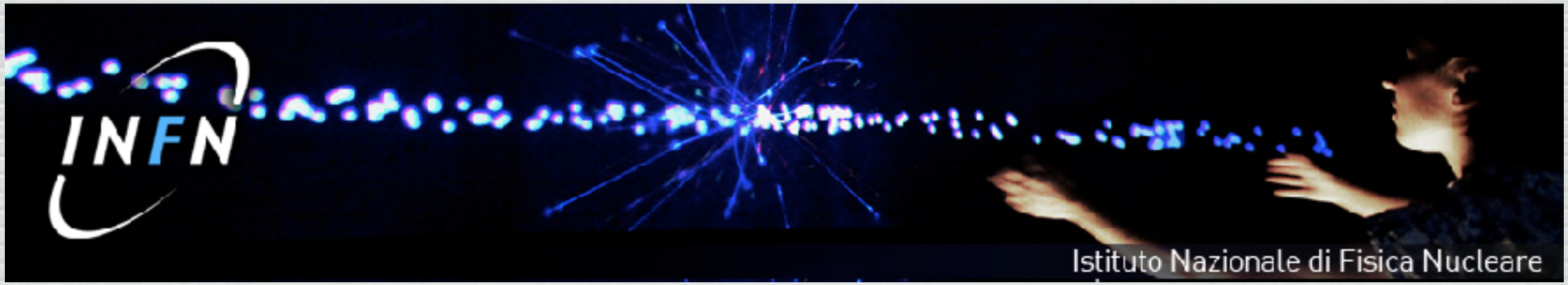


A career in research

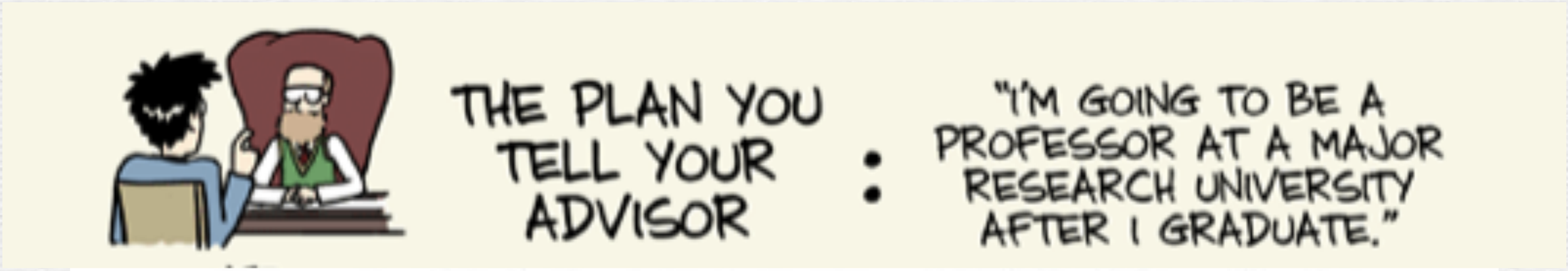
Alessia D'Orazio
Scientific Officer - INFN Brussels Office/ Servizio Fondi Esterni
alessia.dorazio@lnf.infn.it

