



PUSHING  
THE FRONTIERS  
OF INNOVATIVE  
RESEARCH

# *GLOBAL DEVELOPMENTS IN DOCTORAL TRAINING*

**Prof. David Bogle**  
**Pro-Vice-Provost of the Doctoral School**  
**University College London (UCL)**  
**Chair of LERU Doctoral Studies Community**

**FOCAPO/CPC, Tucson, Jan 2017**

University of Amsterdam

Universitat de Barcelona

University of Cambridge

University of Edinburgh

University of Freiburg

Université de Genève

Universität Heidelberg

University of Helsinki

Universiteit Leiden

KU Leuven

Imperial College London

University College London

Lund University

University of Milan

Ludwig-Maximilians-Universität München

University of Oxford

Université Paris-Sud 11

Pierre & Marie Curie University

Université de Strasbourg

Utrecht University

University Zurich



PUSHING  
THE FRONTIERS  
OF INNOVATIVE  
RESEARCH

**LERU members:**

- University of Amsterdam
- Universitat de Barcelona
- University of Cambridge
- University of Copenhagen
- Trinity College Dublin
- University of Edinburgh
- University of Freiburg
- Université de Genève
- Universität Heidelberg
- University of Helsinki
- Universiteit Leiden
- KU Leuven
- Imperial College London
- University College London
- Lund University
- University of Milan
- Ludwig-Maximilians-Universität München
- University of Oxford
- Pierre & Marie Curie University
- Université Paris-Sud
- University of Strasbourg
- Utrecht University
- University of Zurich



# Overview

- Researchers' careers context
- European policy on doctoral education
- Pressures
- Trends and Issues

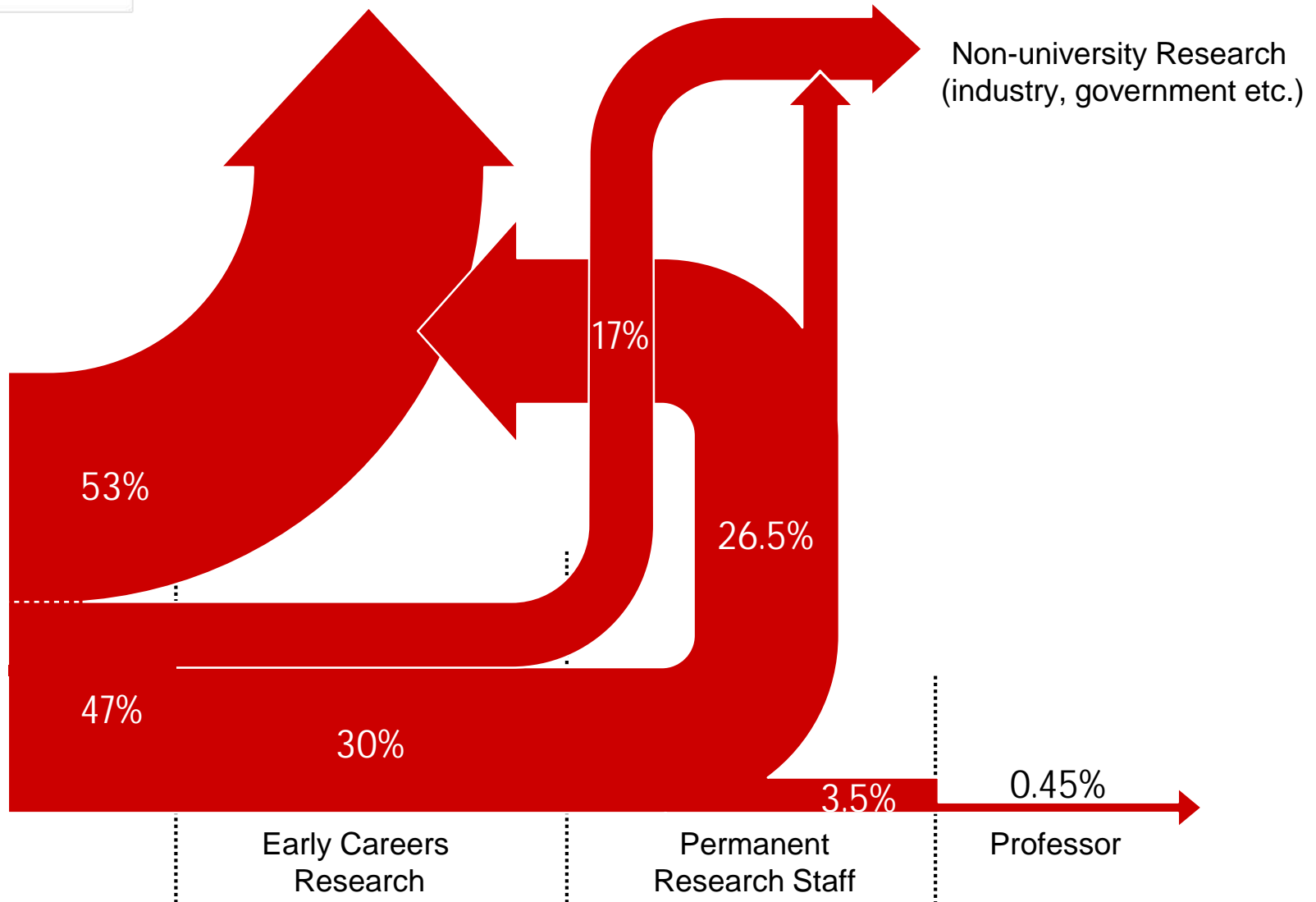
# What do PhDs do (U.K.) ?

