

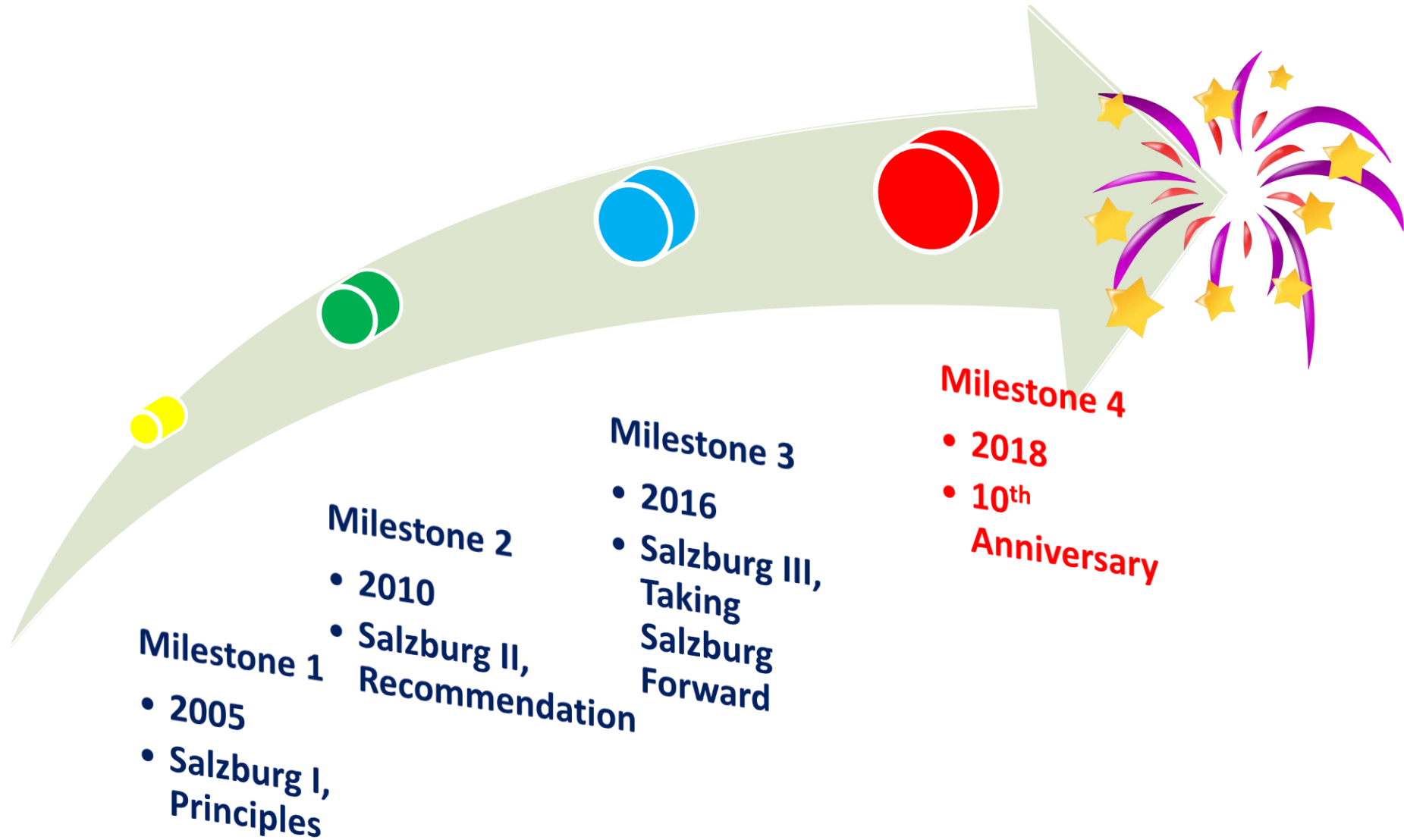


Hints And Tips for those New to Doctoral Education

Professor Mary McNamara

**Head of Graduate Research School, Dublin Institute of Technology
Formerly Steering Committee, Council for Doctoral Education, EUA**

CDE Milestones

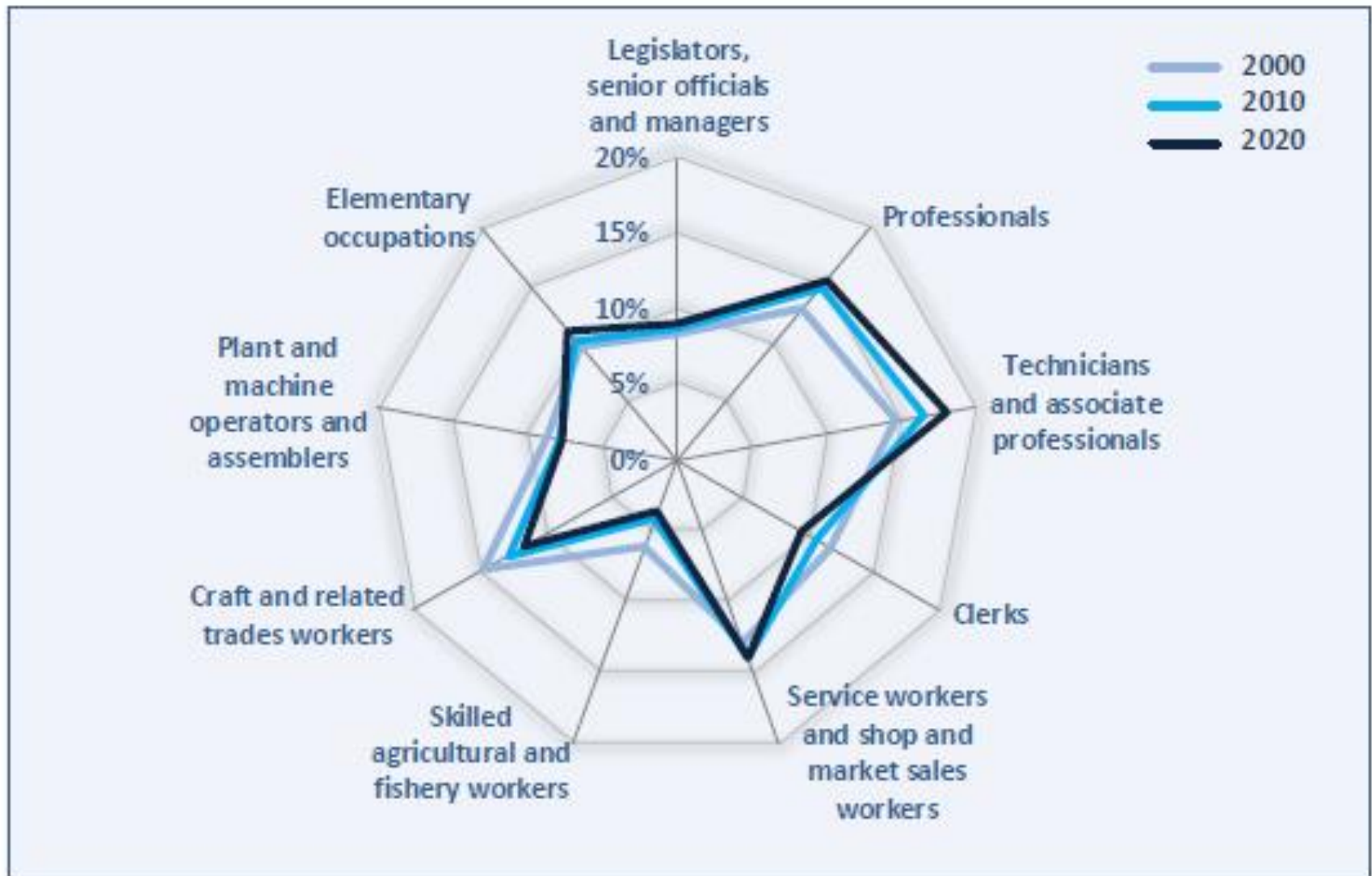


Challenges late 1990s

Why change doctoral education?

- **Changing labour market**
- **By 2020, in Europe**
 - 16 million more jobs will require high qualifications
 - Demand for low skills will drop by 12 million jobs

Labour Markets are Changing – EU-27+



Source: Cedefop (based on IER estimates).

Salzburg Principles 2005

- 1. Original research and training**
2. Embedding in institution strategies and policies
3. The importance of diversity
4. Doctoral candidates as early stage researchers
5. Crucial role of supervision
6. Achieving critical mass
7. Duration
8. Innovative Structures
9. Increasing mobility
10. Ensuring appropriate funding

European Commission 2011

- 7 Principles of Innovative Doctoral Training
- <https://euraxess.ec.europa.eu/belgium/jobs-funding/doctoral-training-principles>
- Research excellence
- Attractive Institutional Environment
- Interdisciplinary Research Options
- Exposure to Industry and other relevant employment sectors
- International networking
- Transferable skills training
- Quality Assurance

Salzburg Declaration 2005

*Doctoral education's core component is the advancement of knowledge through **original research**.*

