

Launch Conference

# EPSRC's Engineering Doctorate A Birthday Oration > its inception & early history



**Eur Ing Emeritus Professor James Powell OBE DSc**

## Mid-wife to the Eng D

*P ASCAL International Observatory for  
place management, social capital and learning regions,  
Salford & Glasgow Universities, Member of New Club of Paris,  
UK Ambassador for Social Entrepreneurship in Higher Education,  
Former Senior Pro Vice Chancellor &  
former Member of HEFCE Business & Community Committee*

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# Period of rapid Higher Education Change – early 1990's

- Government rethinking the Research Councils: SERC > EPSRC
- SERC's Engineering Board Questioned the role of its Higher Education & Training Programmes
- A new thrust to take into EPSRC
- The Powell Report (1993) –
  - urgent need for change
  - a more directive use of scarce resources >>
  - relevance, usefulness and impact of postgraduate education
  - In the present context, to prepare doctoral students to play a more effective & innovative role for future British industry
- Lucas Professor of Engineering Innovation – John Parnaby

*In the UK, the PhD has only existed for a Century > based on Academic Supervision in HEIs - an emphasis on carrying out **HIGH QUALITY Research***



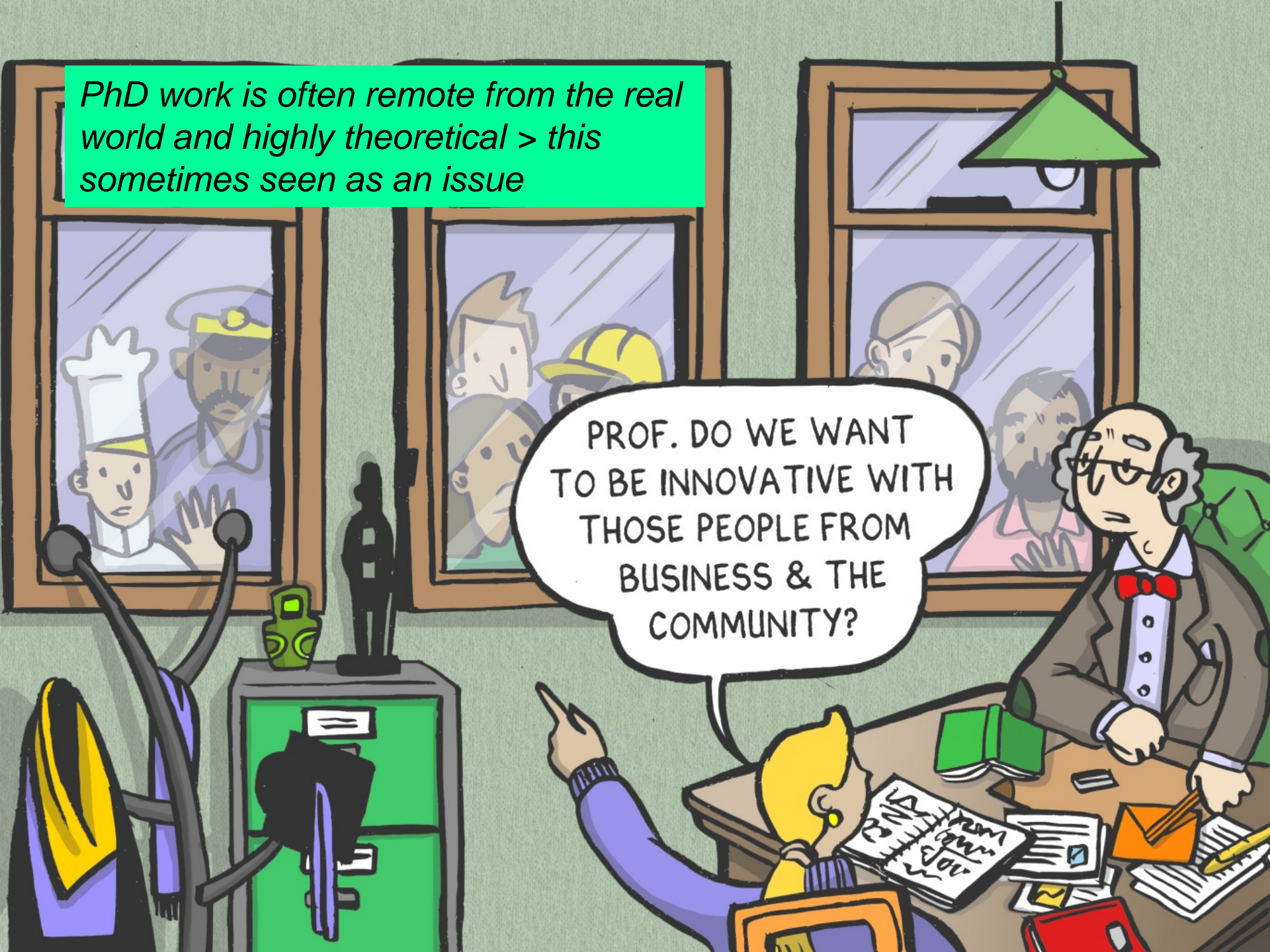
THE DATA'S COLLECTED  
& I'M BUILDING A SOLID  
THEORY... PROF.