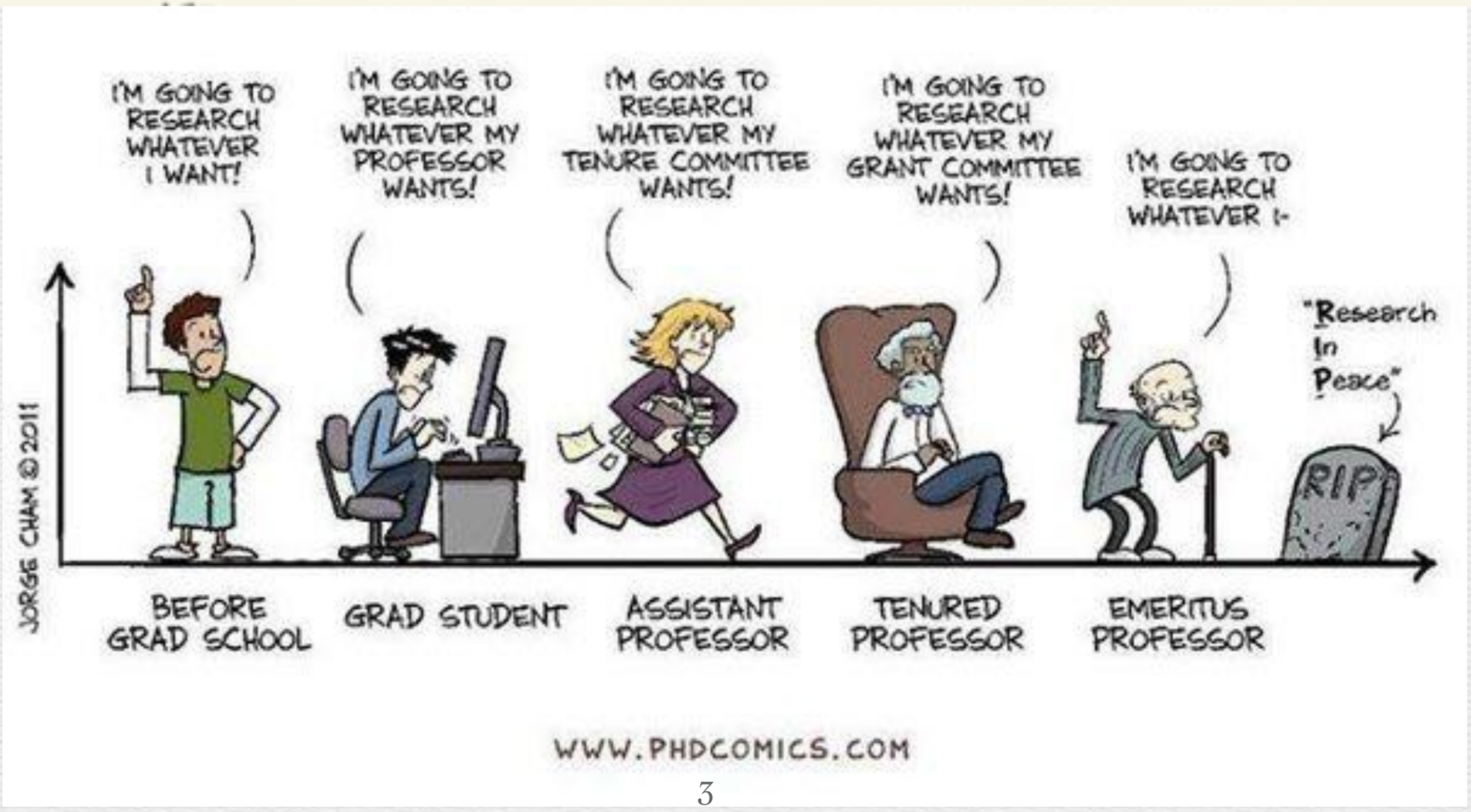
XXX SEMINARIO NAZIONALE di FISICA NUCLEARE E SUBNUCLEARE "Francesco Romano"
OTRANTO , 6 - 11 June 2018

Who is a researcher?

Researchers are: “Professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, and in the management of the projects concerned.” (European Commission’s definition).

Is this your career's plan?





The academic route

this career progression has traditionally been thought of as the path most Ph.D.s will take, but is not possible for most Ph.D.s today given the number of professorships available.

ESF Report "Research Careers in Europe Landscape and Horizons"