At the same time it is recognised that doctoral training must increasingly meet the needs of an

employment market that is wider than academia

Ref: http://www.eua.be/Libraries/newsletter/Salzburg_Conclusions.pdf?sfvrsn=0

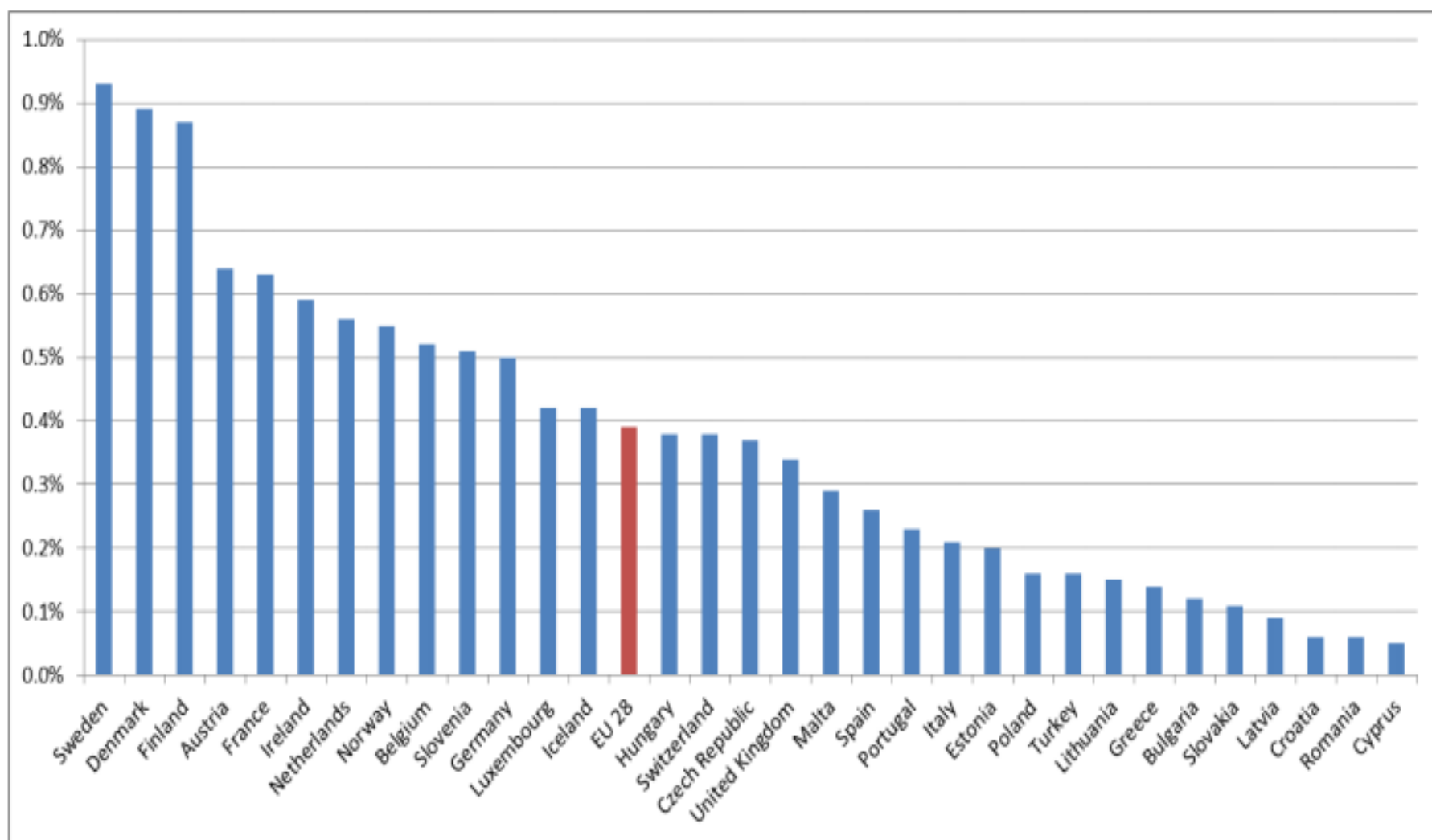


Figure 1 Countries according to the number of researchers employed in industry as share of total employment (Eurostat, 2016)

Salzburg Principles 2005

2. Embedding in institution strategies and policies

Institutions must manage doctoral education more professionally

Most progress in this area

3. The importance of diversity

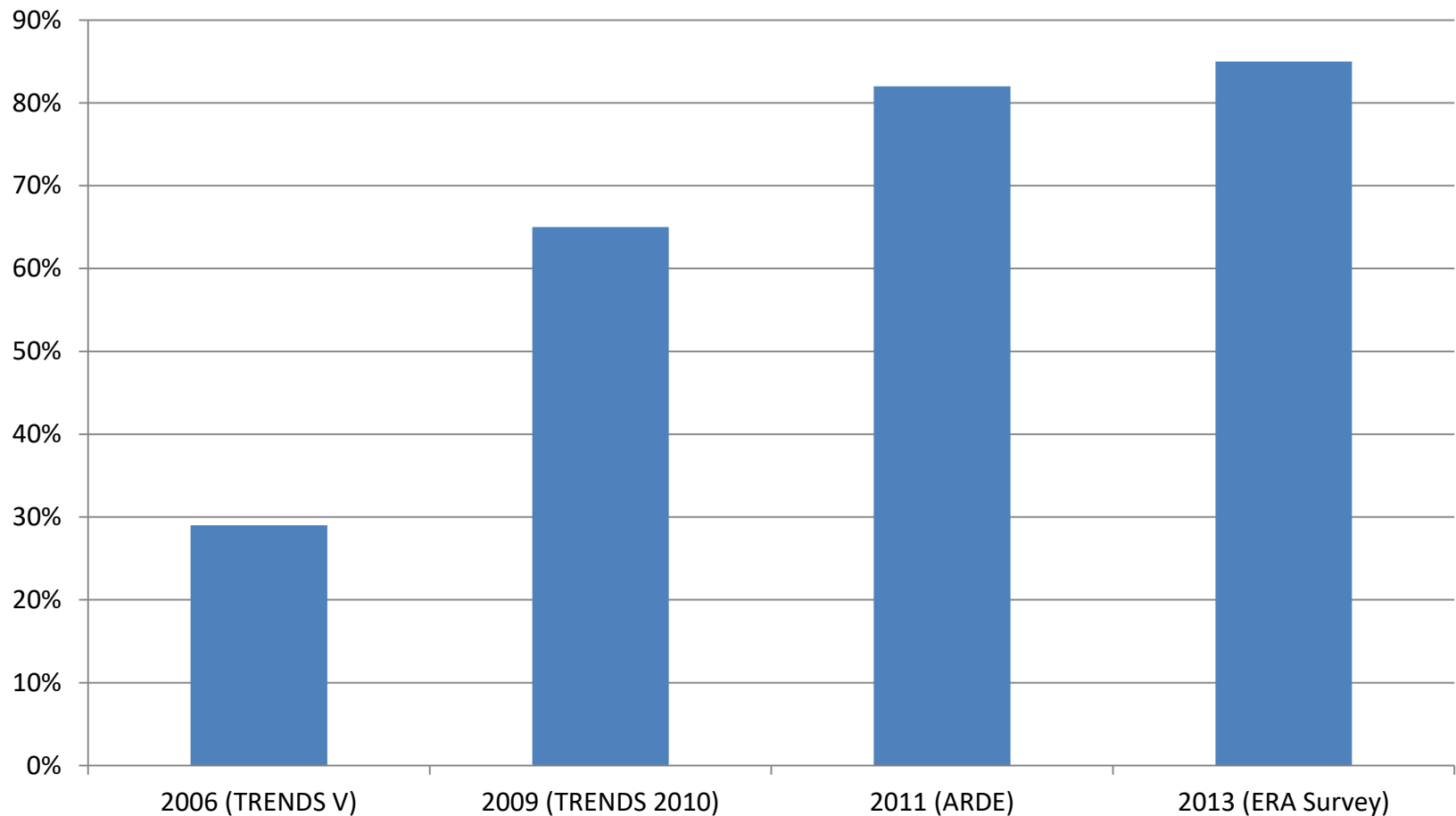
Different national traditions and legislations

Common ideas of 'quality and sound practice'

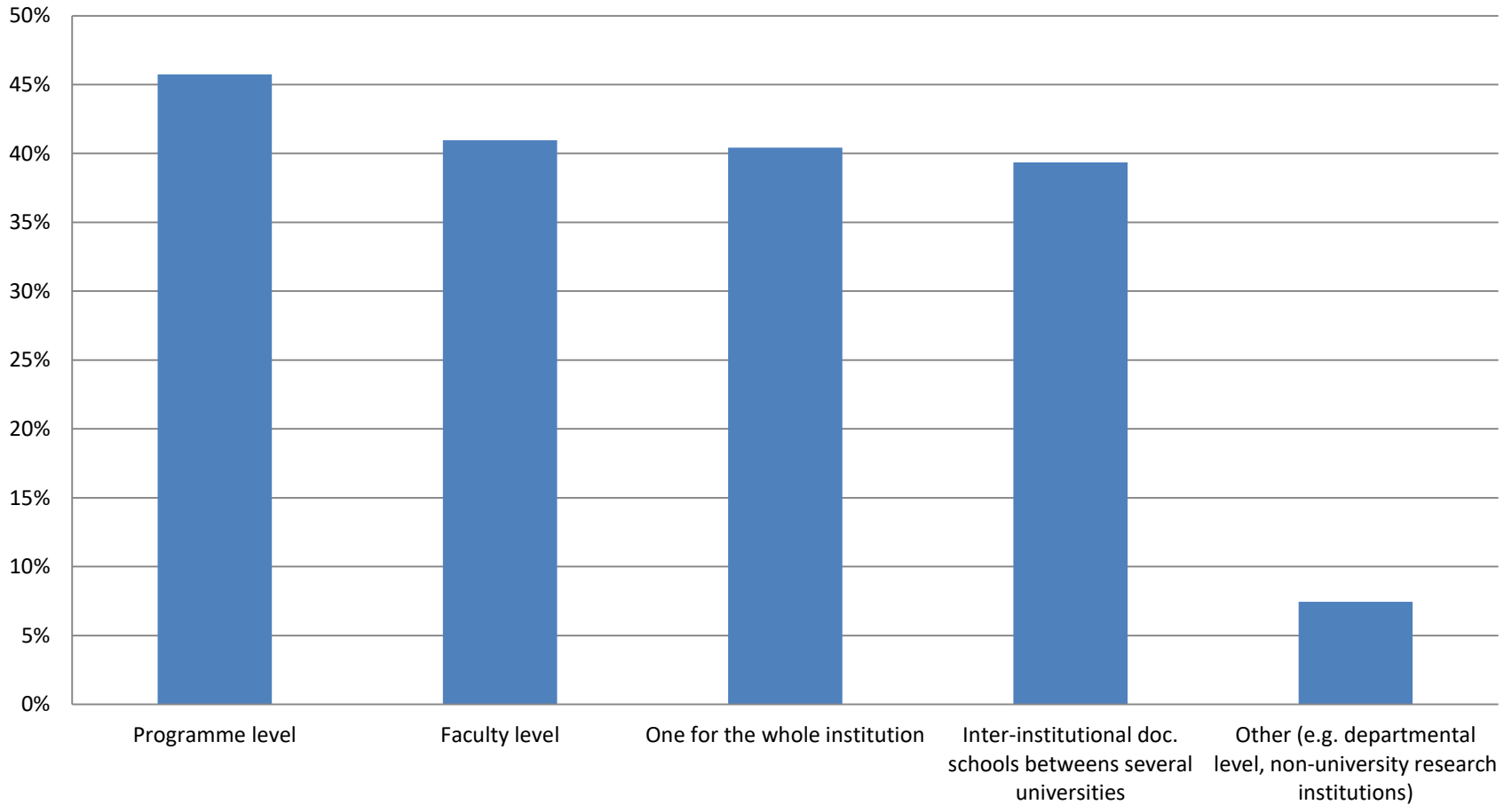
One goal, different routes

Rise of the Doctoral School

Universities with doctoral schools



Location of Doctoral Schools



Salzburg Principles 2005

4. Doctoral candidates as early stage researchers

Different status in different countries.

