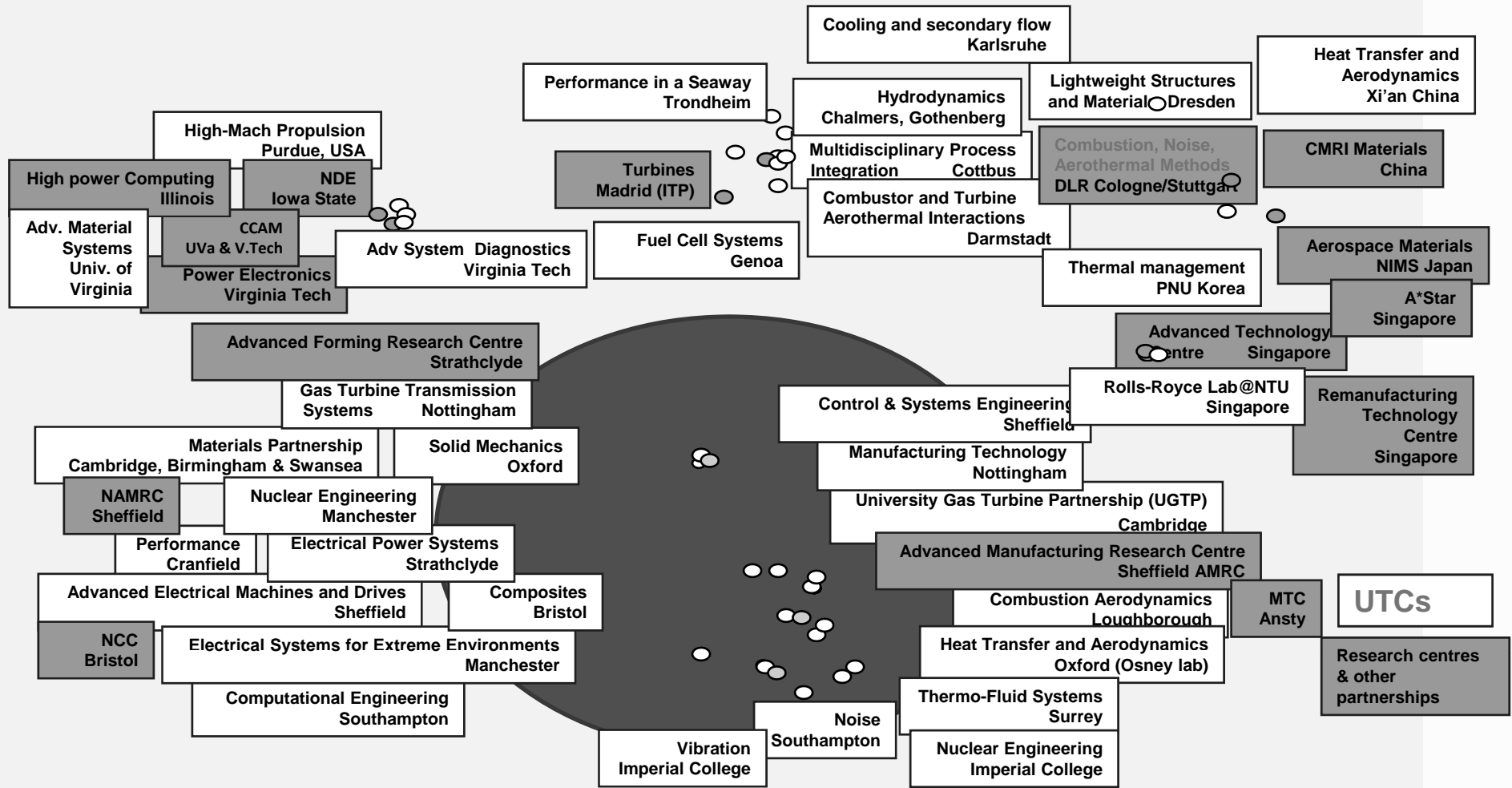
- Partnership with Government agencies
  - Funding and support for university infrastructure
  - Support for complementary basic research
  - Support to attract key researchers
- Up front agreement on IPR, publication, etc.
- Joint review and measurement of quality, results, IPR capture, technology and skilled staff transfer
- Customisation of approach for different countries and cultures