source - Vitae

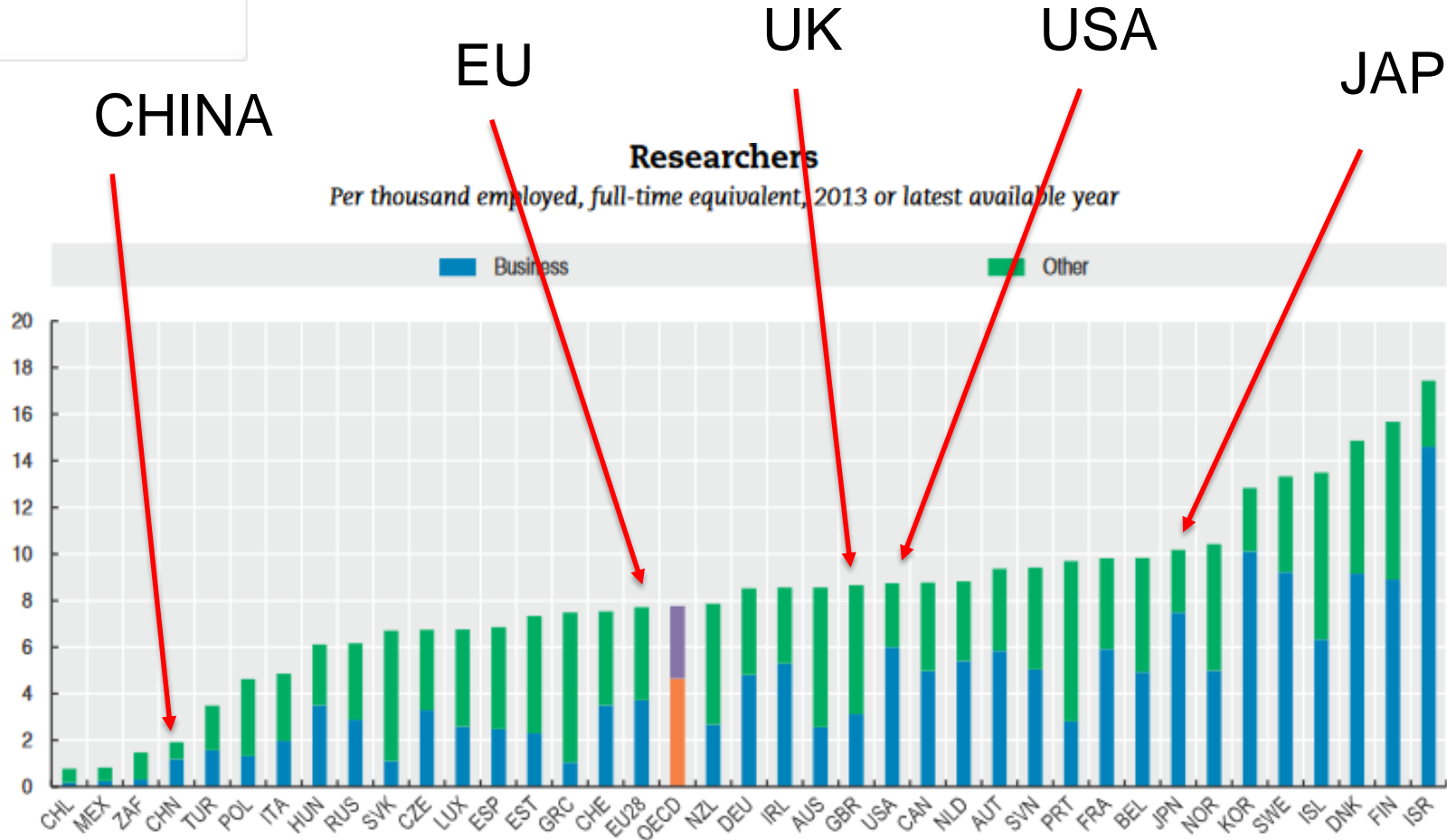
- Education 50%
- Finance Business and IT 9%
- Health and Social Work 17%
- Manufacturing 14%
- Public Administration 5%
- Other 5%