Registered students and/or employed as researchers

Professionals contributing the creation of new knowledge

5. Crucial role of supervision

Transparent contractual framework of shared responsibilities

eg Graduate Research Regulations

<http://www.dit.ie/media/documents/study/postgraduateresearch/Graduate%20Research%20Regulations%20Ed%207.pdf>



APPENDIX 1

Good Practice Guidelines and Responsibilities

A1.1 Responsibilities of Research Student

A1.2 Responsibilities of All Supervisors

A1.3 Responsibilities of the Lead Supervisor(s)

A1.4 Responsibilities of Advisory Supervisor

A1.5 Role of the Associate Supervisor

A1.6 Role of the Head of School

A1.7 Role of the College Head of Research

A1.8 Role of the College Board

A 1.9 Role of Research Programme Committee

A1.10 Role of the Graduate Research School

Salzburg Principles 2005

6. Achieving critical mass

Individual doctoral candidates should feel part of a cohort

Different solutions for different contexts

eg graduate schools in major universities

eg international, national and regional collaborations.

eg National PhD programmes

7. Duration

Programmes should have an appropriate duration

Need to define maximum time to completion

3-4 years fulltime as a rule

Critical Mass *via* Group Work


- Great value in group work activities
 - Opportunity to look beyond own work
 - Share experiences
 - Exposure to different perspectives
 - Apply and validate theories in different contexts
- Creates a community of researchers
- Provides peer support and a sense of identity

The PhD House, Aarhus University



- Focal point for national and international PhD students to meet, professionally and socially.
- The PhD House contains:
 - Lecture rooms for courses on transversal skills
 - Dales Café
 - Service desk for international PhD students
 - AU housing department deals with housing matters for international PhD students

- Joint Ph.D. Degree Programmes
 - NUS-Indian Institutes of Technology
 - NUS-Kings College London
 - NUS-Hebrew University of Jerusalem
- NUS-IIT
 - Indian Institute of Technology Bombay (IITB)
 - Indian Institute of Technology Madras (IITM)
 - Indian Institute of Technology Kanpur (IITK)
- Registered at both NUS and IIT and graduate with joint degree.
- Spend >two semesters each at NUS and IIT on modules or research.



AGRI-FOOD GRADUATE
DEVELOPMENT
PROGRAMME

Specialist skills training for
postgraduates in
agriculture, forestry,
horticulture, food and
nutrition

Hot Topics in the Agri-Food Sector
UCD Date TBC

1 Nov To 30 Nov

[More Info](#)



- National PhD Programme developed by UCC & UCD
- Doctoral candidates registered at a single Irish university
- Doctoral candidates undertaking on a food-related PhD
- Graduate with single degree from home institution
- Travel to other institutions to take modules

Salzburg Principles 2005

8. Develop Innovative Structures

To meet the challenge of interdisciplinary training

To develop transferable skills

9. Increase mobility

Offer geographical mobility

Offer interdisciplinary and inter-sectoral mobility

Offer international collaboration

10. Ensuring appropriate funding

For development of quality doctoral programmes

For successful completion by candidates

Increasing Mobility – Triple I

Offer

Interdisciplinary

Inter-sectoral

International mobility

Why encourage Inter-Sectoral mobility?

- To enhance Two-Way Knowledge Exchange
- To broaden Skills Set of PhD Graduates
- To increase Absorptive Capacity of Business
- **To Enhance Innovation Capability of
Graduates, Universities and Business**

University

PhD Candidate

Internship

Joint Supervision

Collaborative Projects

Employment-Based
PhD

Industrial PhD

Spin-Outs

Business

R&D

Interventions

EUA Projects

- DocCareers I
- ‘Collaborative Doctoral Education: University-Industry Partnerships for Enhancing Knowledge Exchange’
 - <http://www.eua.be/activities-services/projects/past-projects/research-and-innovation/doc-careers.aspx>
- DocCareers II
- ‘Promoting collaborative doctoral education for enhanced career opportunities’
 - <http://www.eua.be/activities-services/projects/past-projects/research-and-innovation/doc-careers-ii.aspx>

Any Questions So Far?



New Challenges

Research will be very different for new generations



Doctoral candidates will work very differently from supervisors, and there will be new challenges

Salzburg III

Taking Salzburg Forward

New challenges

- ❖ Research Integrity
- ❖ Globalisation
- ❖ Digital Challenge

March 2017

Describes good research practices in

- Research Environment
- Training, Supervision, Mentoring
- Research Procedures
- Safeguards
- Data Practices and Management
- Collaborative Working
- Publication and Dissemination
- Reviewing, Evaluating and Editing



**The European
Code of Conduct for
Research Integrity**

REVISED EDITION



Globalisation

- **International Research Environments**
- **Global Recruitment**
- **Worldwide Networks**

The Framework for the Internationalisation of Doctoral Education (FRINDOC)
Launch Event will present a framework with suggestions for a
comprehensive approach to internationalising doctoral education.



The Digital Challenge

- **Big Data**
- **Open Research, Open Science, Open Innovation, Open Access**
- **Social Media**



Any Questions So Far?



Develop Innovative Structures

To meet the challenge of interdisciplinary training

To develop transferable skills

Innovative Structures

- Formation of doctoral/ research/ graduate schools
 - Graduate school is an independent organisational unit
 - Clear effective administration and strong leadership
 - Trend towards structured programmes
 - Provides crosscutting transferable skills development support

**Why provide training
& develop transferable skills?**

The Role of PhDs in the Smart Economy

December 2009

Forfás 



Flash Eurobarometer



Employers' perception of graduate employability

Analytical report

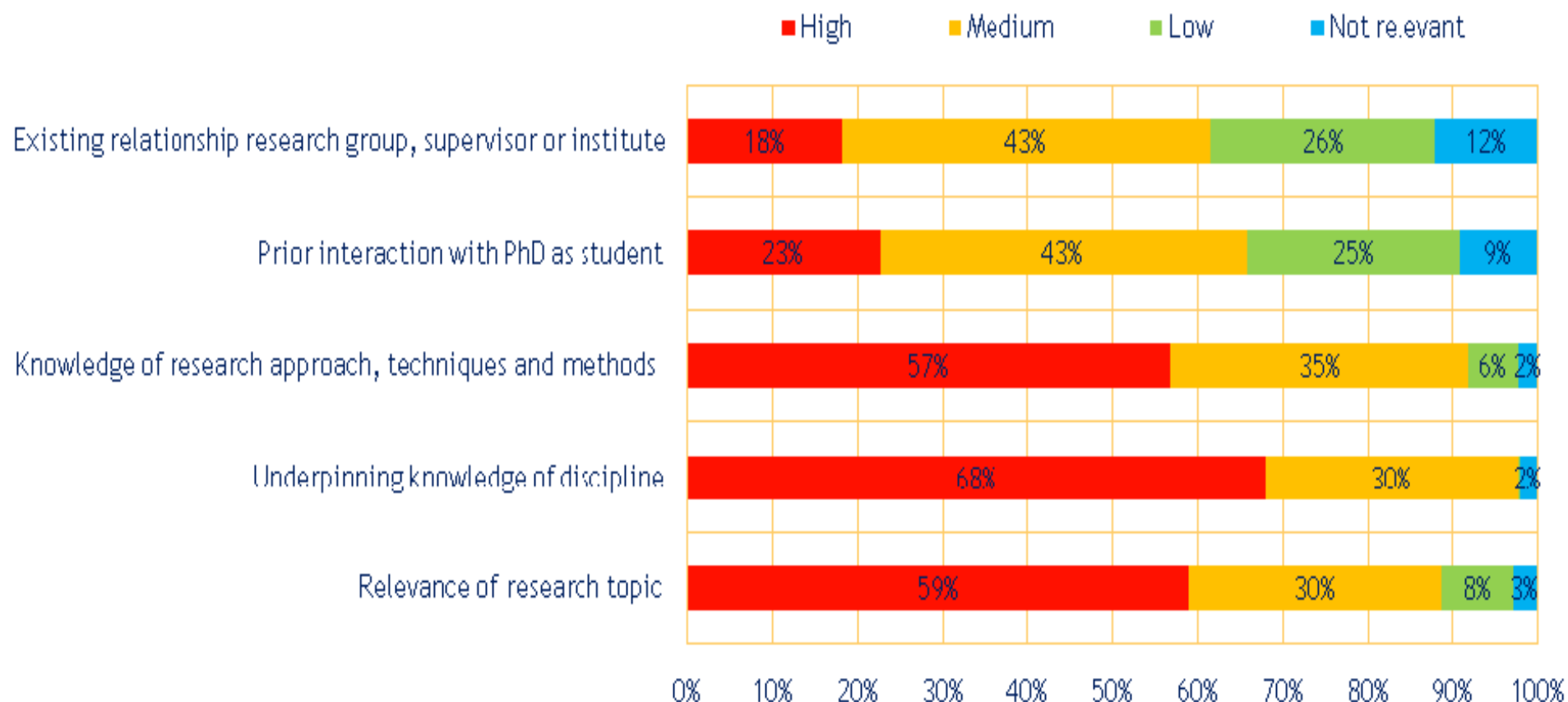
Fieldwork: August-September 2010

Publication: November 2010

Flash Eurobarometer 304 – The Gallup Organization

This survey was requested by Directorate-General for Education and Culture and coordinated by Directorate-General Communication.
This document does not represent the point of view of the European Commission. The interpretations and opinions contained in it are solely those of the authors.

