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Promoting choice and value for all gas and electricity customers

The Royal Academy of Engineering

June 2005

Regulated Networks
- Fit for Tomorrow

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Factors to consider:

1. Electricity Distribution Price Control outcome
2. Distributed Generation: Incentives & Innovation
3. Transmission Price Controls: Electricity & Gas
4. Beyond Incentives - Potential & Pitfalls

Price Control outcome for Distribution Companies

THE HEADLINES:

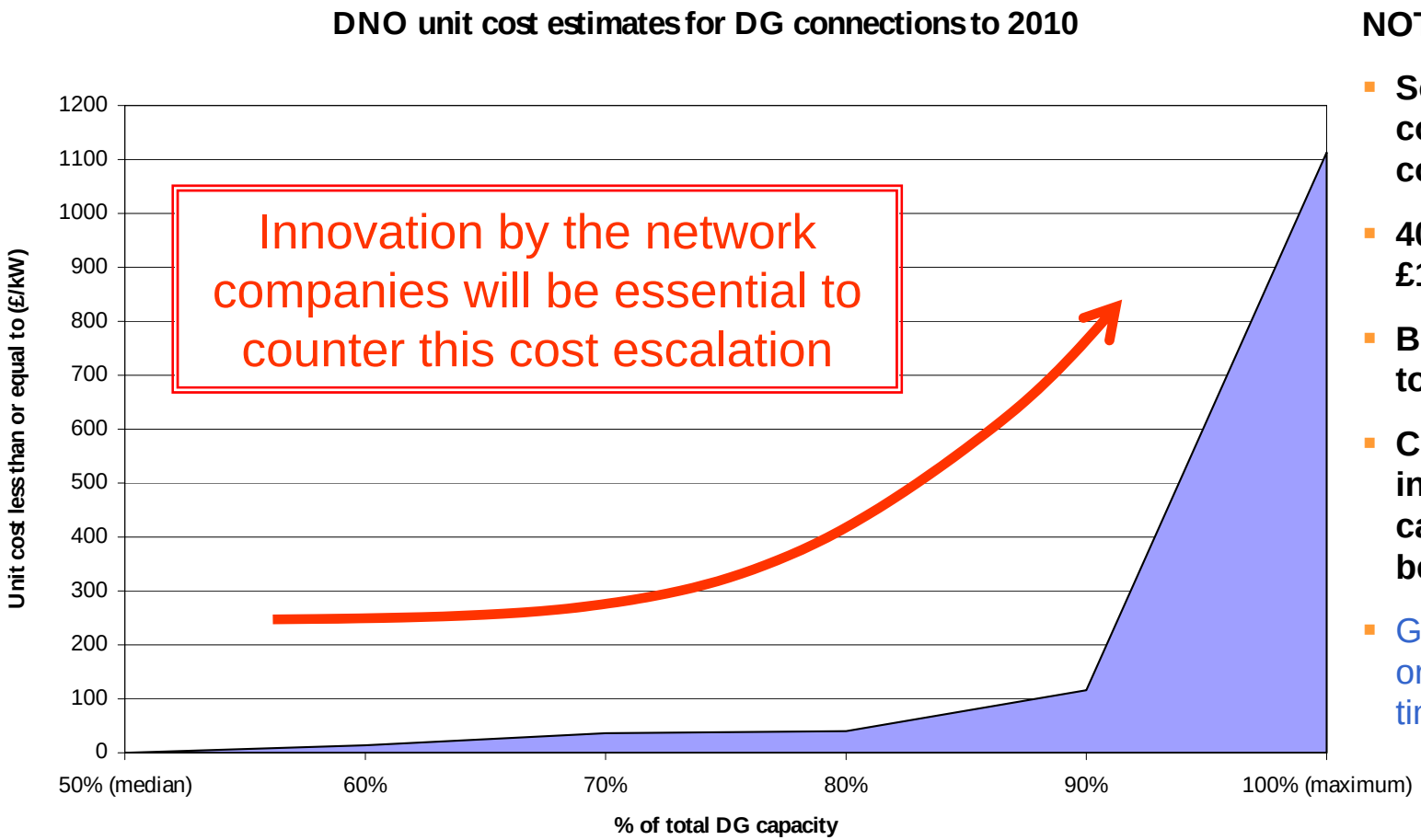
Capital Expenditure: +48% on previous period