HOW'S THE  
RESEARCH  
GOING?

$$\lambda = \frac{2\pi}{h} \cdot \frac{1}{\sqrt{2} \cdot 10^{11}}$$
$$x = 1.2 \times 10^{-11} \text{ m}$$
$$E = 1.48 \text{ eV}$$
$$C = 12.5 \text{ eV}$$

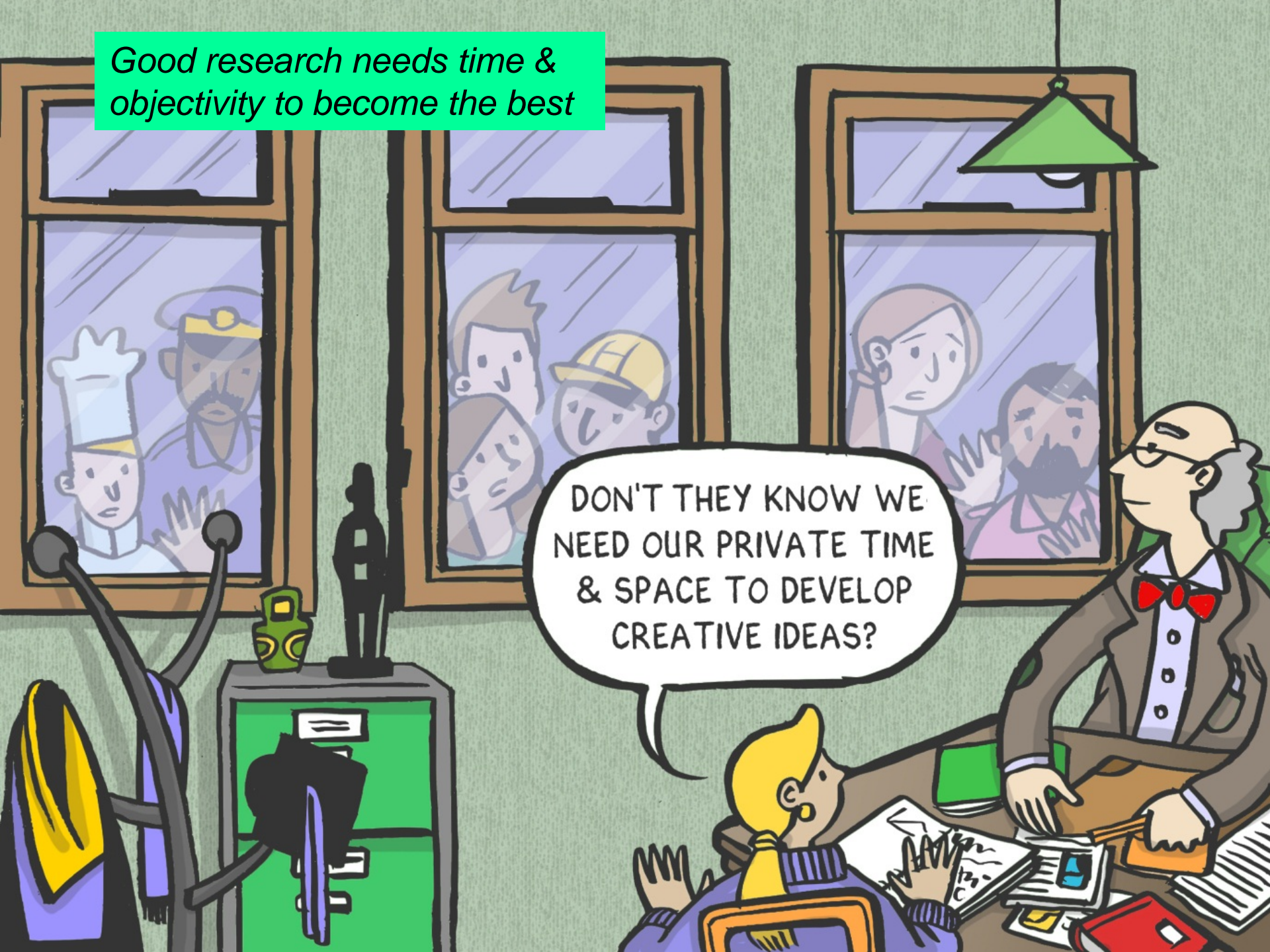


*PhD work is often remote from the real world and highly theoretical > this sometimes seen as an issue*