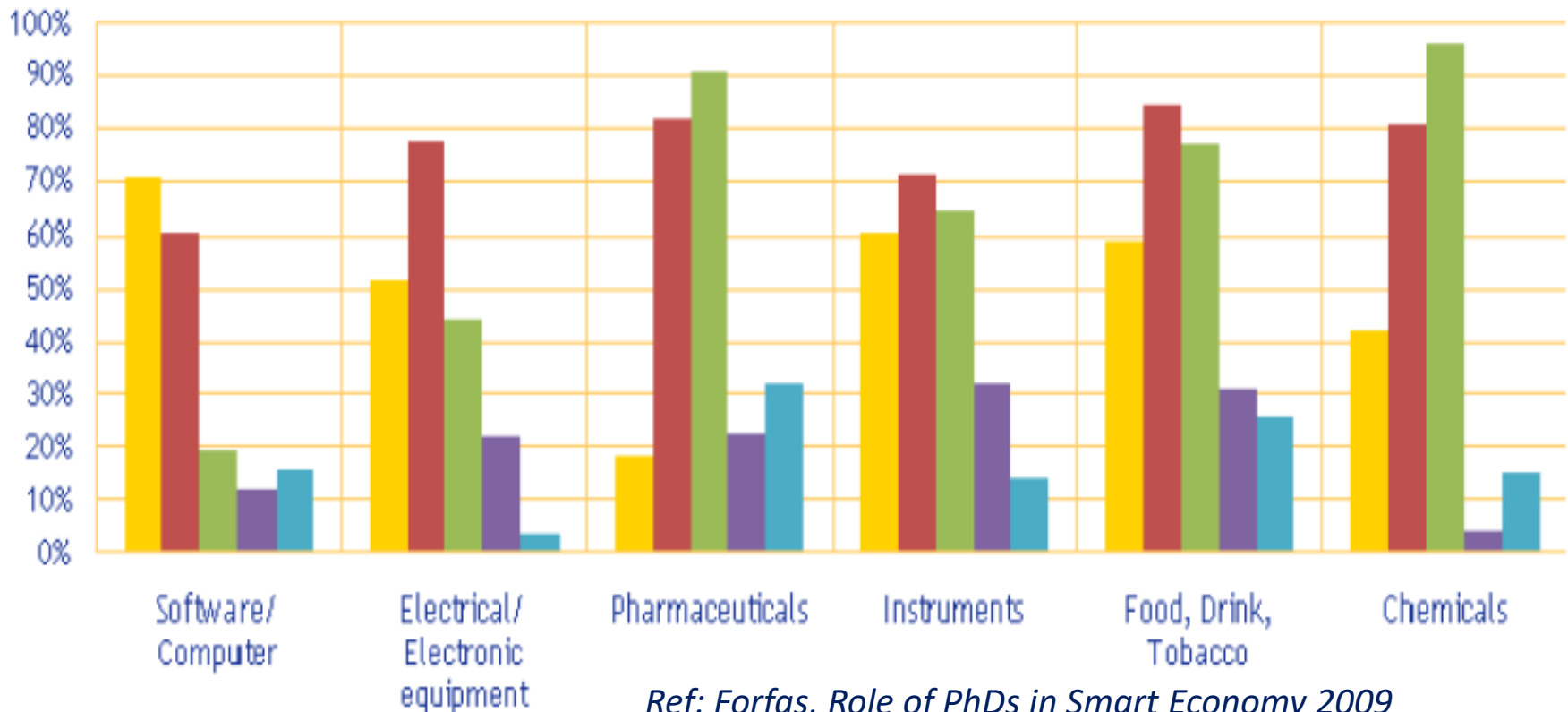
Considerations when recruiting PhDs



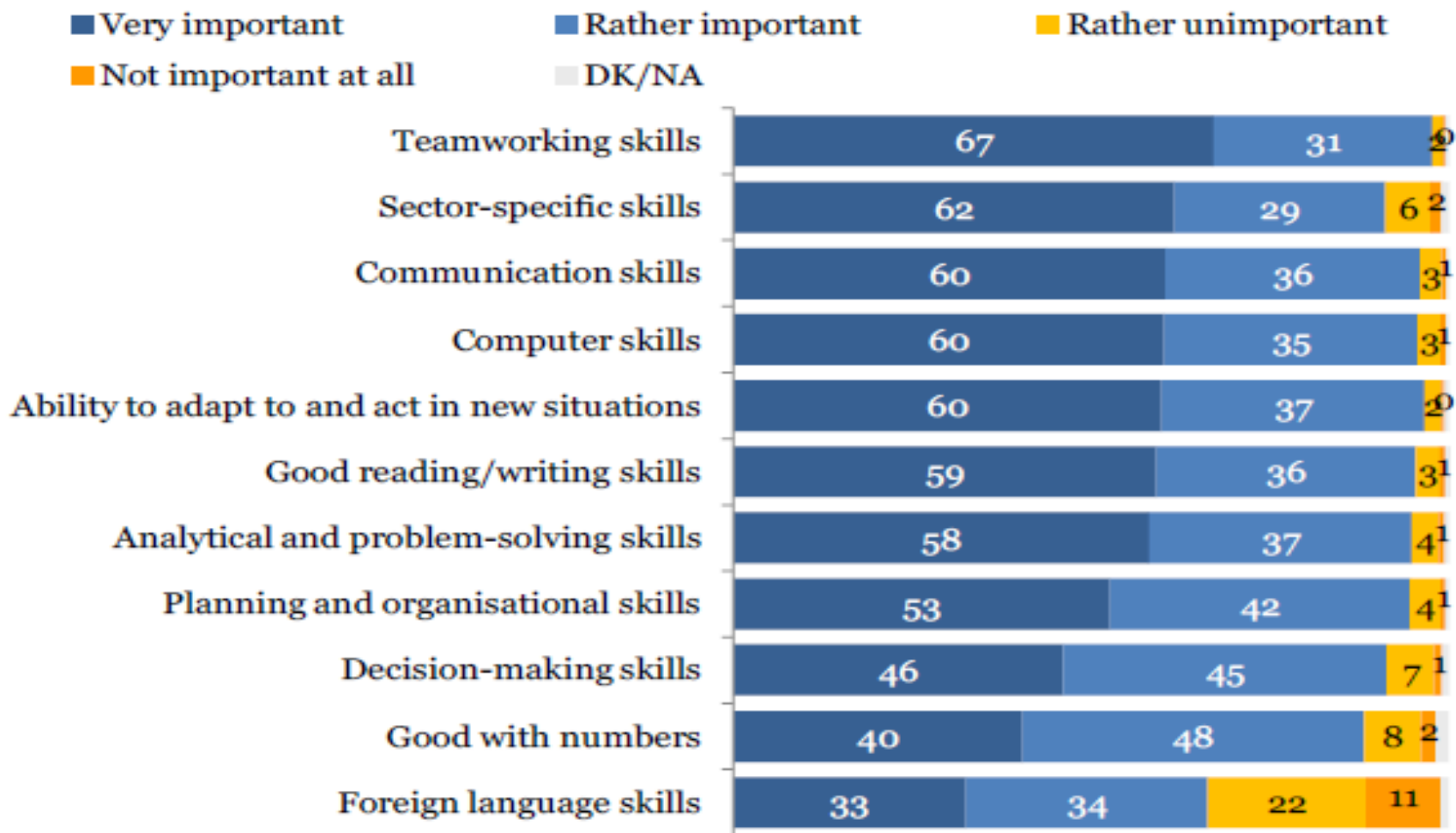
Ref: Forfas, Role of PhDs in Smart Economy 2009

Important Skills when Employing Researchers - Ireland

- Relevance of research topic
- Knowledge of research approach, techniques and methods
- Existing relationship research group, supervisor or institute
- Underpinning knowledge of discipline
- Prior interaction with PhD as student