totalling £5.7bn for period 2005-2010

Cost of capital 4.8% ie the upper end of the range

New incentives to connect distributed generation and for engineering innovation

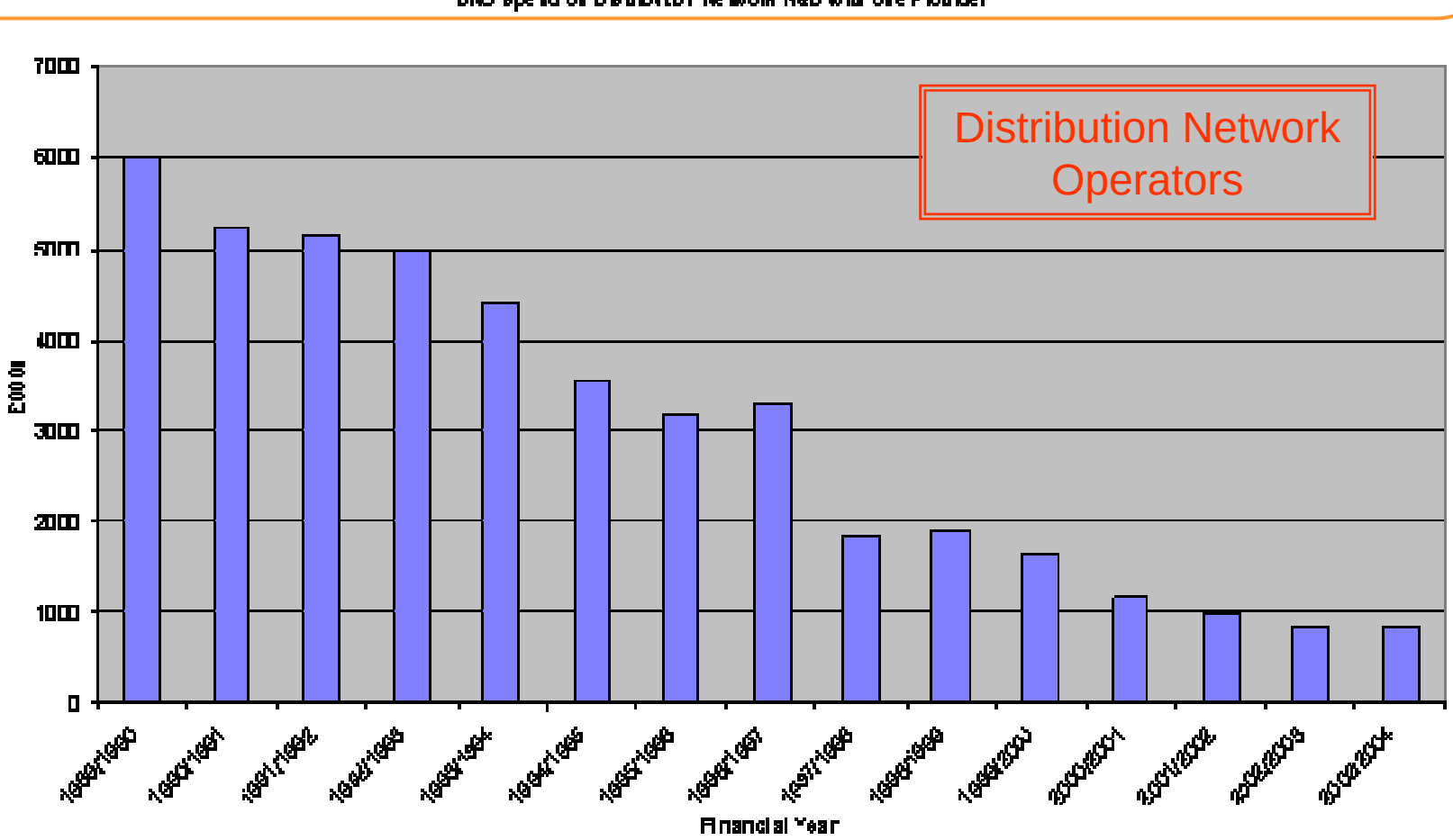
DG connection costs: the £/kW sting in the tail!