# Royal Society UK

Careers outside science



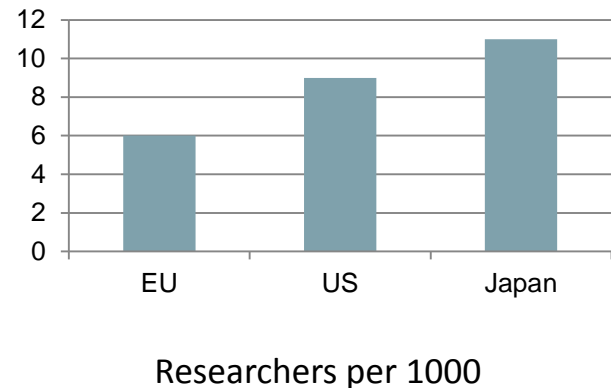
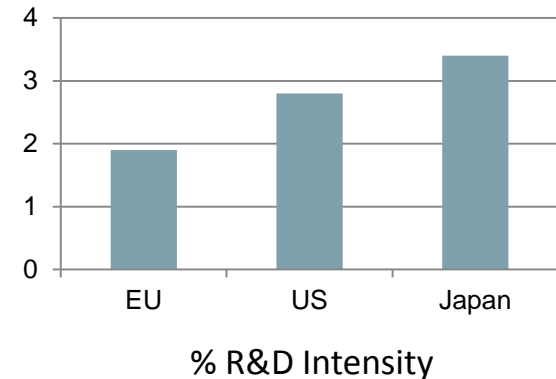
# Researchers per 1000 (OECD)



# European context

The European Union wants to increase research intensity

- European Research Area
- R&D spend target of 3% of GDP
- 1 million new researchers