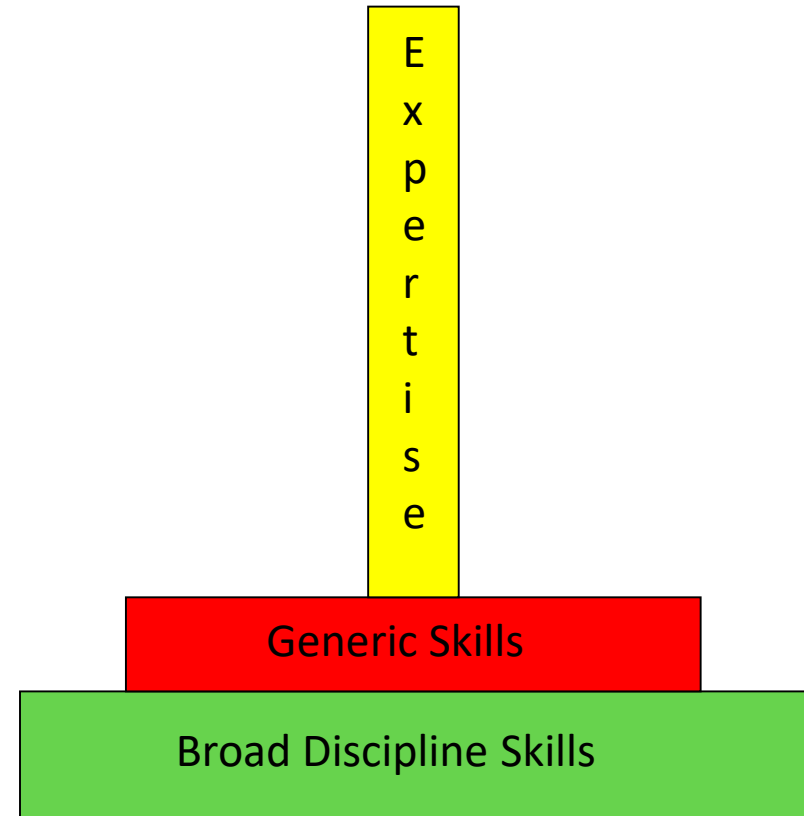


Important Skills when Employing Researchers – EU-27+



Inverted T Model

- Formal consultation with business in development of PhD programmes
- PhD programmes to embody “Inverted T” model



Ref:

http://www.forfas.ie/media/asc091215_role_of_phds.pdf

**Know the Background of your Candidates
&
Understand Their Motivations
&
Manage Everyone's Expectations**

Diverse Background of Doctoral Candidates

- **Origin** – eg in DIT $\frac{1}{3}$ Irish, $\frac{1}{3}$ other EU, $\frac{1}{3}$ non-EU
 - Cultural differences
 - Different learning styles – critical thinking & independent learning not encouraged, plagiarism seen as a form of esteem...
 - Different language skills
- **Older Cohort**
 - Different issues – family, children, elderly parents, mortgages, relationships...
 - Returning to study after a gap – new technologies and learning styles
- **Mode of Study** – full-time vs part-time
 - May need on-line, distance, blended learning
 - Work-Life-Study conflicts

Transition Shock*

- Research is a step change for most
- For Non-Nationals
 - New Culture, New Language,
 - Authority Figures
- For Mature Candidates
 - New Technologies
 - Self-Study
- For New Graduates
 - Surface Learners
 - Independent Learning
 - Critical Thinking
 - Academic Writing

Google Generation

- DOB post-1993
- Poor information retrieval skills
- Rely on shallow simplistic searches
- Literature survey is mainly web-links



Motivations

What motivates doctoral candidates to commence on their programme?

Motivations

- Aspire to be a researcher
- Want an academic position
- Advance career
- Differentiate in employment market
- Develop more specialist skills and knowledge
- Progress to a higher qualification
- No employment available
- ...

Expectations

What can candidates reasonably expect from their supervisors?

What can't candidates expect from their supervisors?

What should supervisors reasonably expect from their candidates?

Candidates can expect	Candidates can't expect	Supervisors can expect
Expert in subject area	To be taught	Regular updates
Regular meetings	Responsibility for thesis	Appropriate communication
Fair and accurate feedback on work & progress	Special treatment	Sticking to deadlines
Support in training	An editor	Professionalism
Help in formulating the research questions		
Help in methodology and analysing and interpreting your results.		
Mediation & Representation		
Open networks		

Conclusion

Diverse Population

+

Varied Motivations

+

Long List of Expectations

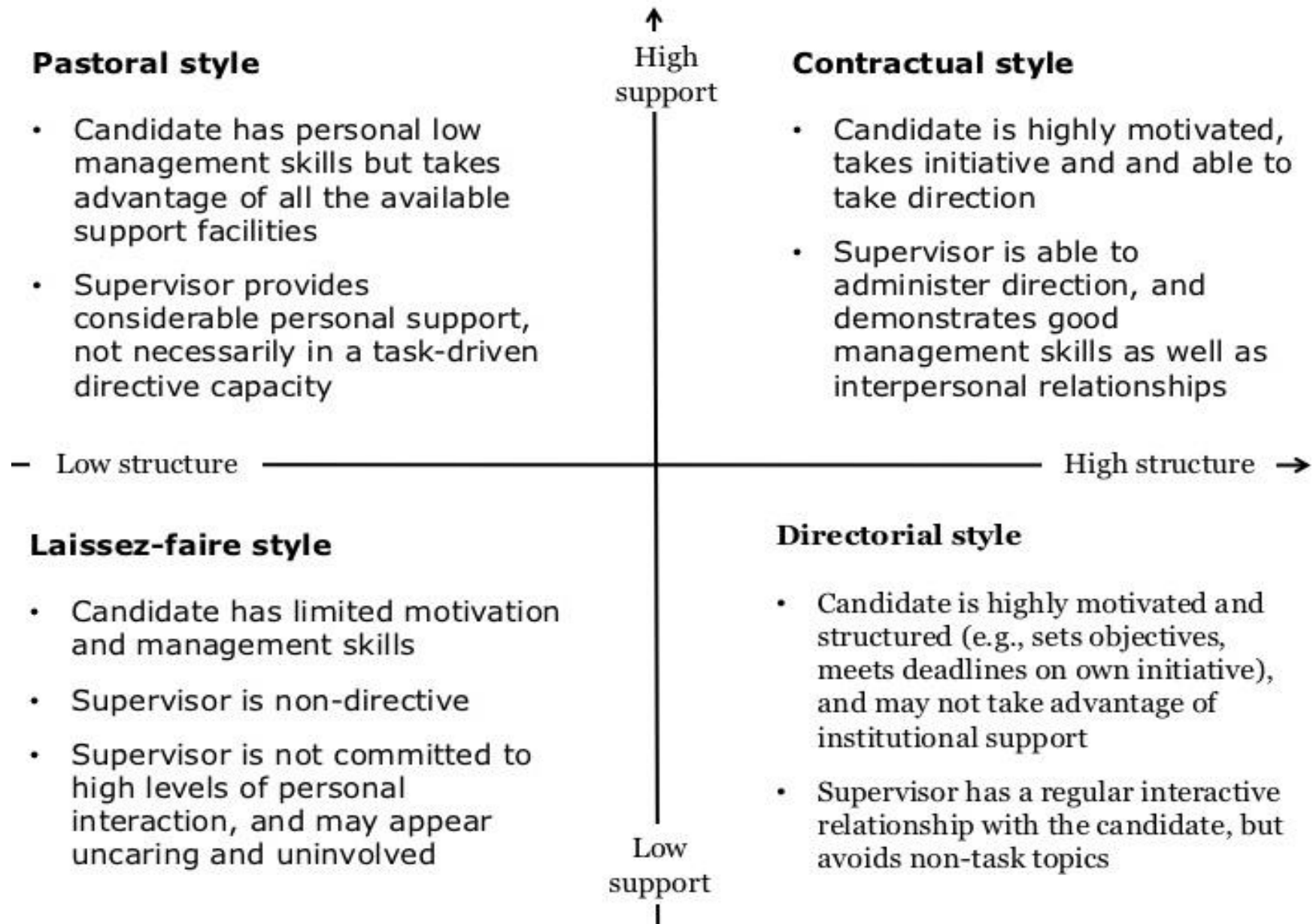
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Challenges