NOTE

- **Some 50% can be connected at nil cost**
- **40% at less than £100/kW**
- **But 10% will cost up to £1000/kW**
- **Costs will further increase as spare capacity is used up beyond 2010**
- Graph is ranked by order of cost, not timing of project.

Spending on Collaborative R&D since 1990



Distributed Generation: Incentives & Innovation

Published & Agreed

Distribution Price Control Review – DG Incentives

- **A general financial incentive for connecting Distributed Generation** - Cost pass-through (80%) plus annual revenue (£2.50/kW typically)

  (The £2.50 comprises £1.00 for DG related Opex + £1.50 for DG related Capex, or in the case of Scottish Hydro Electric £2.00)

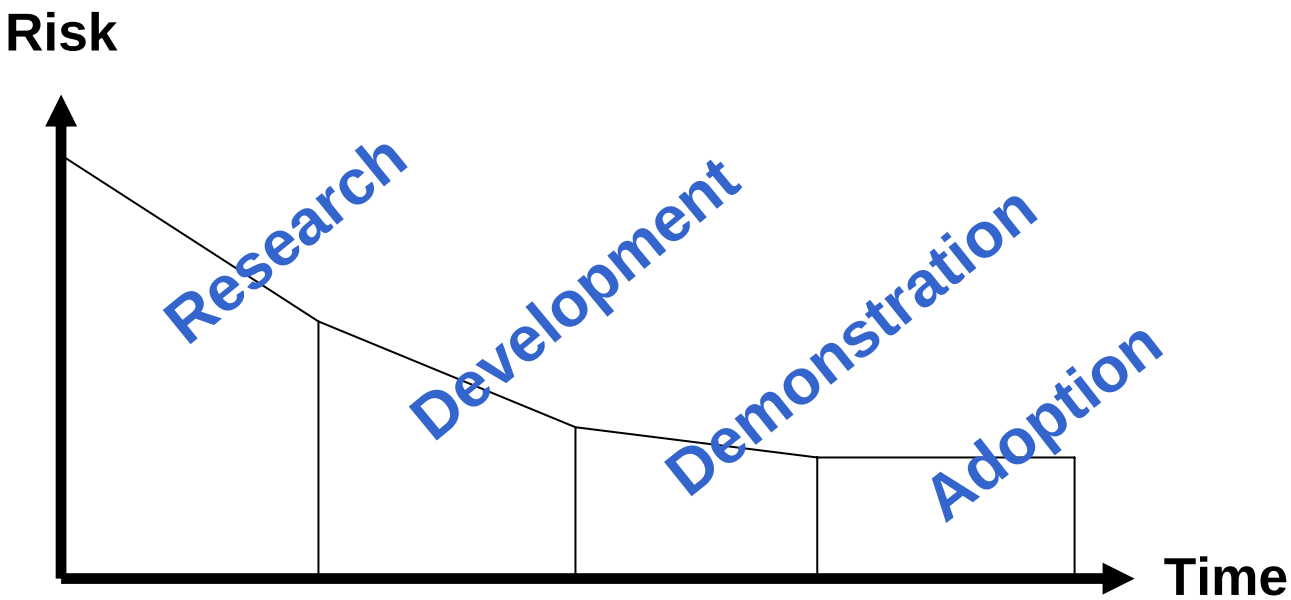
and

- **Two new Innovation incentives:**

  Innovation Funding Incentive (IFI) – an annual funding for network R&D of 0.5% turnover (£1-2m per Co.) and