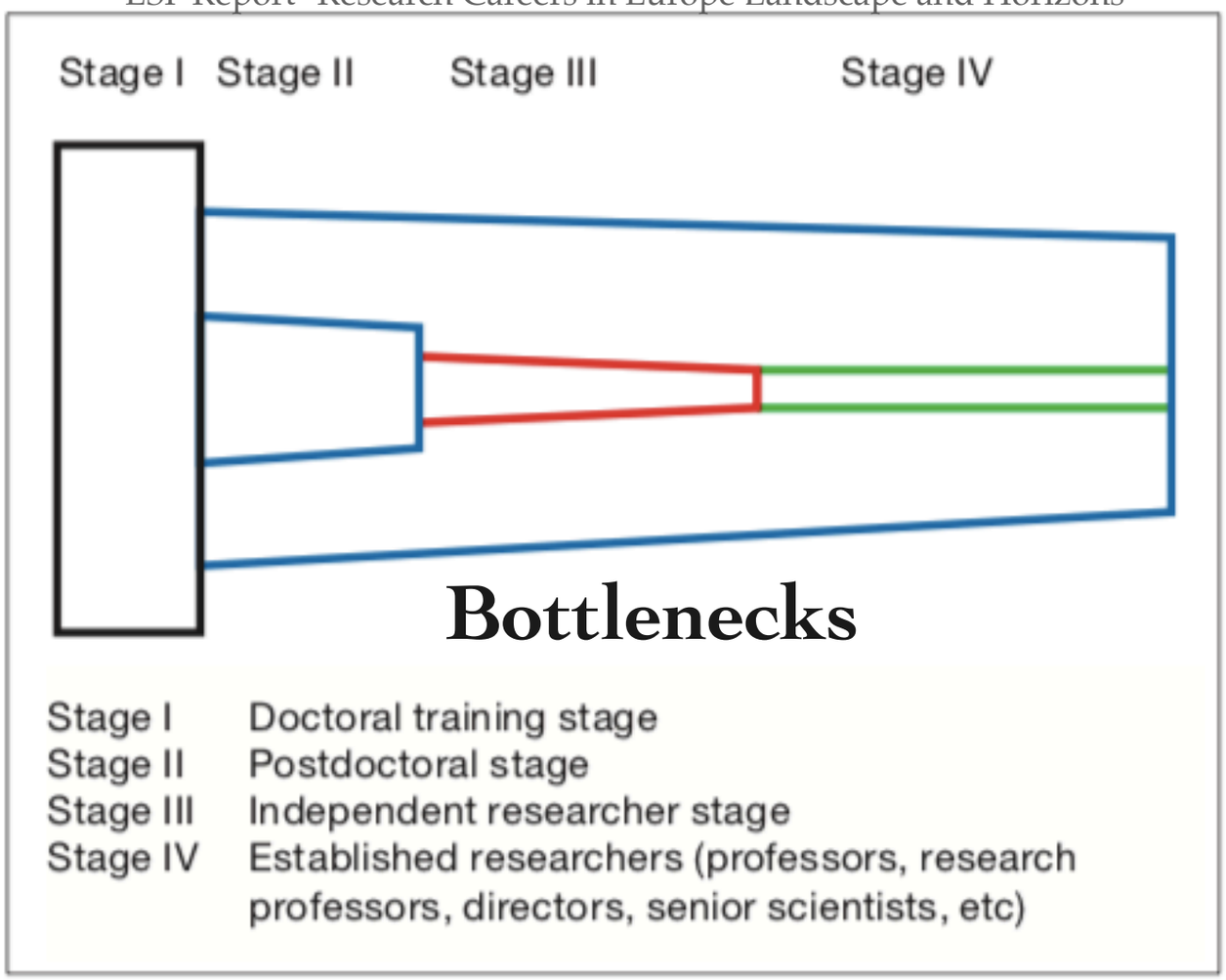


Figure 1.2. Schematic presentation of a four-stage research career

Two transitions are critical, from the PhD to postdoc position(s) and then to obtain a permanent position.

Career Systems: main observations

Every national system has developed a unique version of an academic/research career system.

This applies to

- type of positions
- relative number of each position
- content of work related to each position
- recruitment procedures
- promotion regulations and career paths

In academic/research institutions, a doctorate is a formal requirement for being appointed to post-docs and permanent academic/research positions.

2 different career tracks:

- **Higher education institutions** (i.e. universities): most of the cases teaching&research position
- **Research institutes**: research-oriented positions

Career Systems: main observations

In addition to a doctoral degree, experience from teaching and supervision, one or two postdoc periods along with requirements for international publications as well as research managerial experience seems to have become the new ***rite de passage*** **for achieving tenured positions** (Vabø, 2007).

At an **individual level**, more is at stake with regard to what it takes to become a full member of the profession or a principal investigator. It is widely argued that such demanding working conditions cause a **leaking pipeline effect**, particularly prominent within the STEM* fields – as talented researchers, especially women, drop out in favour of alternative careers.

Therefore, it is also a societal challenge to create an academic career system without such dysfunctions.

*STEM-Science, Technology, Engineering, and Mathematics

Advancement Career Systems

Career advancement can be based **on promotion or competition**.
In some countries there is strong competition for advancement at all stages of the academic career, but more common are hybrid forms of promotion and competition.

Competition model: those aspiring to "climb the ladder" must apply for a **limited number** of vacant positions in competition with other applicants.

Tenure track model is a type of advancement system based on promotion in the sense that those who fulfil a specified list of achievement criteria in (teaching and) research can be promoted to a higher position based on an evaluation of their performance.

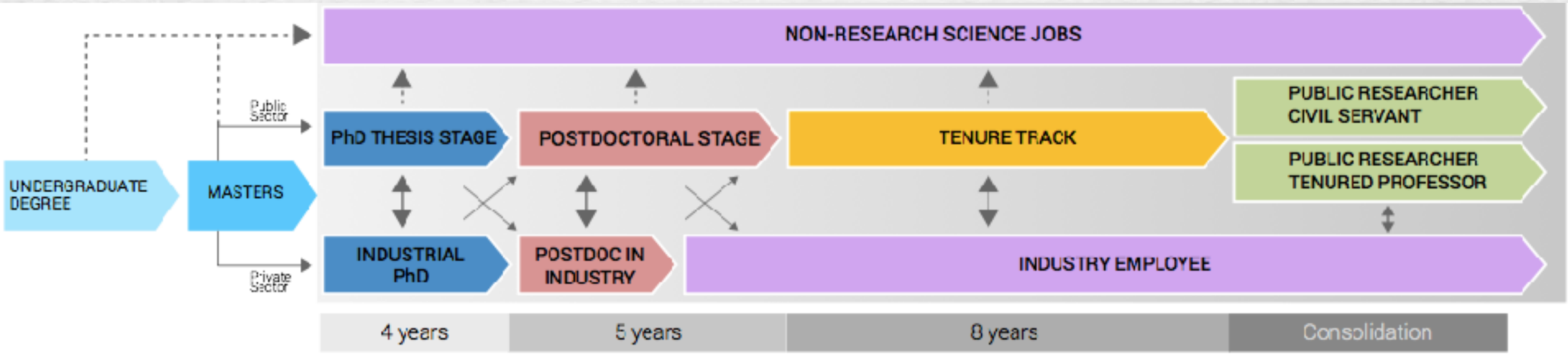
Advancement Career Systems

Academic/research advancement and recruitment to "senior" positions is to a large extent influenced by the competition/ promotion system of the country.