*Good research needs time & objectivity to become the best*

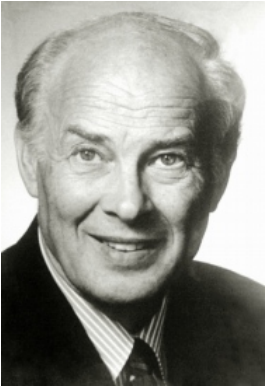




I UNDERSTAND WHAT  
YOU'RE SAYING, BUT AS  
ACADEMICS WE MUST FIND  
A WAY TO UNDERSTAND  
PEOPLES' NEEDS &  
DEMANDS

*Engineers  
especially  
Questioned  
the relevance  
of the PhD!!*

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### The late, Dr John Parnaby CBE FREng – *‘The father of the Engineering Doctorate’*

- Led the change in thinking about doctoral programmes
  - SERC’s Parnaby Report (1990) saw the need for
    - ❑ *‘A major new scheme providing engineering doctorate programmes in the processes and practices of engineering required by industry.’*
    - ❑ *Such an engineering doctorate would be distinct from, and complementary to, the traditional existing PhD which has been criticised by its lack of industrial relevance’*
  - A 4 year programme with a period in industry & partly supervised by an industry-based supervisor.
- Group Director of Lucas Varity p.l.c.
  - President(s) of both the Institution of Electrical Engineers & Production Engineers
  - Awarded the Faraday Medal

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# The Roles of the Education and Training Committee in the development of Engineering Doctorate

- It extended Parnaby's notion so the future 'engineer', would not only have unique and supreme technical and scientific capabilities, but
  - ✓ is concerned with synthesis and creativity
  - ✓ integrates a range of sciences and technologies
  - ✓ applies semi-empirical methods to tackle complexity
  - ✓ has to apply a range of business methodologies
  - ✓ is always concerned with cost effectiveness and financial justification
  - ✓ has a significant managerial, motivating and team building role
  - ✓ has to be able to identify and meet the needs of a customer & provide value for money
- A prototype Engineering Doctorate was developed – E&T of the Engineering Board > *'The Mother of the EngD'*
- Heads of University Engineering Schools surveyed about the proposition, including its name



## EngD into the real world

- No we don't want an specific engineering doctorate and it can't be called DEng
- But, the then Fellowship of Engineering was highly supportive
- Sir Mark Richmond (then CEO of SERC) allowed me to ask Universities again, but for a experimental start up programme of five Engineering Doctorates, followed shortly by a further five (Key = £10 million)
- The title EngD was agreed for the programme > the most hotly discussed topic of the whole development
- This time, nearly all the Engineering Schools applied to run the programmes And, the early doctoral programme were closely monitored & agreed to work closely together to share best practices



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# Monitoring and Development was Key

- The Education and Training Committee of Engineering Board insisted of their being five yearly evaluations of the programmes progress
- Interesting at the inception of the EngD, we could find little truly useful evaluations of the traditional PhD, so we determined to set in motion a route to continuous improvement through evaluation
- There have been two constructive overall Reviews:
  - so compelling that EPSRC that it has continued to invest and expand the programme
  - particularly rave reviews from industry asking for more, which showed that academic work of the highest quality results from these interactions etc?
- The Reviews also confirm that the engineering doctoral graduates :
  - undertake an intellectual challenge equivalent to a PhD
  - experience rigorous, leading edge research in a business context
- The Programmes continue to develop and improve
- The rest is now HISTORY



*My summary of the EngD to date:  
What Engineering & the Country  
Demanded >> innovative &  
talented, leading-edge, doctoral  
engineering graduates now deliver*

SHARING KNOWLEDGE  
CREATIVELY & LEARNING FROM  
ALL OF YOU ADDS REAL MEANING  
TO ANY SUCCESSFUL SOLUTION  
& ENSURES ITS IMPACT!