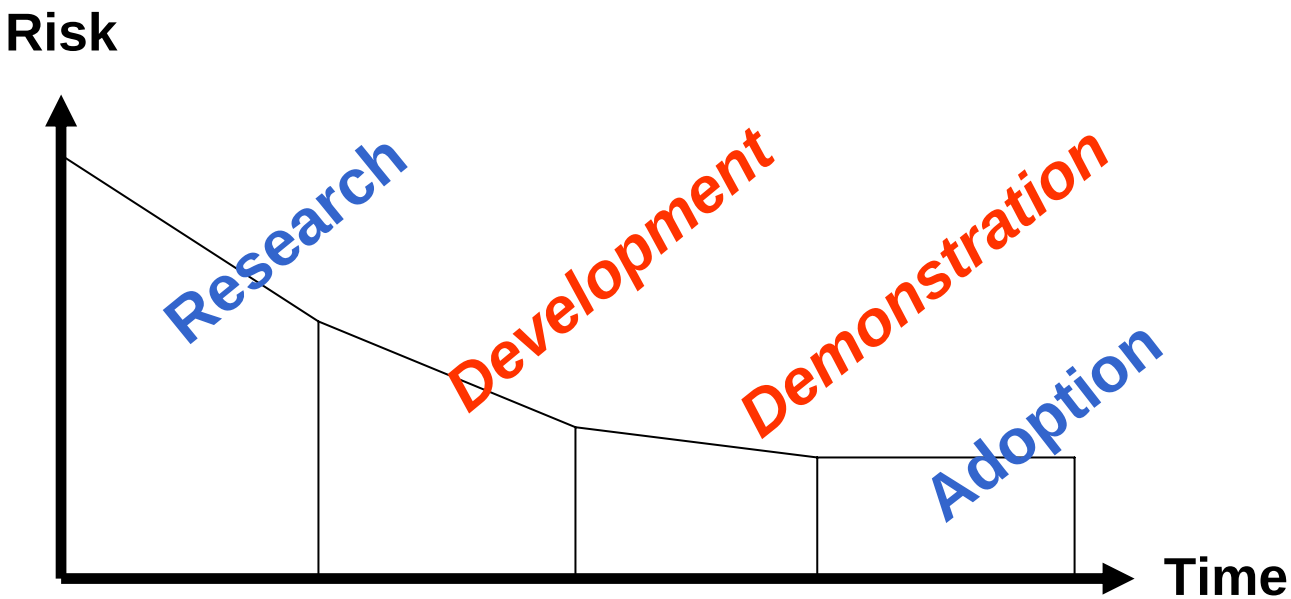
  Registered Power Zones (RPZ) – an enhanced DG financial incentive of typically 3x the DG Capex incentive where new technology is used on networks to connect and integrate DG (ie an additional £3/kW to the main DG incentive).