(Ref. Yudkevich at al., 2015) In many universities, internal recruitment processes based upon personal connections between PhD candidates and their professors have traditionally been common practice…and this practice in common globally, and might well be a factor in close to half of the world's academic appointments.

Over a relatively short period of time, this tradition has, however, been challenged, partly due to a demand by national authorities to a**dvertise vacant positions internationally**, and partly due to the **development in Europe towards a common labour market for researchers.**

Example: Research career path in Spain in a glance



source: euraxess.ec.europa.eu/node/184559/

Academic career maps in universities

- Belgium (Flanders)
- Finland
- France
- Germany
- Italy
- The Netherlands
- Sweden
- Switzerland
- United Kingdom (England)

Legend for maps:
Red indicates positions which are funded by stipend rather than as salaried employment.
Green marks positions supported by fixed-term grants.
Blue indicates academic positions supported by core university funding.
Orange indicates researchers with positions funded by external sponsors (either by research councils or industrial partners), although they carry out their research within the university.

EURAXESS- Researchers in motion

It is s a unique pan-European initiative **delivering information and support services to professional researchers**.
It **supports researcher mobility and career development**, while enhancing scientific collaboration between Europe and the world.

- coordinated by EU Commission, supported and implemented by Member States and Associated Countries

- **EURAXESS Jobs**: global access to vacancies and fellowships in EU - CV database for researchers

- **EURAXESS Services**: more than 200 services centres across EU. Visa and residence issues,social security, practical support

- **EURAXESS Links**: linking researchers abroad to EU. USA, China, Japan, India, Singapore and Brazil to become regional hubs

https://euraxess.ec.europa.eu

> “In order to keep the ‘right’ workers in the academic system, a research career has to be attractive”

EURAXESS Rights

- Aim to **improve employment and working conditions of researchers in Europe and enhance their career prospects**
- Key topics:
  - support the take-up of **Charter & Code principles at institutional level** (European Charter for Researchers and Code of Conduct for the recruitment of researchers), hided by Human Resources strategy for researchers
  - implementation of the scientific visa package
  - issues related to social security and pensions for (mobile) researchers

European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers

The EC has adopted a **European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers:**

- Documents addressed to researchers as well as to employers and funders in both the public and private sectors

- **key elements in the EU's policy** to **make research an attractive career**, which is a vital feature of its strategy to stimulate economic and employment growth.

- Giving individual researchers the **same rights and obligations wherever they may work throughout the EU** should help counter the fact that research careers in Europe are fragmented at local, regional, national or sectoral level, and allow Europe to make the most of its scientific potential.

European Charter for Researchers

The **European Charter for Researchers**:

- addresses the **roles, responsibilities and entitlements of researchers and their employers** or funding organisations.
- aims at ensuring that the relationship between these parties contributes to **successful performance** in the generation, transfer and sharing of knowledge, and to the career **development of researchers**
- covers amongst others:
  - Recognition of the profession
  - Career development
  - Value of mobility

Implementation of European Charter for Researchers

Implement principle of the "European Charter for Researchers", means (non-exhaustive list)

- provide reasonable level of employment stability
- offer opportunities for professional development independently from contractual situation
- reward achievement in a fair way (performance related pay, prizes, reduced teaching load, sabbatical,…)
- allow for appropriate work-life balance through increased flexibility (and family support structures)
- provide practical support for new staff (especially internationally mobile researchers)

Code of Conduct for the Recruitment of Researchers

The **Code of Conduct for the Recruitment of Researchers**

- aims to improve recruitment, to make selection procedures fairer and more transparent
- proposes different means of judging merit: Merit should not just be measured on the number of publications but on a wider range of evaluation criteria, such as teaching, supervision, teamwork, knowledge transfer, management and public awareness activities
- covers amongst others:
  - Recruitment principles
  - Selection criteria
  - Postdoctoral appointments