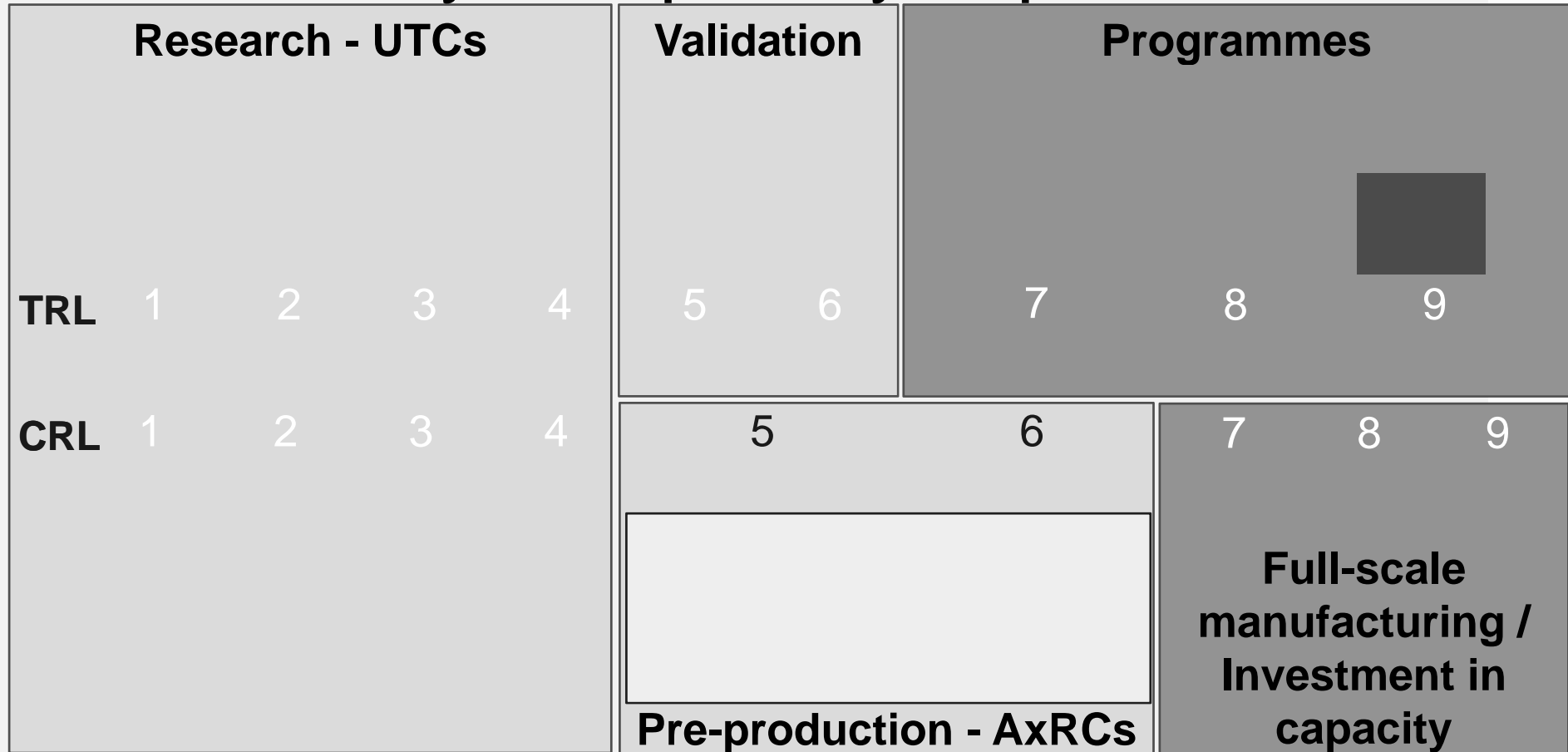
# Global Research Network 2000



# Global Research Network 2015



# Delivery of Capability Acquisition



# Conclusion

- University & Industry collaboration is a three way pact
  - University + Company + Government
- Together they can achieve more than they could individually
- This helps to bridge the “Valley of Death”