The innovation process



Multi-stage process to convert ideas to products/solutions

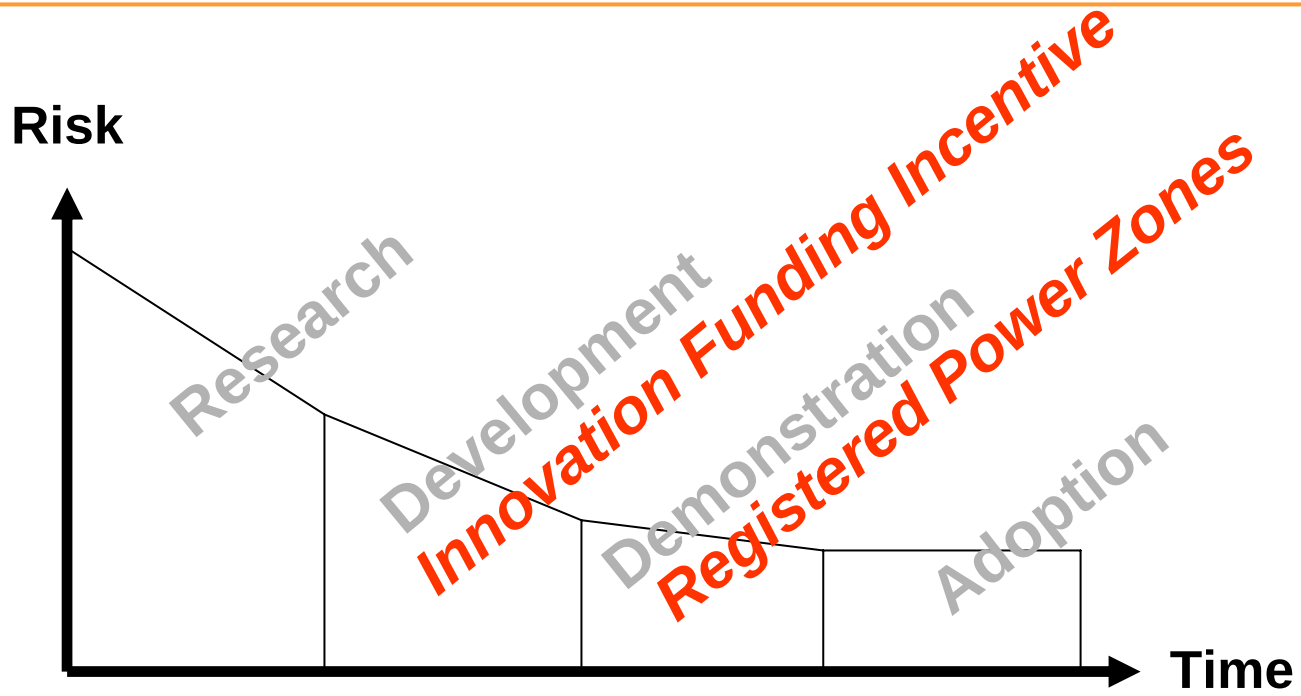
The innovation process



Greater network company involvement needed here

a distinguishing feature is the requirement for field testing and the insufficiency of laboratory simulations alone

The innovation process



IFI & RPZ – Targeted incentives for network companies

Innovation Funding Incentive

- The companies fund a proportion of each project (av. 20%)
- Expenditure is allowed on a ‘use it or lose it’ basis
- Annual, open, reporting of projects to promote best practices

Registered Power Zones

- Ofgem registers, but does not approve projects
- The enhanced financial incentive provides an additional reward to balance the risks associated with innovation
- Open reporting of RPZ projects to promote best practices

Regulatory Impact Assessment:

(Mott MacDonald/BPI Consultant's Report)

Substantial Potential Value for Customers

IFI costs

= £62m NPV over 5 years

"For all the innovations identified, the sum of the Present Values is **£443m**"

@ 6.5% discount rate

RPZ costs

= £29m NPV over 5 years

"For all the innovations identified, the sum of the Present Values is **£121m**"

@ 6.5% discount rate

Transmission Price Controls: Electricity & Gas

Work now commencing…

Electricity Transmission Price Control Review

- A limited review is in hand for NGC's price control to extend it by one year to March 2006
- Work is commencing on a full review of price controls for implementation from April 2007 for NGC, SPT and SHETL
- Specific issues for the transmission price control review:
  - the impact of the increasing need to replace ageing assets
  - the impact of growth in renewable generation

Investment in Gas Infrastructure

- **Gas Transmission**:
  - next price control to be implemented from April 2007
  - encourage timely and efficient investment by developing Entry and Exit capacity incentives
- **Gas Distribution**:
  - diversified ownership of 8 distribution networks (4 by Transco and 4 by independent parties) since 1 June 2005
  - all remain regulated regional monopolies, whose next price controls will start from April 2008