Implementation of Code of Conduct for the Recruitment of Researchers

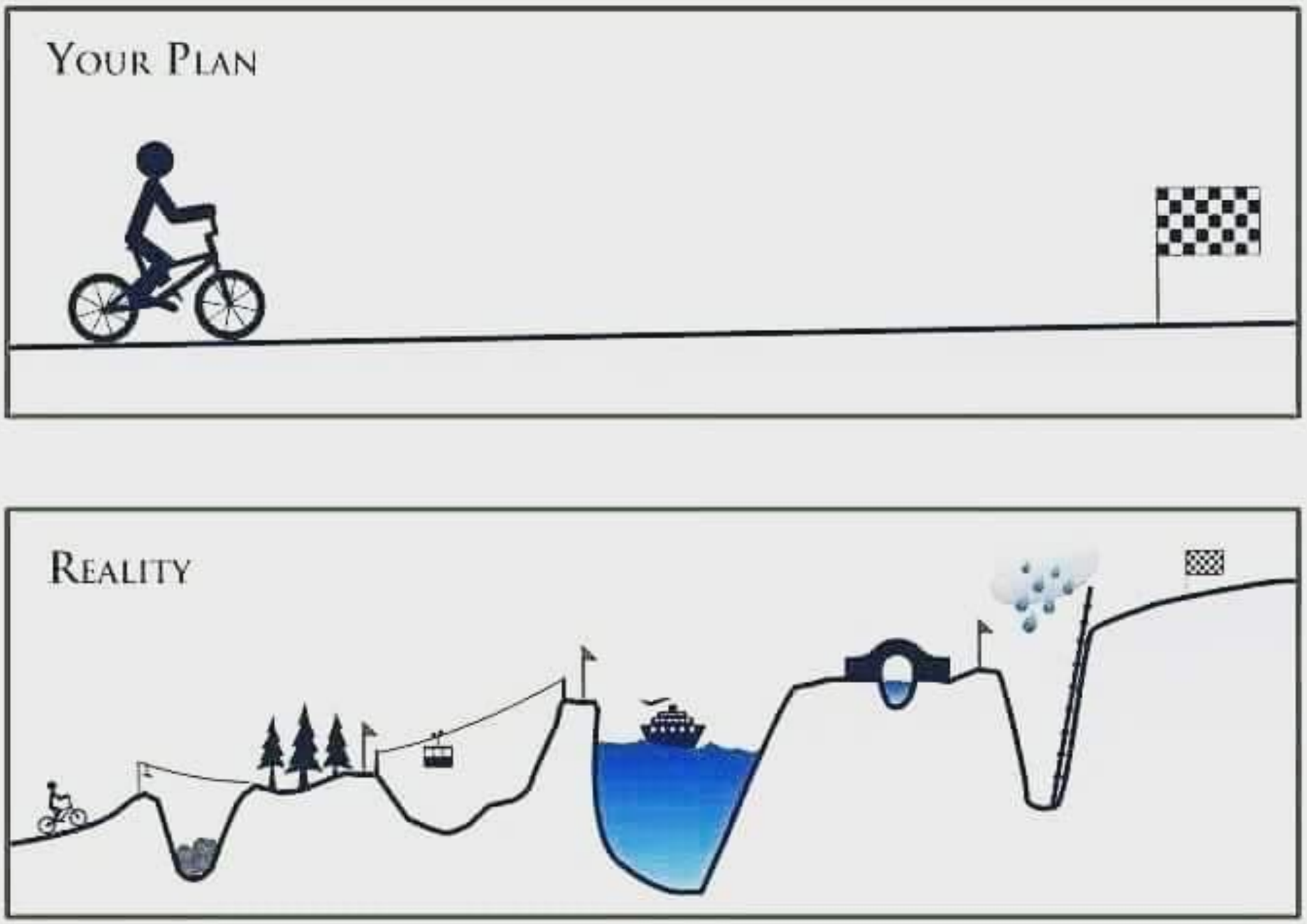
Implement principle of the "Code of Conduct for the Recruitment of Researchers", means (non-exhaustive list):

- advertise positions internationally, including those at early-career level (e.g. through Researchers' mobility portal, use video interview for first screening if necessary)

- clearly state evaluation criteria, taking into account **all** relevant skills and experience

- involve international experts in selection panel

Your plan vs. real life



A critical phase in your career

The postdoctoral period is a **critical phase in a researcher´s career**: it is when (s)he chooses whether or not to pursue a scientific career, and succeeds in achieving that goal, or not.

Over recent decades, the number of postdoctoral researchers has increased, and the supply of tenured positions has become lower than the demand.

Although many candidates embarking on a PhD aspire to an academic career, only a small proportion can actually expect to make one in research.

Life might make you change your plans

Life might make you change your plans

THE PLAN YOU TELL YOUR ADVISOR : "I'M GOING TO BE A PROFESSOR AT A MAJOR RESEARCH UNIVERSITY AFTER I GRADUATE."

THE REAL PLAN : YOU SUCCEED

THE REAL PLAN : LOOK FOR CAREER ALTERNATIVES.

THE SECRET PLAN : BECOME A ROCKSTAR/DANCER/ WRITER/CHEF.