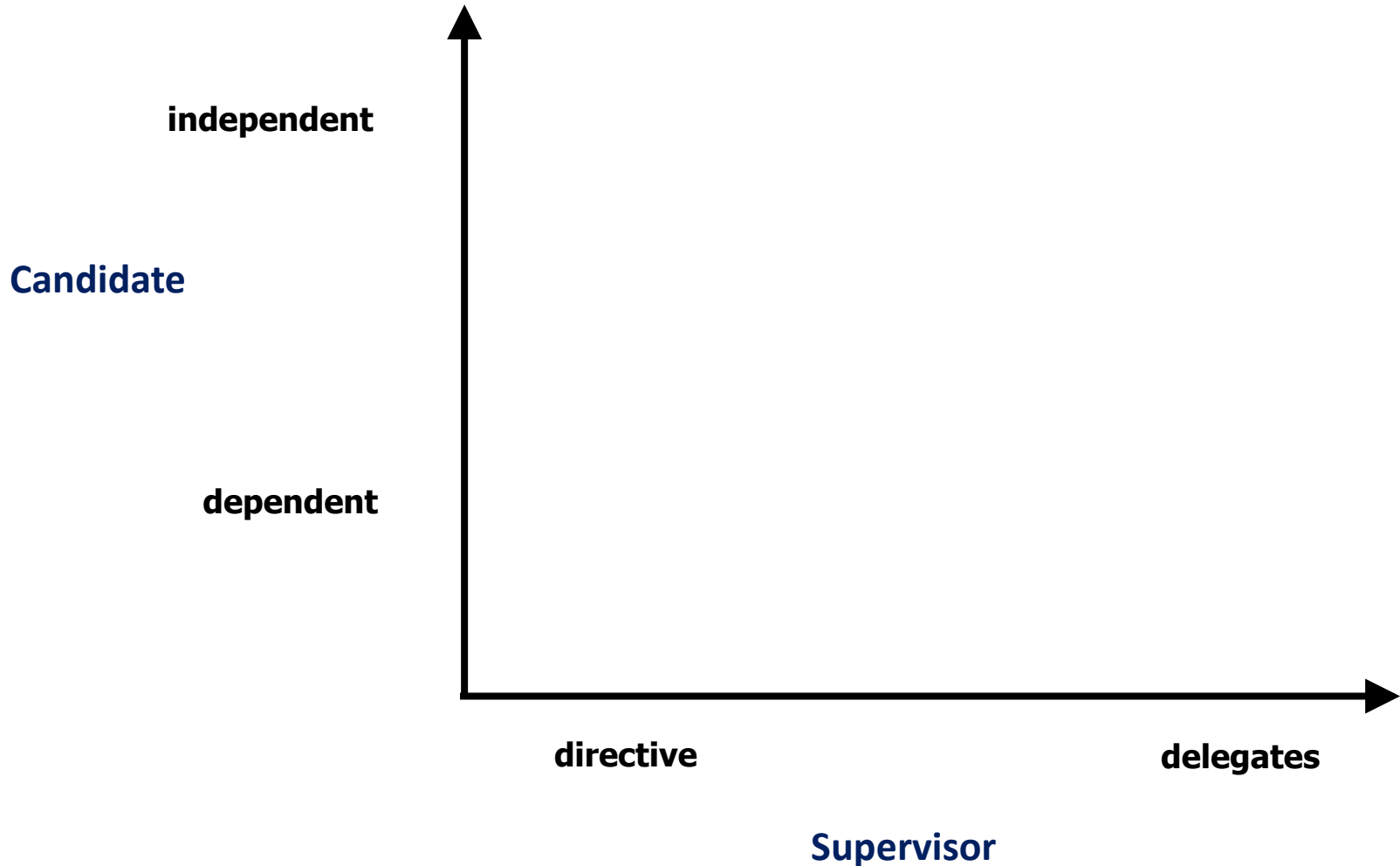
Providing Supports

Some Extremes

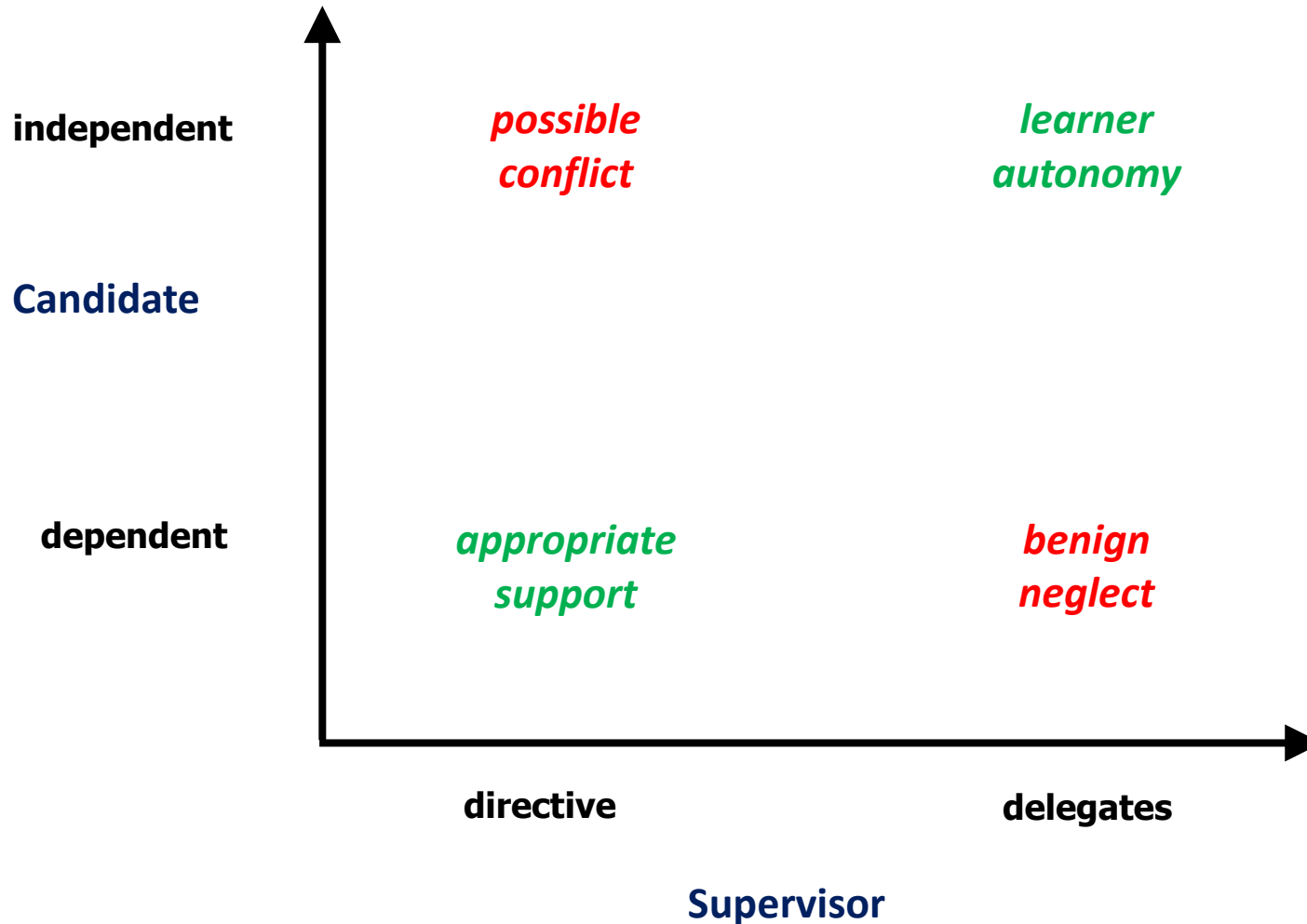
- Being a Supervisor vs Being the Supervisee?
- Supervision Styles – Mentor or Tormentor?
- Candidate Behaviour – Assertive or Needy?



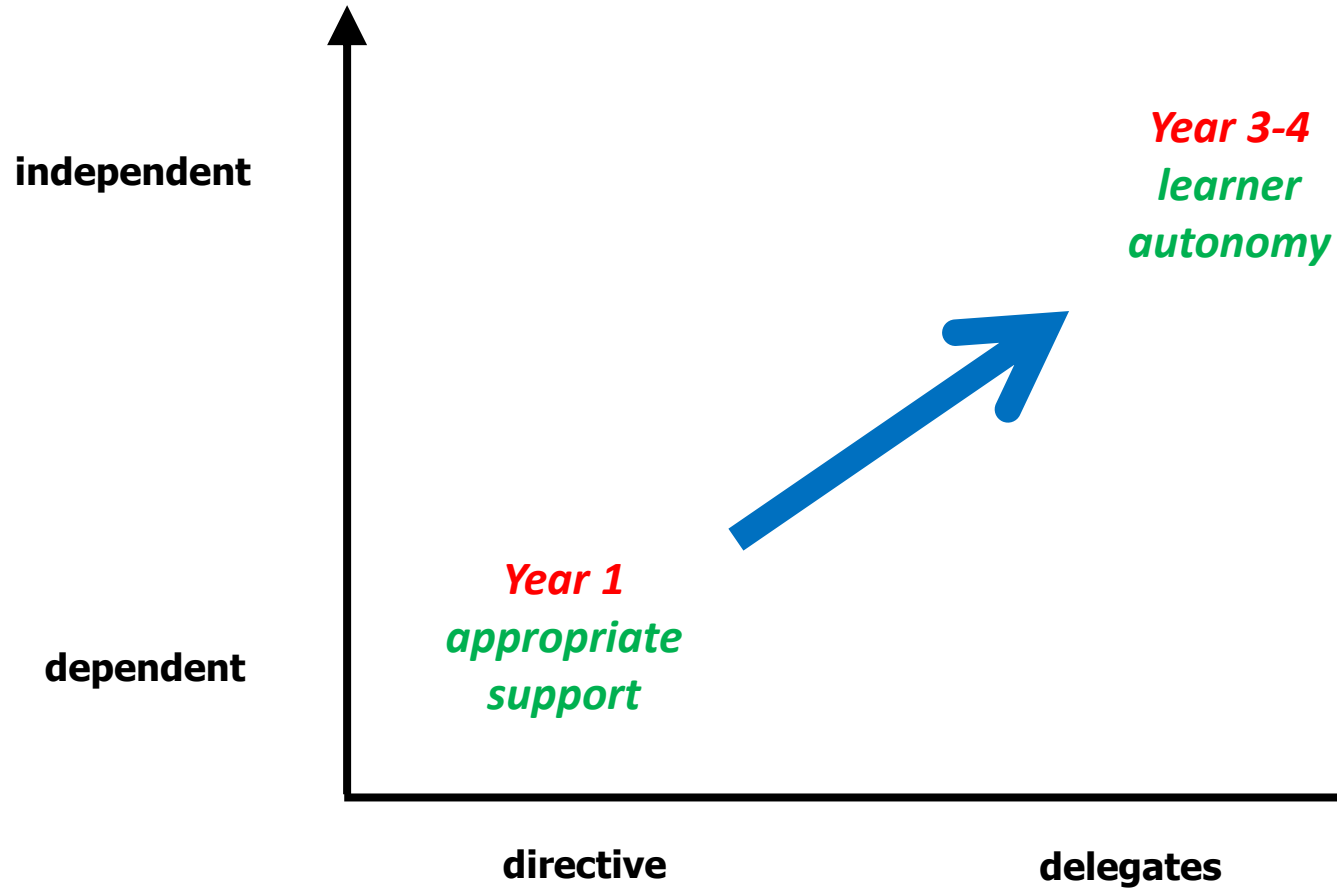
The “Alignment Model” (from G. Gurr)