Beyond Incentives - Potential & Pitfalls

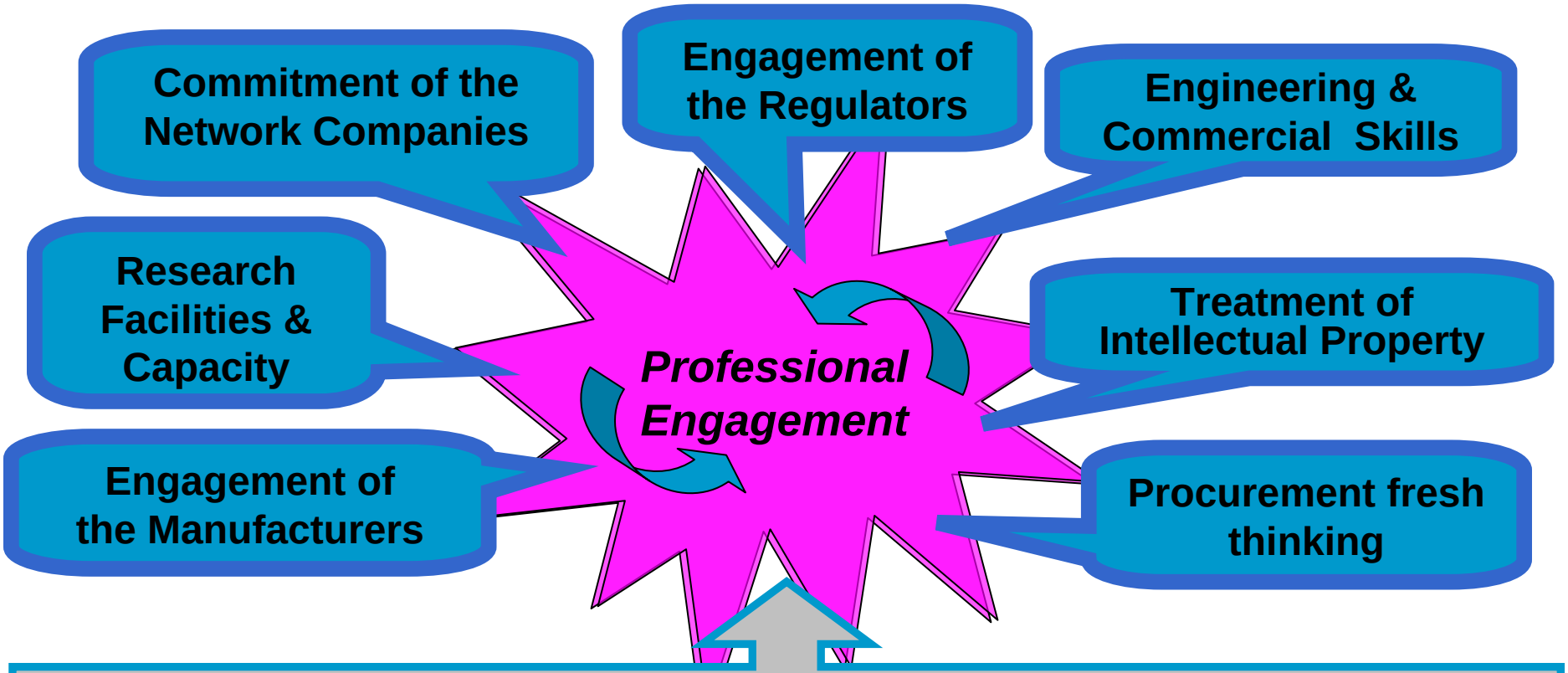
This part of the presentation describes work undertaken in conjunction with the **Institution of Electrical Engineers** to develop a **Technical Architecture** for the networks of 2020 and beyond

Enablers for innovation and business growth

- After a time of low innovation there is inertia to be overcome
- DG, IFI and RPZ incentives are intended to stimulate change
- **But will this be sufficient to energise really effective engineering innovation and hence business growth?**

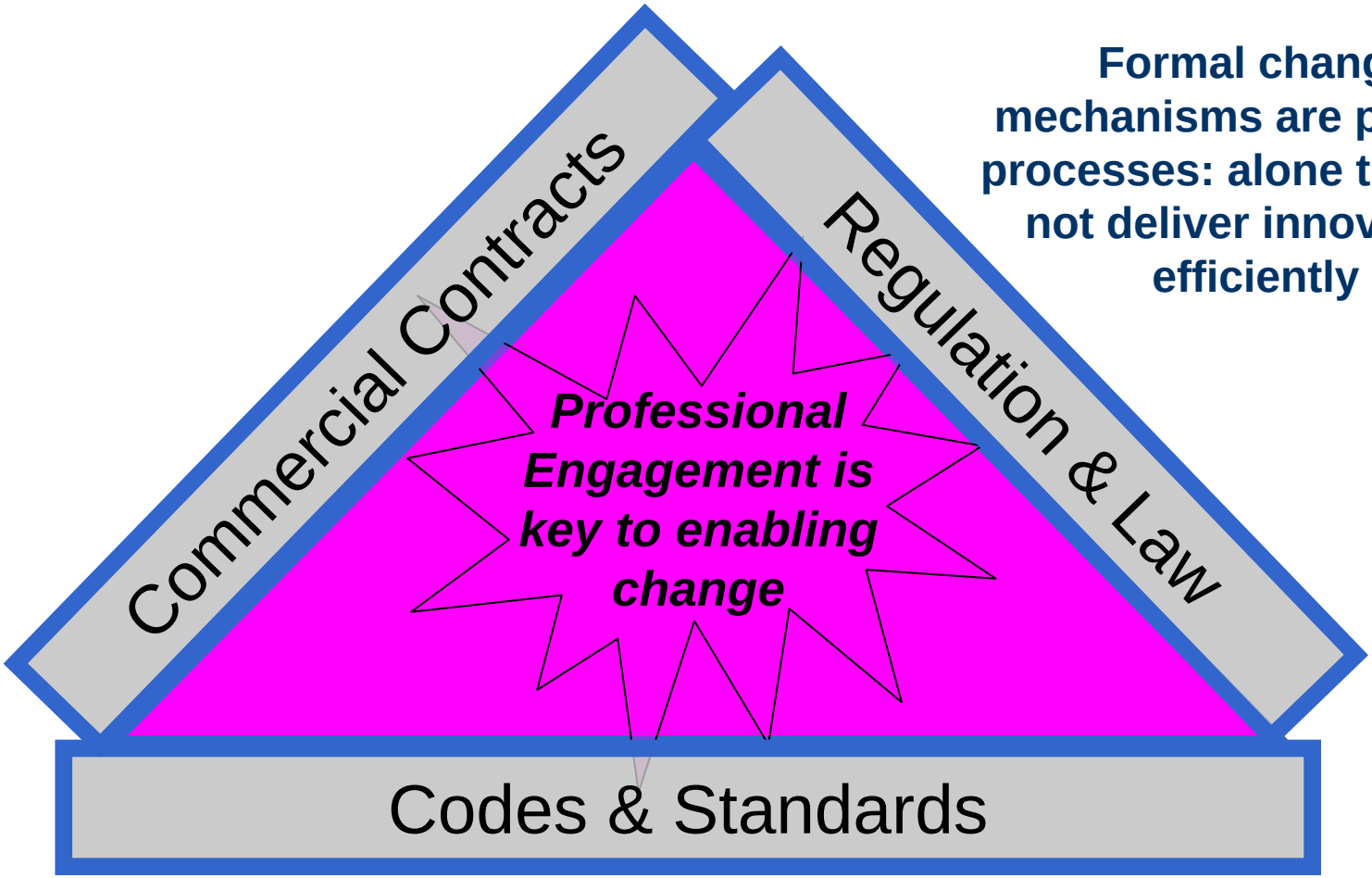
Two enablers for innovation	
	1. Effective cross-organisation working between the parties in the supply chain
	2. The ability to adapt the sector's technical, regulatory and commercial frameworks