Life might make you change your plans

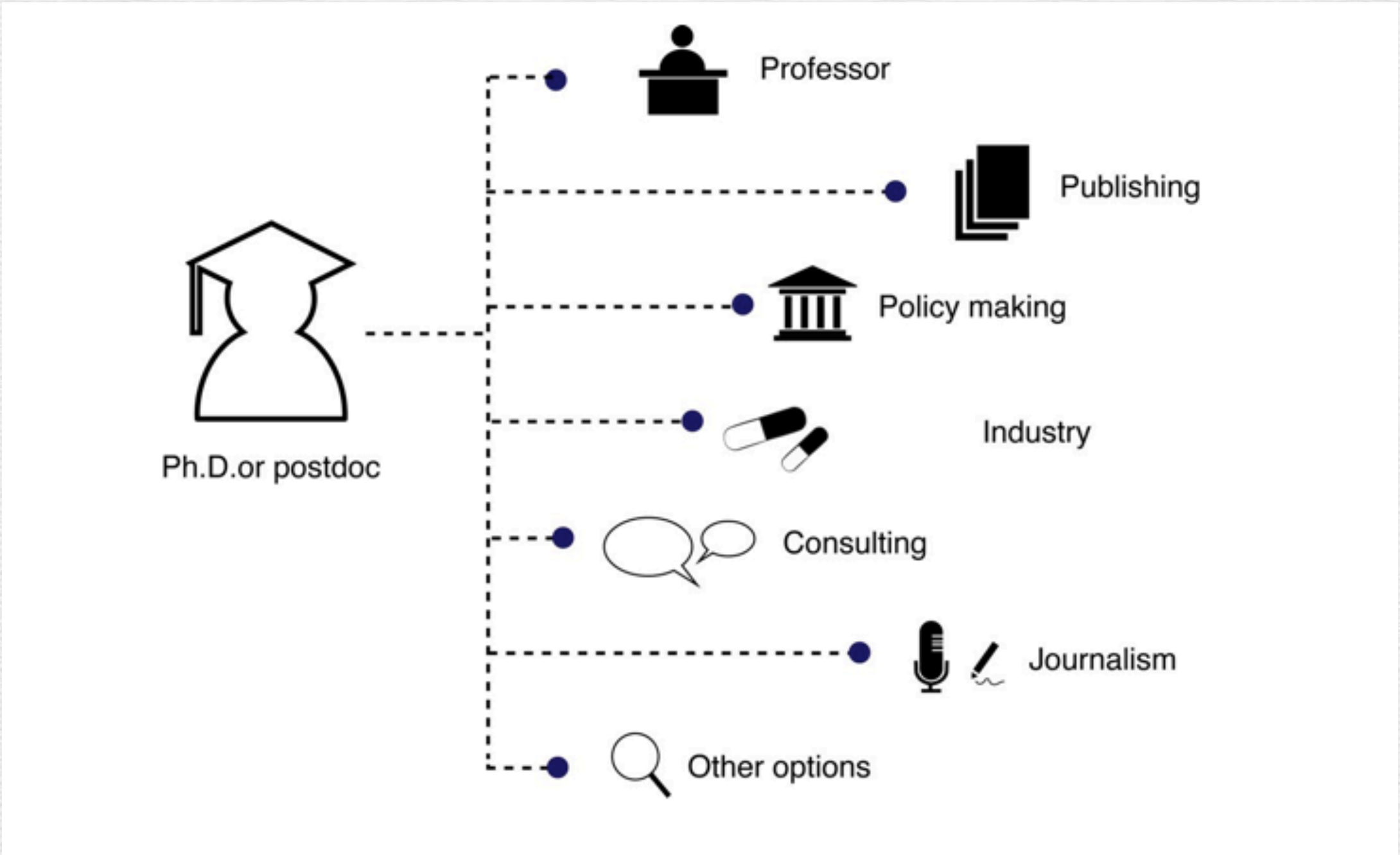
THE PLAN YOU TELL YOUR ADVISOR : "I'M GOING TO BE A PROFESSOR AT A MAJOR RESEARCH UNIVERSITY AFTER I GRADUATE."

THE REAL PLAN : YOU SUCCEED

THE REAL PLAN : LOOK FOR CAREER ALTERNATIVES.

THE SECRET PLAN : BECOME A ROCKSTAR/DANCER/ WRITER/CHEF.

The branching career path



The branching career path

Focus on the branching career path for Ph.D.s should come with the understanding that it's incredibly important for scientifically trained individuals to hold positions in many different parts of society.

Rather than being hunkered down in academia, scientists in these many different careers can help **improve society's appreciation for scientists and science at large**.
With humanity facing huge and complex problems like global warming and food scarcity, it is imperative the people with an appreciation and understanding of science permeate society such that we can help others make informed decisions about how to combat these problems.
The branching career path for Ph.D.s represents a small but important step toward broadening humanity's scientific understanding.