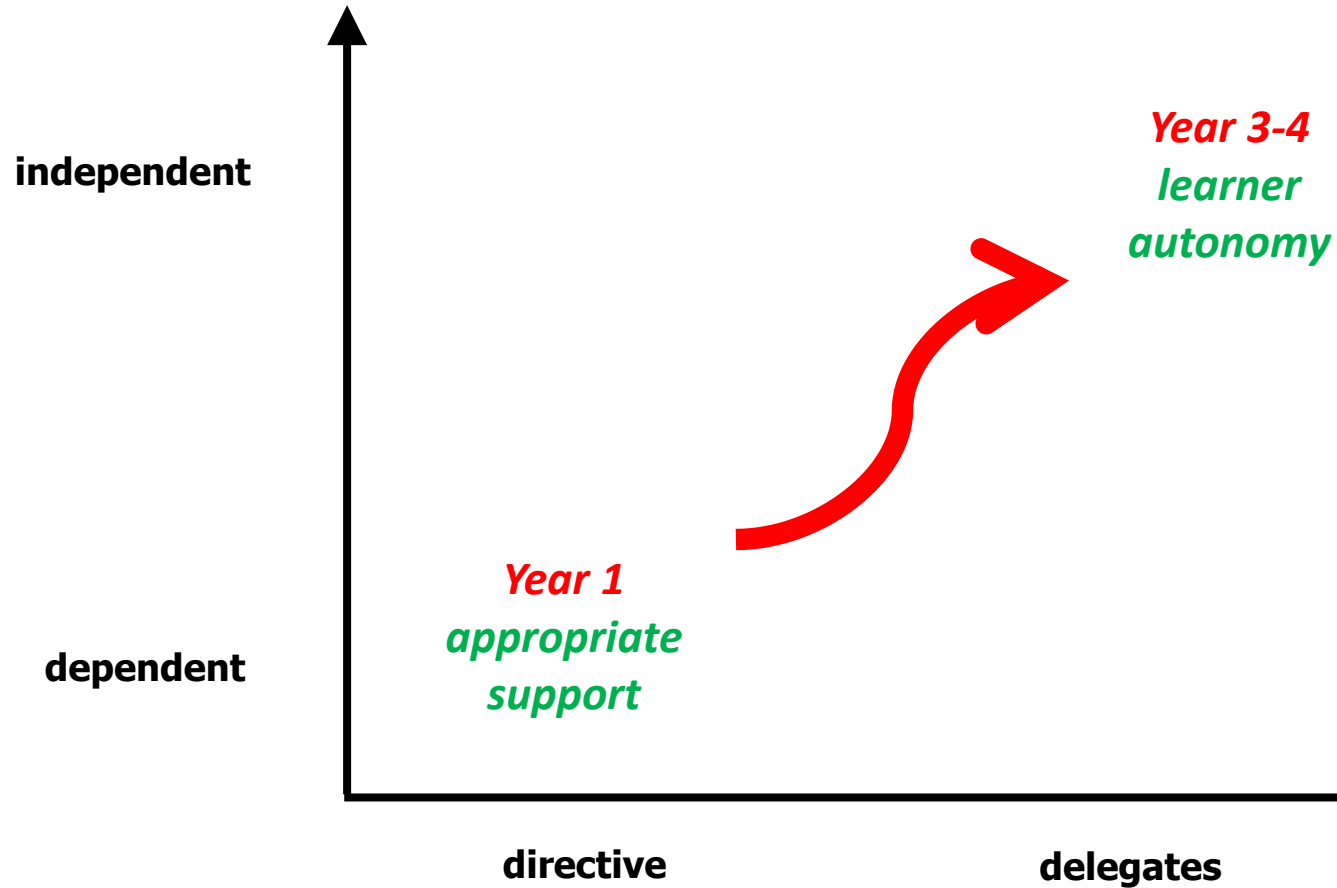
Needs a Match Maker



PhD Life-Cycle



PhD Life-Cycle



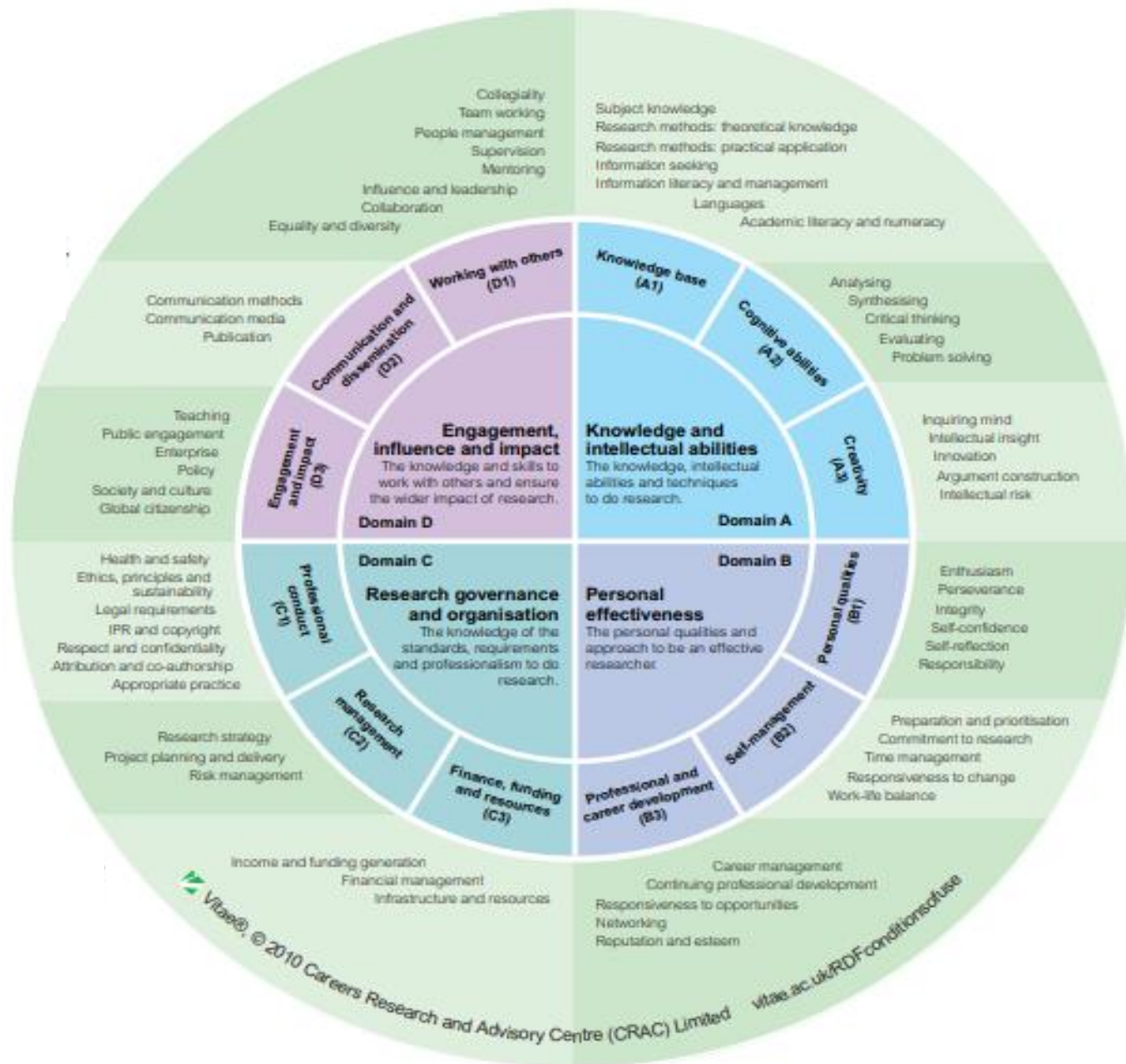
**What interdisciplinary
& transferable skills training is needed?**

Do Candidates Arrive Fully Equipped for Research Programmes?

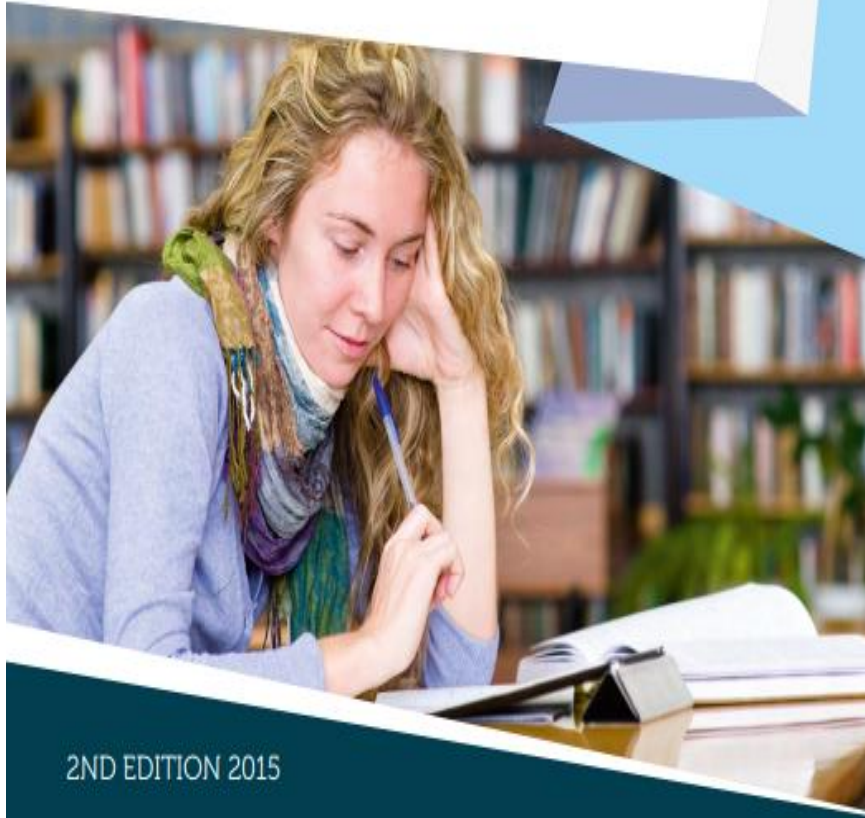
- Doctoral Candidate and their Supervisor(s) need to:
 - Assess skills needed to complete the research
 - Assess skills needed to support the candidate's career plan
 - Identify any skills gaps
 - Align to National and International policies
- Sample Skills Analysis at
<http://www.dit.ie/researchandenterprise/graduateresearchschool/currentresearchstudents/>

Researcher Development Framework Vitae

- Designed for:
 - Researchers - to plan their professional development
 - Supervisors - to support researcher development
 - Graduate School - to provide training for researchers.
- 63 'descriptors' = characteristics of excellent researchers
- Arranged in 4 domains and 12 sub-domains
 - Knowledge, Intellectual ability, Techniques, Professional standards
- Each descriptor has 3-5 phases = distinct stages of development