1. Effective cross-organisation working between the parties that comprise the supply chain



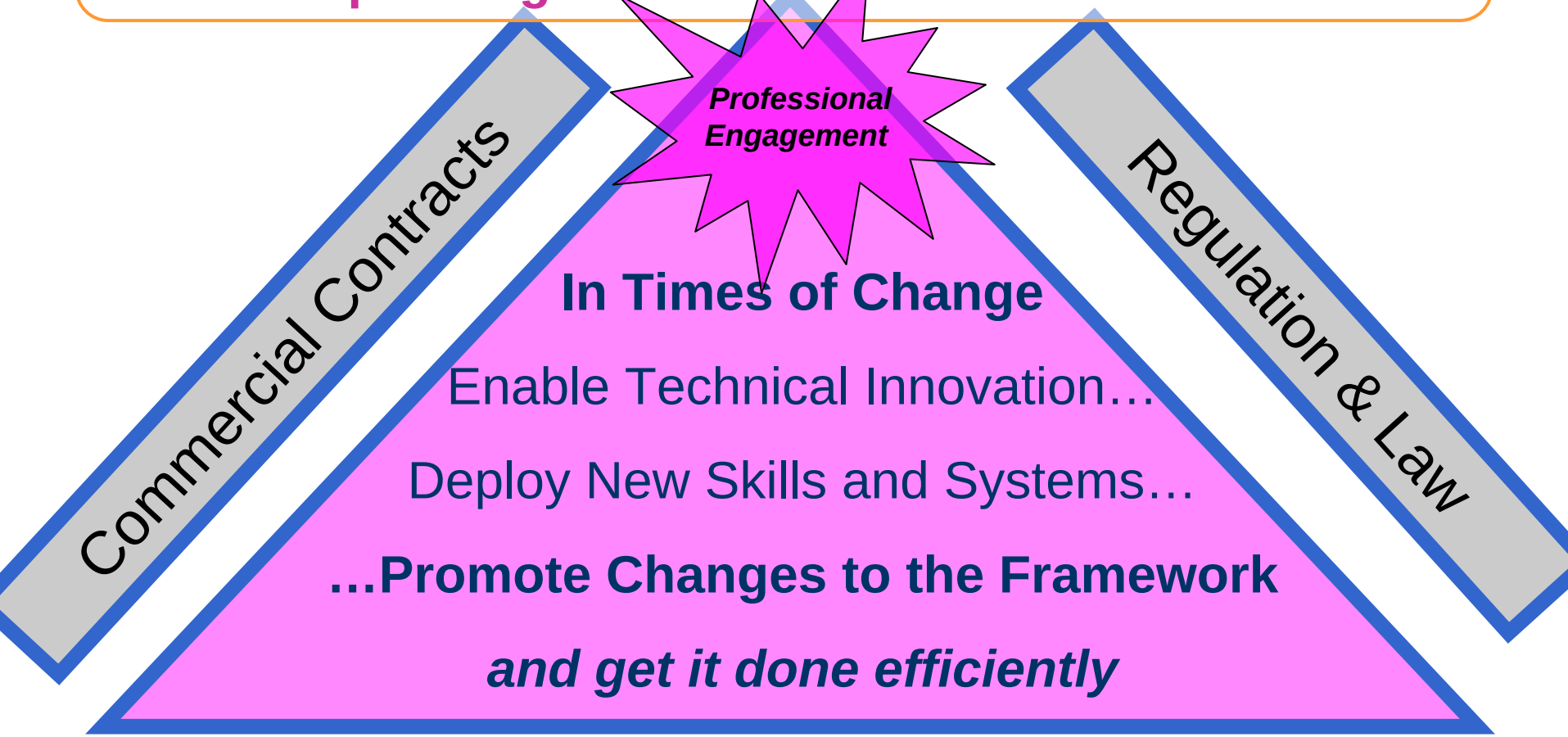
In the absence of central planning the impetus for change is mutual benefit and the mechanism is the 'Professional Engagement' of all the parties