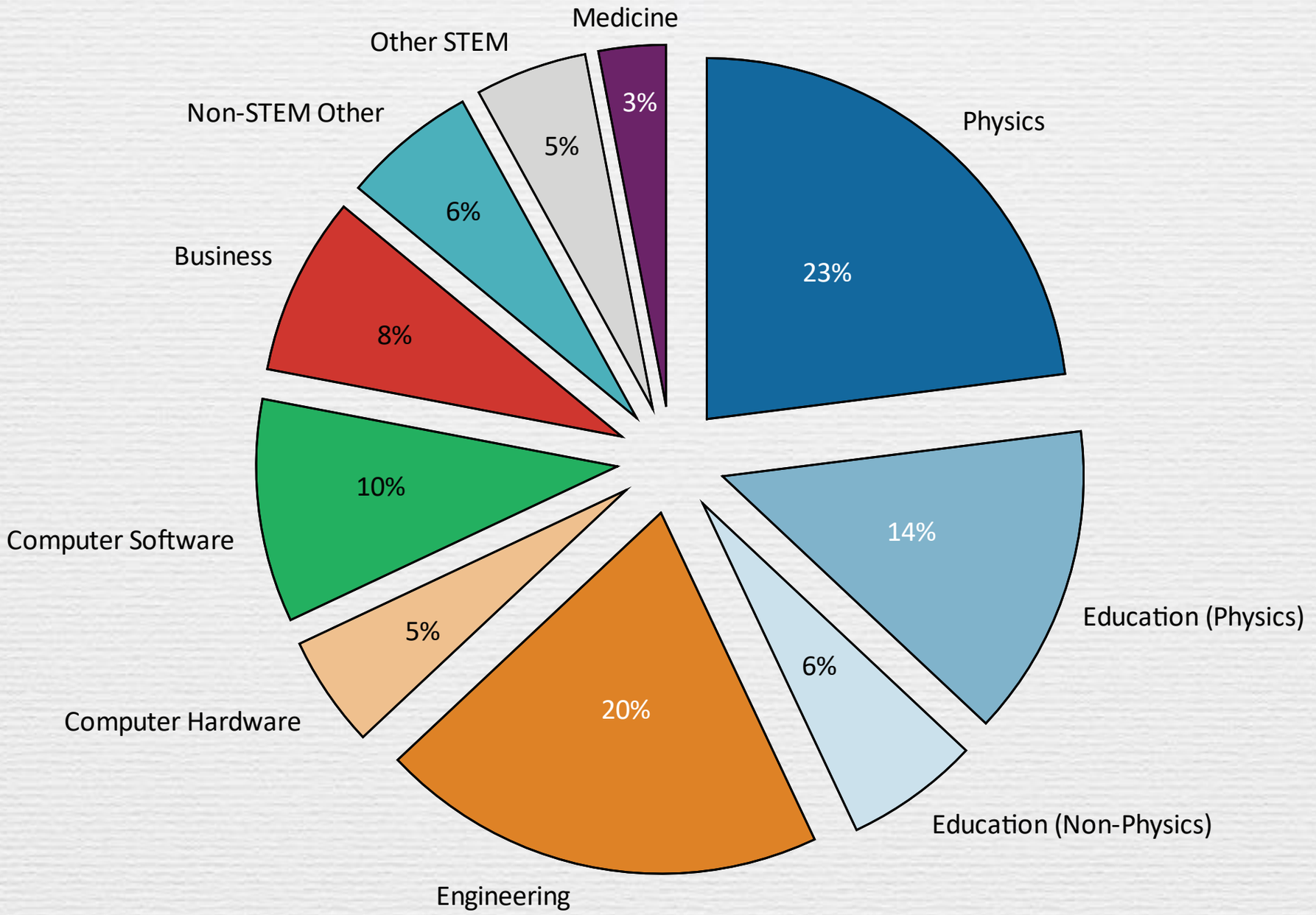
A PhD in Physics from a different point of view

Completing a PhD in Physics give you a set of key skills which are appealing also to (no-academic) employers.

The skills that are developed as a researcher are even more valued in the labour market (in IT: private sector "blindness" problem)…