PUSHING  
THE FRONTIERS  
OF INNOVATIVE  
RESEARCH

# Changing Doctoral Education in Europe and beyond

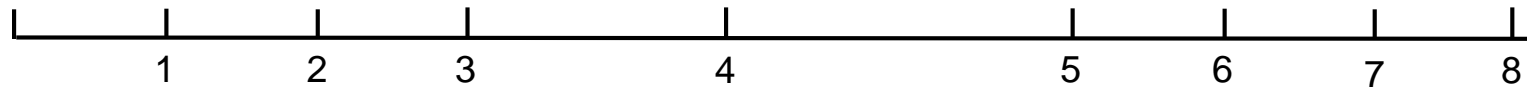
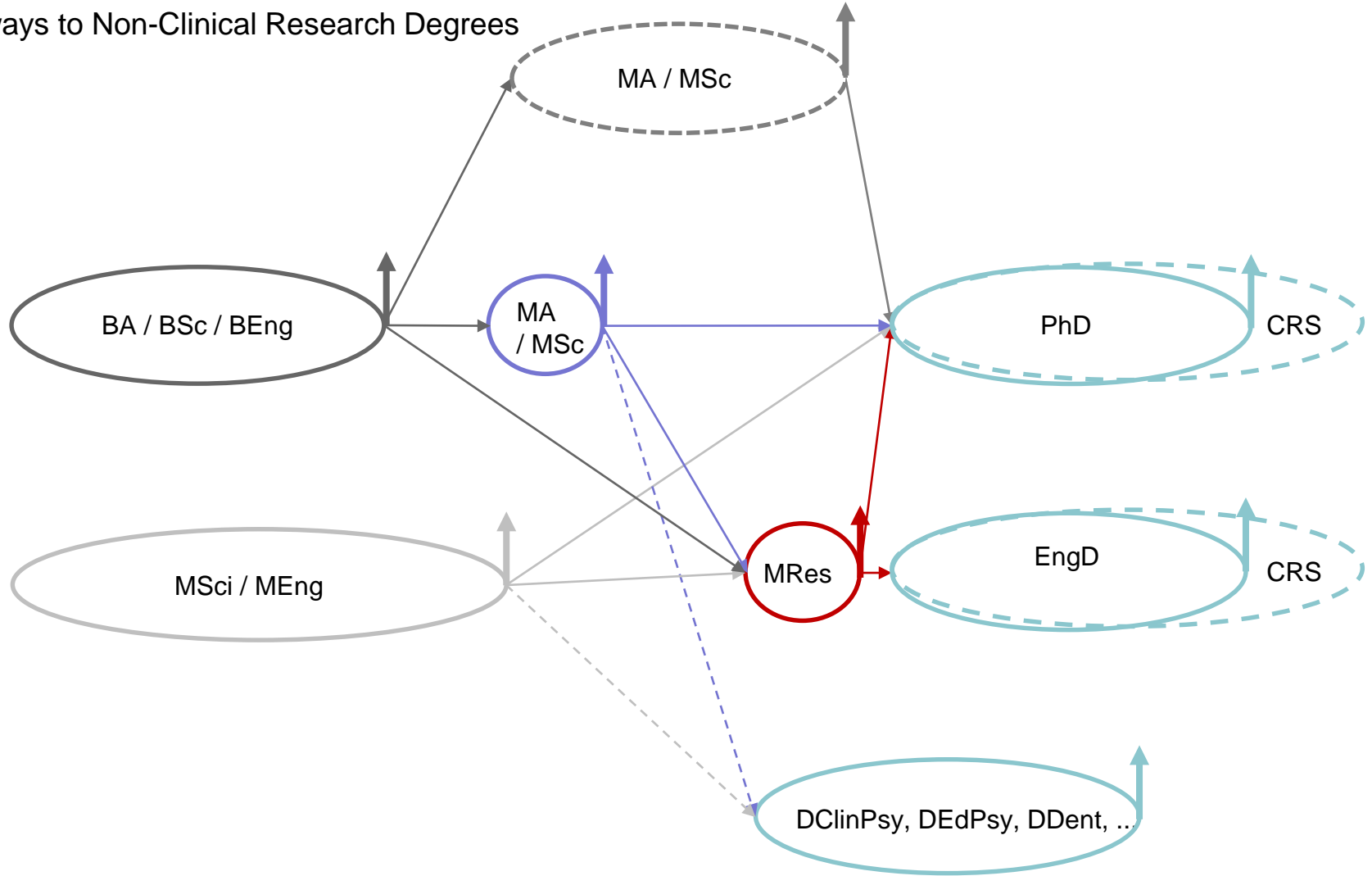