2. The ability to adapt the sector's technical, regulatory and commercial frameworks when needed



Formal change mechanisms are passive processes: alone they will not deliver innovation efficiently

Expanding The Framework for Business



Codes & Standards

Professional Engagement – *current status*

However, Professional Engagement in the sector is currently at a low point

- Sparse engineering representation at events and seminars
- Little authorship of papers or articles to journals and conferences
- Only a trickle of applications for Chartered institution membership
- At a corporate level, companies have almost no engineering profile
- No distribution company manager President of IEE since 1980's

...with full acknowledgement to those individuals who are the exceptions

Professional Engagement – *the pitfalls*

Why is this ?

Some barriers to Engagement

- While companies have become more efficient their internal processes have become more mechanistic with a strong short term focus
- Engineers are working in silos; time allocation is often recorded and rigid personal objectives do not include wider engagement
- The silo mentality says “It’s not my job to think more widely - and I’ll be criticised if I do”. Wider engagement is not viewed as the real job
- There is limited personal discretion and trust has been eroded – so people are cautious about doing things differently
- It is not unusual for engineers to have to book holiday to attend seminars or attend committee meetings of Professional Bodies.

Professional Engagement – *the benefits*

What's the Business Value ?

- ✓ **Breadth of skills and experience brought in to the business; network of contacts, sector intelligence**
- ✓ **A quality self-check and external reference point**
- ✓ **Avoiding known pitfalls; access to historical knowledge that may have been lost in the company**
- ✓ **It stretches people; refreshed skills and enthusiasm are taken back to the company; revitalises commitment to professional standards; a source of job satisfaction and staff retention**

Professional Engagement – *some hazards ?*

But, to be clear…….

- This is not about forming cartels or breaching company confidentialities; it applies fully in competitive and regulated business contexts
- Colleagues may view these activities as peripheral to core and not contributing to shared short-term goals
- The issues here are behavioural – lasting improvement cannot be achieved from below or from middle ranks; if sustained change is desired, leadership will be required from those at the top

The call for action is a wide one for UK business growth. Recent consultation shows the issues prevalent beyond the power sector.

In Summary - Key Messages

- **The path ahead reverses the trend of 50 years. Engineering innovation can be deployed to contain costs and find solutions**
- **Ofgem has introduced new financial incentives for distribution companies to encourage R&D and network innovation for DG**
- **The whole 'technology chain' will need to participate actively if successful innovation is to underpin business growth**
- **Lack of professional engagement is a threat to effectiveness – a wider conversation is needed if this is to be addressed.**

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