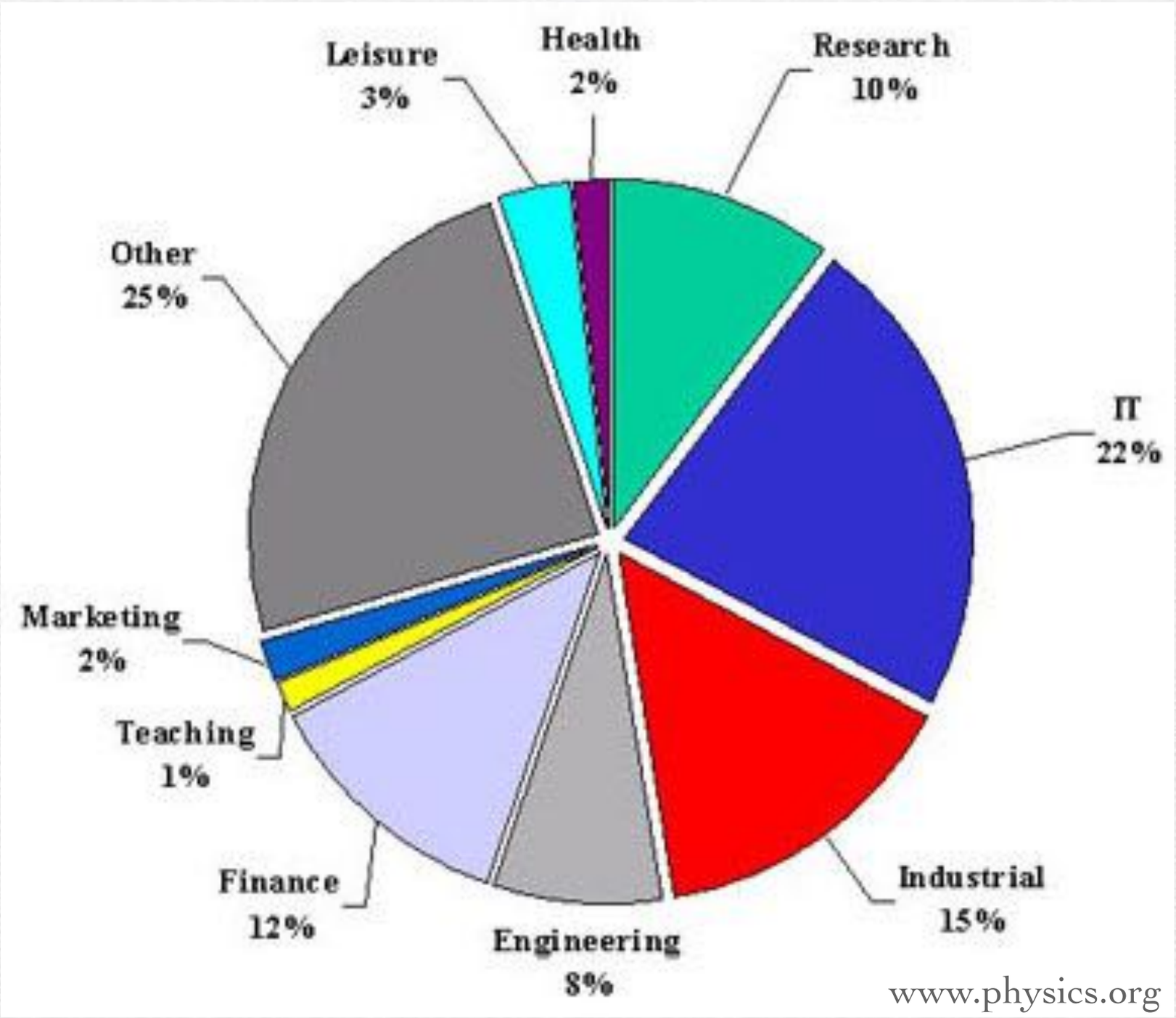
…but they are not always well presented by public institutions to researchers and/or by researchers in their CV

Employment Fields for New Physics PhD Recipients in Potentially Permanent Positions, Classes of 2009 through 2014



Source: AIP Statistical Research Center, Initial Employment Survey, classes 2009 through 2014.

Typical job sectors for physicists



www.physics.org

Physicists' Skills

the discipline of physics teaches skills and ways of thinking that are valuable in many professions, including, but not limited to, traditional physics

Skills cultivated through your research experience

As a researcher you will:

- developed **professional** working **relationships** with your supervisor and colleagues,
- **set and meet deadlines**
- **communicate** results using a variety of methods.
- **manage** your research project (giving you project planning and management skills)
- **manage** your own work load and motivation.
  The autonomous nature of your work gives you a strong work ethic and personal effectiveness that equips you for a wide range of challenging possibilities. All these skills will make you more effective in other workplaces as well as preparing your for an academic career.

Skills relevant and important in a wide range of careers

- **Independence** – being able to work without close supervision, managing your own time and projects
- **Critical thinking** – being able to evaluate your work and that of others, making judgments about the value of information and drawing conclusions from data.
- **Problem solving** – working without "a right answer" and devising strategies to work towards a solution

- **Contributing as a professional** – presenting work to your peers, managing discussions and defending your position, having the confidence to put forwards ideas to senior staff
- **Initiative** – having the confidence to make decisions and act on them, not waiting for approval to do basic tasks, but reporting back responsibly at appropriate times

Italian regulation UNI-11683:2017 Non-regulated professions- **Professional physicists** - Knowledge, skill and competence requirements

This standard specifies:

1) the profession of professional physician/physicist and related requirements;
2) the levels of education, training and continual professional development required for the profession;
3) the professional acknowledgment and a precise placement of the professional physicist among non-regulated professions;
4) information to the clients for a proper assessment of the professional service;
5) information to the clients on the attestation of the professional physicist, including the applicable ethical and deontological aspects;
6) guidelines for the assessment of learning outcomes for the single professional physicist to achieve the relevant qualification.

regulation summary (only in IT) : http://www.anfea.it/_box_17/data/0_ESTRATTO_UNI_11683_Fisico_Professionista.pdf/

Take home message

KEEP YOUR MIND OPEN