I THINK THE  
PROBLEM'S ABOUT  
VALUE FOR MONEY

IF ONLY WE ALL  
UNDERSTOOD THE  
COMPLETE  
CONTEXT

WHAT ABOUT  
PEOPLES' NEEDS  
AND WANTS

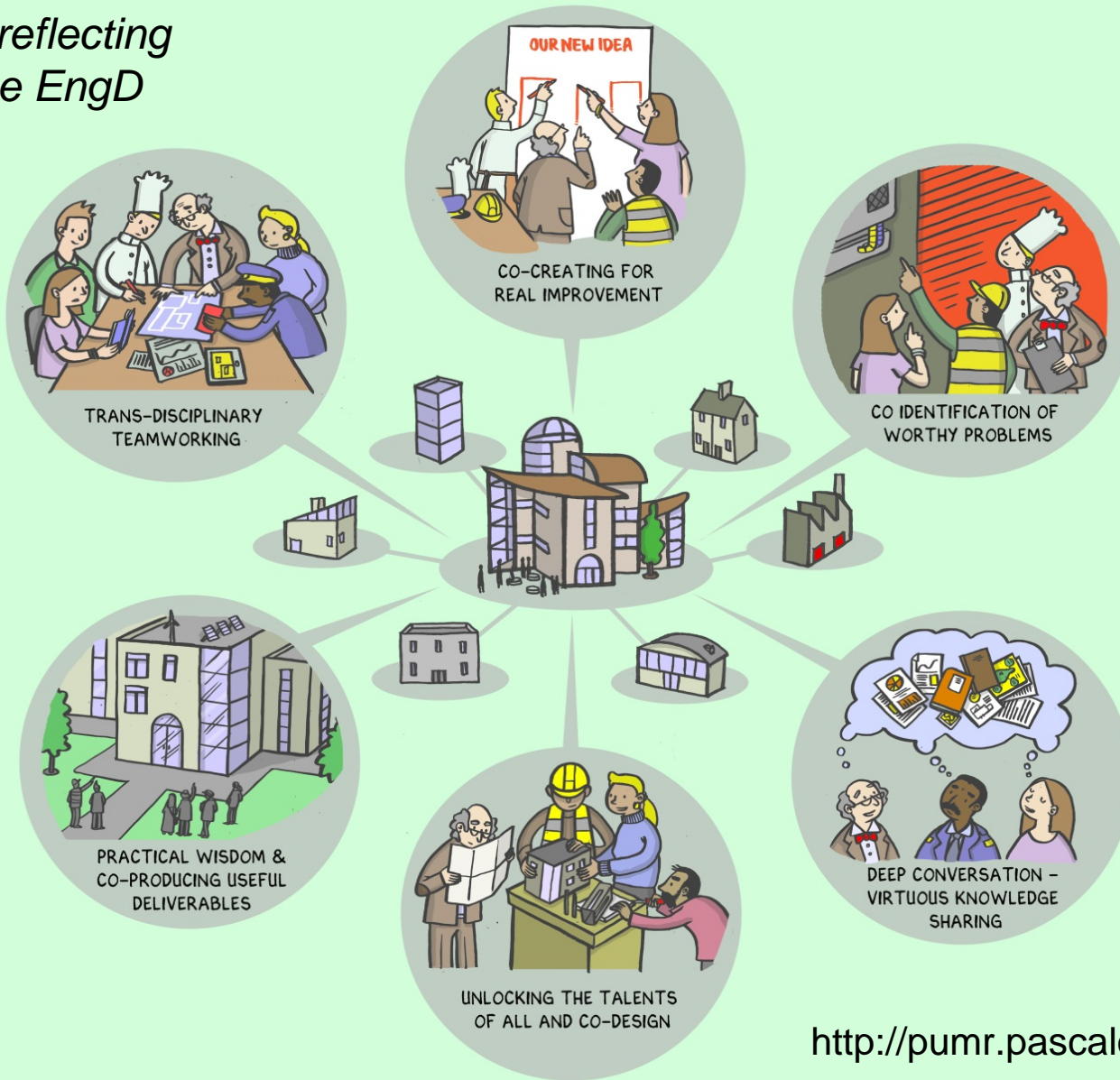
LET'S DESIGN  
PROCESSES  
THROUGH WHICH  
ALL CAN  
FLOURISH

YOU'R ALL  
RIGHT.... IT'S ABOUT  
DESIGNING  
SOLUTIONS A WHOLE  
SYSTEMS AND MAKING  
THEM FIT-FOR  
PURPOSE

*Doctoral Graduates = Innovative  
Engineers that Listen and Respond  
to Need and Demand*



*I am Academic Director  
of a programme for the  
PASCAL International  
Observatory reflecting  
the best of the EngD*



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- I think one of the best outcomes of the Eng D has been Universities have shown they can work to the highest intellectual quality with Industry in ways that mean they come back for more the greatest accolade; and graduates are highly sought after by industry
- *When Professor Chris France (Coach to the EngD) & I developed our own EngD, we didn't even consider it having the successful and rewarding life it clearly now has.*
- Well done all of you in developing the Association & by this, ensuring future programmes continue to develop & flourish by sharing of good practices
- This launch shows your intent.

*So as the Mid-wife to the EPSRC EngD*



May I wish the  
Programme a  
Very Happy  
Birthday