IRISH UNIVERSITIES' PHD GRADUATE SKILLS STATEMENT



2ND EDITION 2015

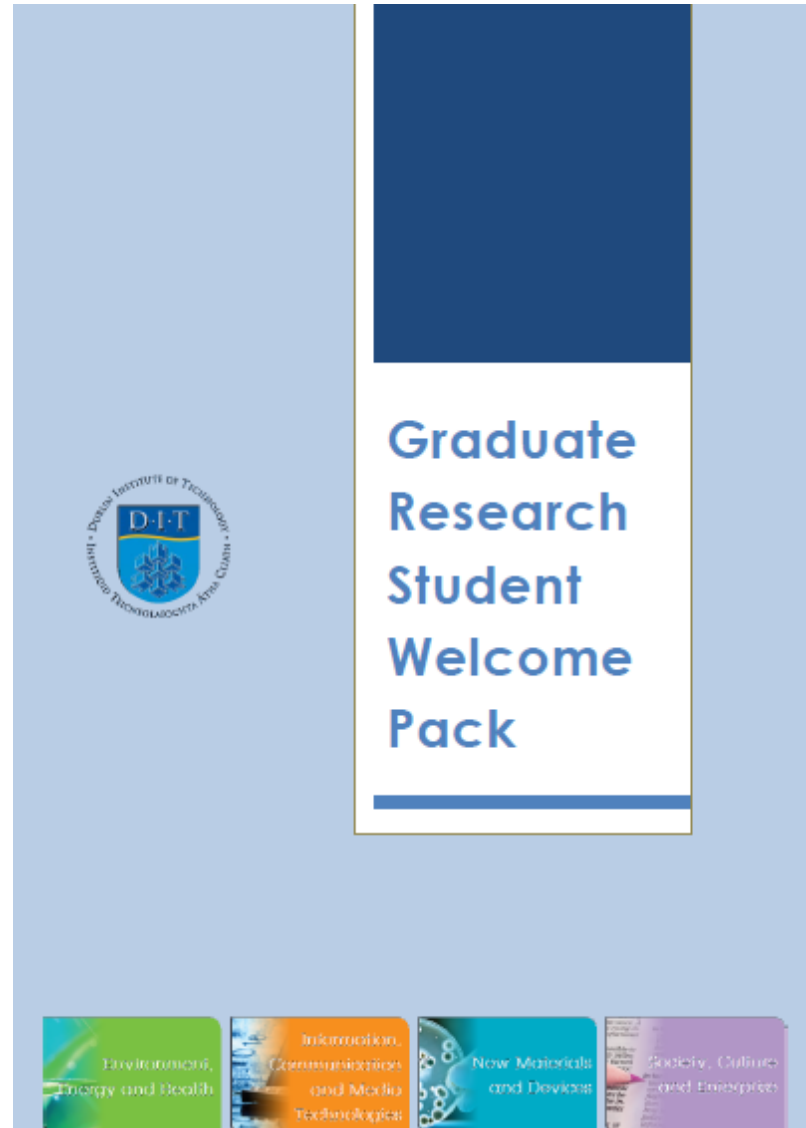
- Research Skills & Awareness
- Communication Skills
- Personal Effectiveness
- Ethics & Social Understanding
- Team-work & Leadership
- Entrepreneurship & Innovation
- Career Management

What is the role of the Graduate School?

Role of Graduate School

- Pre-arrival
 - provide information to ease arrival
- On arrival
 - administer registration/contract set-up
 - provide formal induction
- Years 1-2
 - provide training opportunities
 - administer annual monitoring
 - provide support/information as needed
- Years 3-4
 - continue training opportunities
 - administer mid-point exam
 - provide support/information as needed
- Thesis submission & Examination
 - provide information on thesis standards
 - provide training in exam preparation
 - administer exam process
 - provide support/information as needed
- Graduation
 - help prepare candidates for careers

Pre-Arrival



- Pre & Post-Arrival Checklists
- Visa & Immigration
- Accommodation
- Maps
- Cost of Living
- General Programme Information
- Class Calendar
- How To:
 - Open a Bank Account
 - Get a Student Card
 - Get a Social Security Number

On Arrival

- Face-to-face meeting in Graduate School Office
 - Get letters for bank, immigration, student card etc
 - Graduate Research Regulations, Student Handbook and Book of Modules
 - <http://www.dit.ie/researchandenterprise/graduateresearchschool/currentresearchstudents/>
- Twice Yearly Induction Event

On Arrival

- With Supervisor - Research and Professional Development Plan
 - hypothesis/research question(s)
 - Background information on current state-of-the-art,
 - Schedule of work-packages/methodologies including measurable outcomes and time-lines for the project duration,
 - **List of employability and discipline skills training to be completed in the coming stage**
 - Plans for dissemination of results,
 - Possible lay-out of final thesis

During Programme

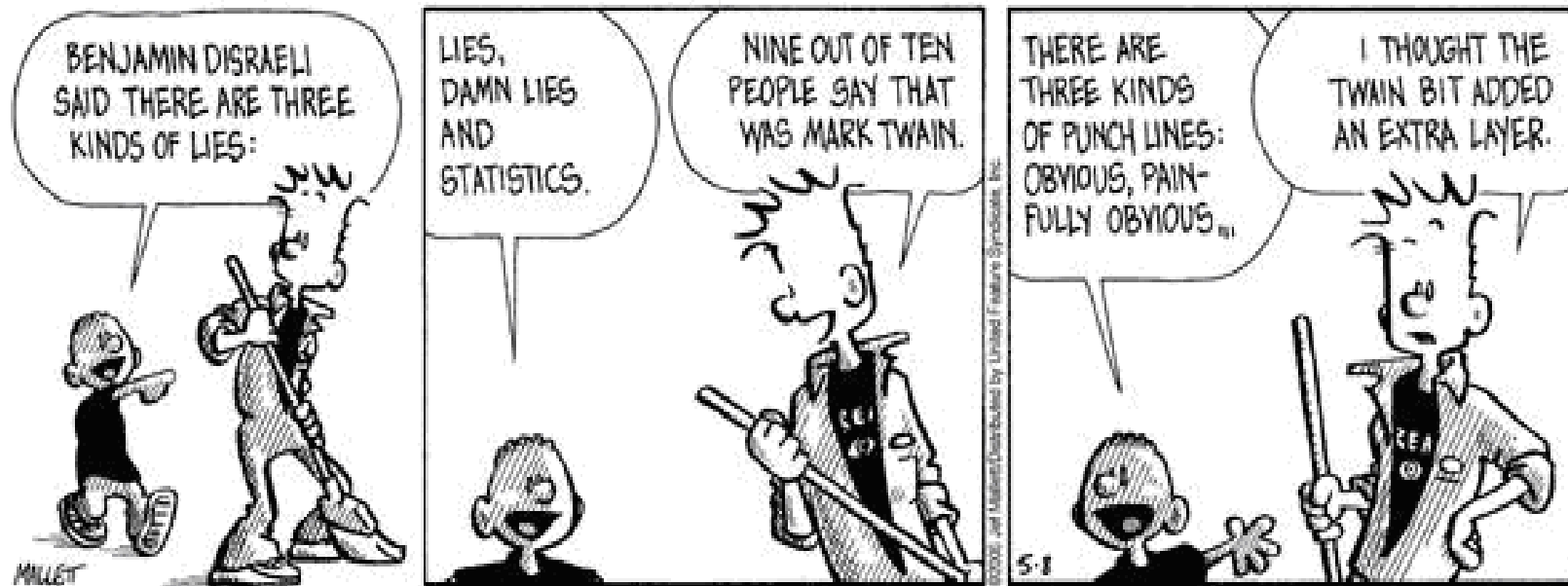
- Monitoring & Feedback
 - End Years 1 & 3 Annual Evaluation
 - End Year 2 Transfer or Confirmation
 - End Year 4 Final Thesis and Viva Voce Exam

Reports from Transfer and Confirmation Examiners

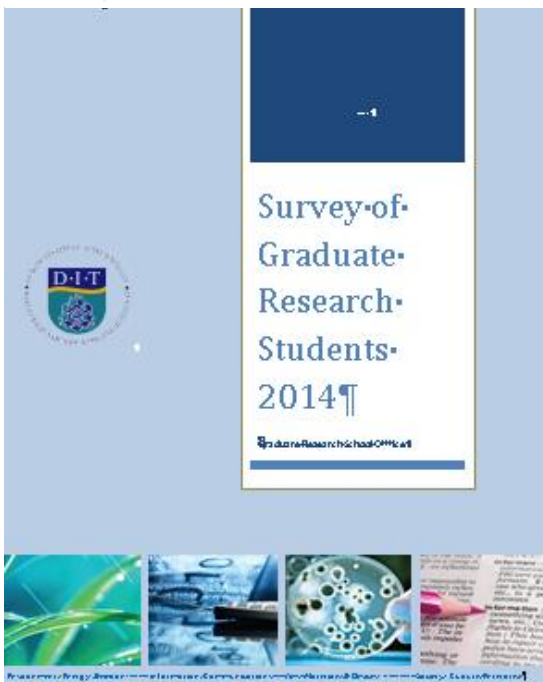
- **Most common areas for improvement 2016.**
 - **Literature Overview** – more detail/elaboration/context
 - **Methodology** - More detail/justification required
 - Aims and Objectives – clarity/focus needed

Reports from Final Award Examiners

- **Most common areas for improvement 2015.**
 - Typographical and Grammatical Errors
 - Lack of consistency
 - **Lack of critical analysis**
 - Poor quality figures and images



'I think postgrad students in general would very much benefit from statistic courses covering different stats software environments such as R '



Some Ideas for Training

- Research Integrity
- Data Management
- Critical Thinking
- Dissertation Skills
- Information Retrieval
- Statistics
- Research Methods
- Language Classes
- Academic Writing Skills
- ...



Go Raibh Maith Agaibh – Thank You