# Bologna Declaration

## - HE harmonisation in Europe and beyond

- Bachelor – Masters – Doctorate (3+2+3)
- Europe? Models for Bologna compliance are very varied
- MEng - Integrated masters of 4 yrs
- BEng + MSc – research focussed Masters

# Pathways to Non-Clinical Research Degrees



# European Doctoral Policy (05 - )

## 10 Salzburg Principles for Doctoral Education 2005

### Salzburg II 2010

Funding, Institutional autonomy, Legal framework, Intersectoral collaboration

### LERU 2010

‘Doctoral degrees beyond 2010: Training talented researchers for society’

### European Commission and ERA 2011:

### 7 Principles for Innovative Doctoral Training

Intersectoral, Interdisciplinary, International

### ERA Framework Commitment 4.2 2012

Quality of Doctoral Training: employment conditions, gender balance, mobility, cross-border collaboration, dissemination, consistency

# 10 Salzburg Principles for Doctoral Education

- Core is original research
- Embedding in institutional strategies and policies
- Diversity of practices
- Doctoral candidates as early career researchers
- Role of supervision and assessment – transparent
- Achieving critical mass
- Duration 3 to 4 years full time
- Promotion of innovative structures
- Increasing mobility
- Ensuring appropriate funding

# The Modern Doctorate

'Doctoral degrees beyond 2010: Training talented researchers for society' (LERU, 2010)

- Doctoral graduates are the **drivers** of their professional development,
- While being immersed in a **research-rich** environment,
- Where **boundaries** to other research fields are highly **permeable**,
- And in which connections to the external world have a **global outlook**,
- And link to **other sectors of society**,
- So that the skills the new doctors develop are highly **valuable** to the knowledge society.

Creative Critical Autonomous Intellectual Risk Takers

# LERU Doctoral Studies Reports

- Doctoral degrees beyond 2010: Training Talented Researchers for Society (2010)
- Good Practice in Doctoral Education (2014)
- Maintaining a Quality Culture in Doctoral Education (2016)

[www.leru.org](http://www.leru.org)

# ERA 7 Principles for Innovative Doctoral Training

- Research Excellence
- Attractive institutional environment
- Interdisciplinary research options
- Exposure to industry and other sectors
- International networking
- Transferable skills training
- Quality Assurance

# Pressures

- Breadth versus depth
- Academic and non-academic careers
- Collaboration with industry
- Time to submission
- Consistency
- Isolation
- Diversity



# Breadth and depth

Range of research experiences

Generic skills

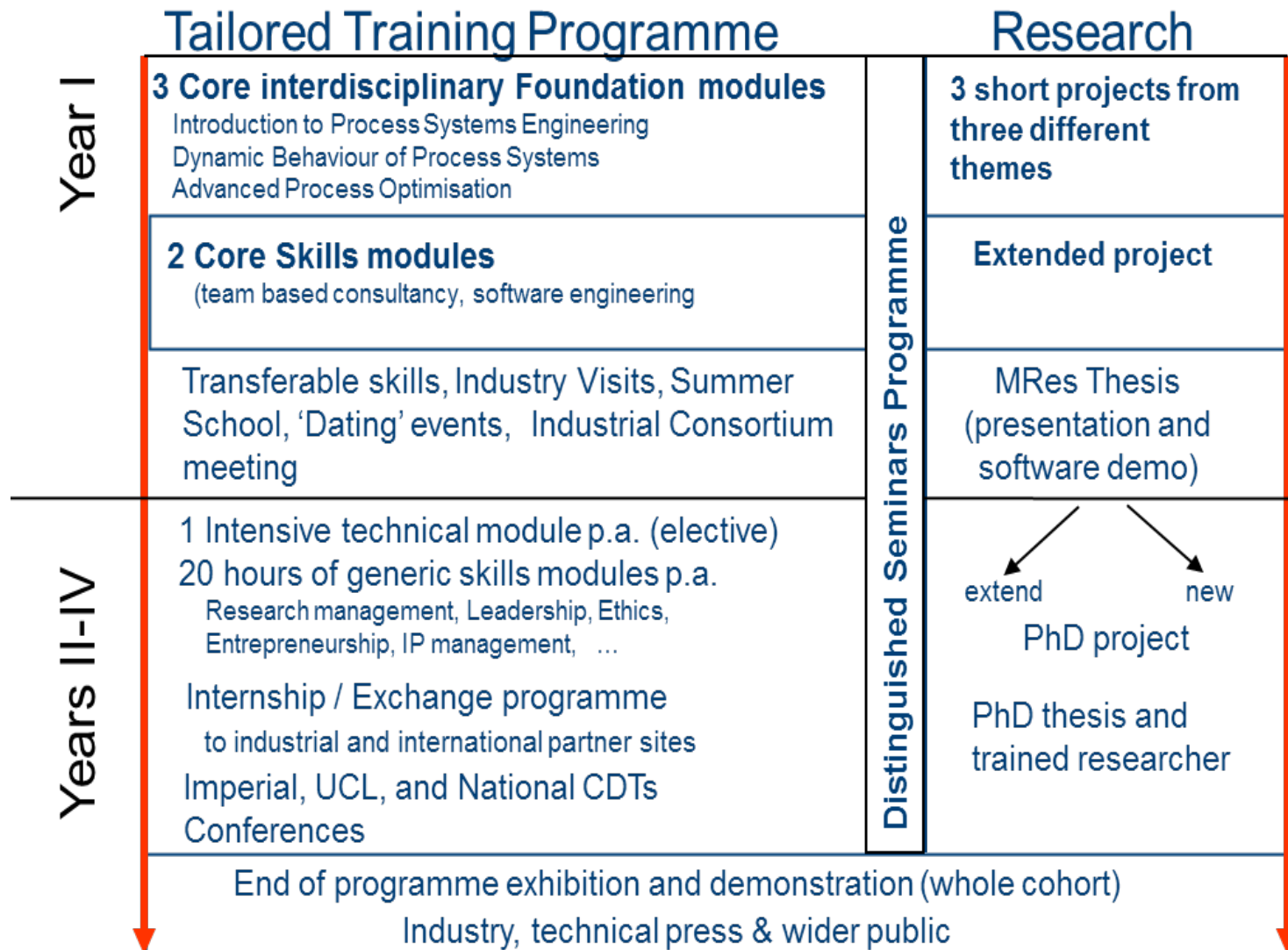
Career perspectives

UK Centres for Doctoral Training

Year 1: 2 technical courses, 4 projects,  
generic skills

Years 2-4: Main project, generic skills

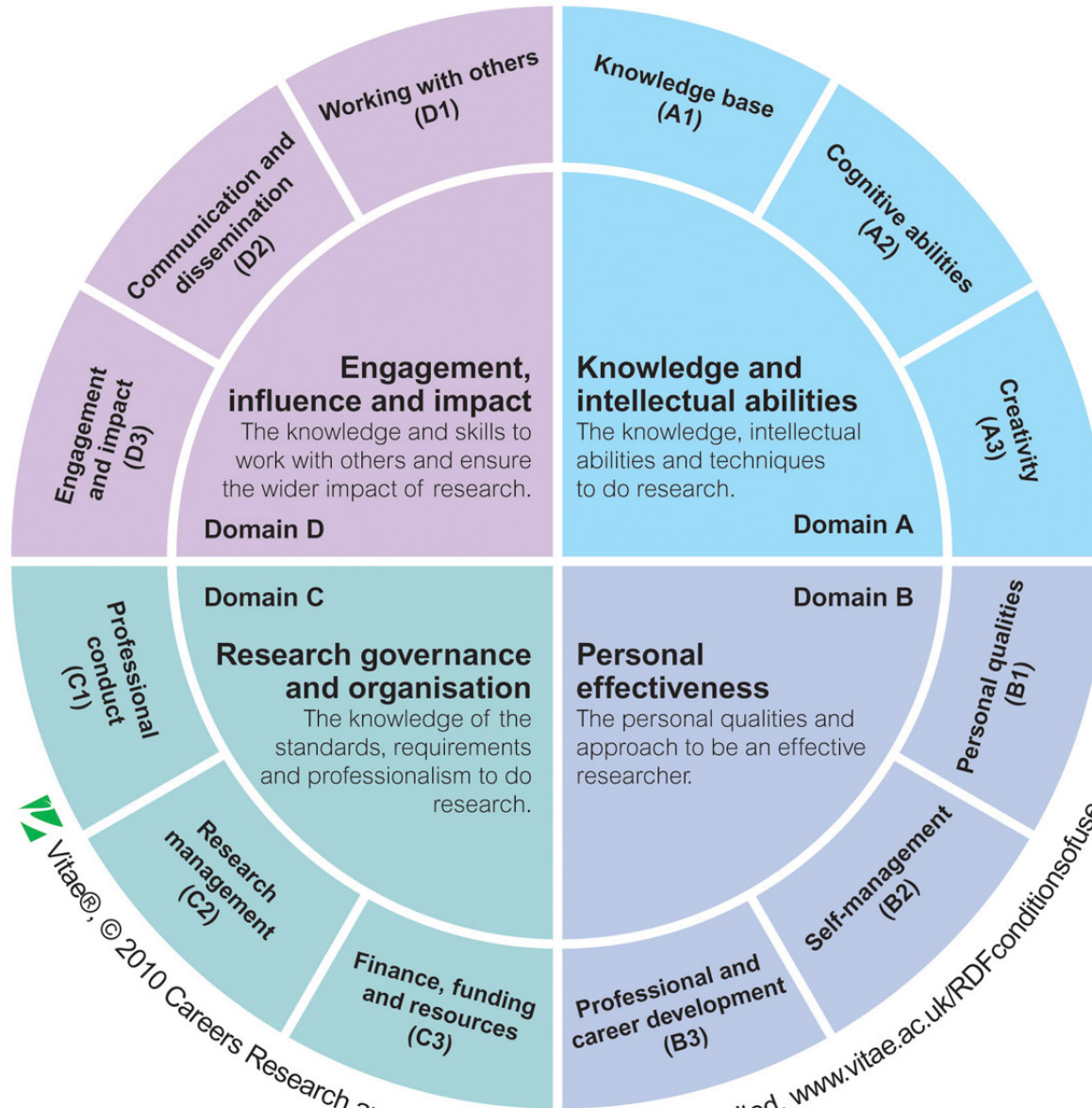
# Doctoral Training in Process Systems Engineering



# Transferable Skills

Research Skills and Techniques, Research Management, Personal Effectiveness, Communication Skills, Networking and Teamworking, Career Management

# Researcher Development Framework VITAE, UK



# Trends and Issues in Doctoral Education

- Structured doctorates and cohorts
- Integrity
- Open Science and Innovation
- Impact and Communication
- Global collaboration
- Intersectoral collaboration
- Careers and advice
- Professional Doctorates

# Overview

- Researchers' careers context
- European policy on doctoral education
- Pressures
- Trends and Issues

Contact Prof. David Bogle at  
[docschoolhead@ucl.ac.uk](mailto:docschoolhead@ucl.ac.uk)



**Info@leru.org**  
**www.leru.org**



**League of European Research Universities (LERU)**  
**Minderbroedersstraat 8**  
**3000 Leuven - BELGIUM**