Briefing – Doctoral training in Europe

About Doctoral education

“Doctoral education is a primary source of new knowledge for the research and innovation systems in Europe. The outcomes of doctoral education are both:

a) young researchers who proved their skills for a professional life as “creative, critical and autonomous intellectual risk takers”, and “those who go into roles beyond research and education, in the public, charitable and private sectors, where deep rigorous analysis is required.”, as pointed out by LERU, “as well as

b) the research output in the form of a doctoral thesis that contributes to the development of world science and the innovation system.”

Background

In its Report of Mapping Exercise on Doctoral Training in Europe "Towards a common approach" in 2011, the European Commission (EC) aimed at "shaping the future of doctoral training in the context of the Innovation Union policy. [...] Doctoral training is a primary progenitor of new knowledge, which is crucial to the development of a prosperous and developed society. Developed economies rely on new knowledge and highly skilled knowledge workers to feed a process of continuous innovation. They rely also on adequately trained responsible citizens that can adapt to changing environment and can contribute to the common good. Grand societal challenges like climate changes and healthy ageing require complex solutions based on high level frontier research carried out by new generations of researchers.

Several initiatives have been taken to identify and promote good practice in doctoral training, most notably [...]” by the European University Association (EUA).

“In the framework of the Bologna process, the European University Association (EUA) launched in 2005, after extensive consultation through a structured bottom-up process, Conclusions and Recommendations on Doctoral Programmes for the European Knowledge Society, better known as "Salzburg Principles". These principles were confirmed and enriched, in 2010, in the Salzburg II Recommendations.”

Seven Principles for Innovative Doctoral Training

Based on the initiatives cited above and many other (by the League of European Research Universities LERU, Coimbra Group, different thematic and international initiatives), as well as good practices in Member States and the Marie Curie experience, the European Commission identified seven principles composing a common approach to enhance the quality of doctoral training in Europe.

1. Research Excellence
2. Attractive Institutional Environment
3. Interdisciplinary Research Options
4. Exposure to industry and other relevant employment sectors
5. International networking
6. Transferable skills training
7. Quality Assurance
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"The duration of doctoral education varies across Europe according to the national university structures and disciplinary traditions, but requires as a rule a full-time endeavour of 3 to 4 years."


These principles have been endorsed in the Council conclusions on the modernization of higher education, Brussels, 28-29 November 2011.

The Council calls on institutions and Member states "to link, where relevant and appropriate, national funding to the Principles for Innovative Doctoral Training". With that aim, the European Commission is supporting National funding agencies through the Marie Skłodowska-Curie Actions COFUND scheme that covers the co-financing of national or institutional doctoral training programmes in compliance with the 7 principles.

**A diversified European higher education system**

The EC 7 principles were not meant to be constraining and are rather considered by EU member states and associated countries as a "guiding tool" to inspire in the reforms in doctoral training and education in Europe.

Doctoral training remains very different from a country to the other. It can also vary within a country across universities, faculties/departments or disciplines. It is important to note that, as stated by LERU, those "varied practices [...] successfully achieve high quality doctoral education within a vigorous research culture and these must not be stifled."

For more details on how doctorate training is organised in the different European member states and associated countries, check EURODOC survey on the Doctorate structures across Europe [here](http://ec.europa.eu/euraxess).

To date, country fiches were published on Croatia; Czech Republic; Italy; Netherlands; Norway; Poland; Slovenia; Spain; Switzerland; Ukraine.
Marie Skłodowska-Curie Actions and innovative doctoral training

MSCA is a European Commission research fellowship programme. It is funded under the framework programme for research and innovation Horizon 2020. Under Marie Skłodowska-Curie Actions (MSCA) structured research and training programmes are based on the Principles for Innovative Doctoral Training (European Commission, 2011).

About Innovative Training Networks (ITN)

ITN is the main European doctoral training programme. The objective of the MSCA ITNs is to train a new generation of creative, entrepreneurial and innovative early-stage researchers able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefits. The projects funded will allow structuring and raising doctoral training at European level by providing researchers with enhanced career perspectives both in the academic and non-academic sectors through international, interdisciplinary and inter-sectoral mobility combined with an innovation-oriented mind-set.

Maximising employability

Innovative training networks bring together universities, research institutes and other sectors from different countries worldwide. The maximum duration of an ITN project is 4 years. All research areas can be funded.

There are three types of Innovative Training Networks:

1. **European Training Networks (ETN)**

Joint research training, implemented by at least 3 partners from in and outside academia. The aim is for the researcher to experience different sectors and develop their transferable skills by working on joint research projects.

The organisations should be established in at least 3 different EU or associated countries. Additional participants can join from across the world, including from Brazil and other LAC countries.

2. **European Industrial Doctorates (EID)**

Joint doctoral training delivered by at least one academic partner entitled to award doctoral degrees, and at least one partner from outside academia, primarily enterprise. Each participating researcher is enrolled in a doctoral programme and is jointly supervised by supervisors from the academic and non-academic sector, where they spend at least 50% of their time.

The aim is for the doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs.

The organisations should be established in at least two different EU or associated countries. A wider set of partner organisations from anywhere in the world may also complement the training.

3. **European Joint Doctorates (EJD):**

A minimum of 3 academic organisations form a network with the aim of delivering joint, double or multiple degrees. Joint supervision of the research fellow and a joint governance structure are mandatory. The aim is to promote international, intersectorial and multi/interdisciplinary collaboration in doctoral training in Europe.

The organisations should be from different EU or associated countries. The participation of additional organisations from anywhere in the world, including from the non-academic sector, is encouraged.
ITN annual calls are **open to consortia of organisations** such as universities, research centres or companies, that propose a research training network, including **Latin American and Caribbean institutions**. Please note, that the call is **not open to individual researchers/students**.

Your LAC institution is looking for partners to submit a proposal? Check the EURAXESS partnership tool to find organisations willing to collaborate:

Check MSCA calls 2019 calendar [here](#) to know when the annual call will be announced and read the [guide for applicants](#) for more details.

Sources:
- Report of the ERA Steering Group Human Resources and Mobility (ERA SGHRM) [Using the Principles for Innovative Doctoral Training as a Tool for Guiding Reforms of Doctoral Education in Europe](#);
- LERU Advice paper no 19, March 2016, [Maintaining a quality culture in doctoral education at research-intensive universities](#); Eurodoc.

**=> Brazilian and LAC researchers** interested in high quality doctoral-level training in and outside academia can apply to the PhD positions created by these networks. They are advertised on the [Euraxess Jobs portal](#) and many will be published in the coming months to start your PhD in September.

**PhD in Europe (ITN/Cofund)**

**=> open on EURAXESS Jobs portal**

http://ec.europa.eu/euraxess
Meet the researcher: Interview with Larissa Terumi Arashiro, Brazilian PhD candidate enrolled in a European Joint Doctorate (MSCA ITN) on Wastewater

MSCA is a prestigious European funding programme. How did you learn about it? Tell us more about the selection process.

I learnt about the MSCA funding programme while I was doing my Master’s through colleagues who were also researchers. They always mentioned the MSCA as competitive top-level fellowships. After obtaining my Master’s degree, I was informed about the call for this joint PhD programme by an Erasmus Mundus Association (EMA) communication. As one of the fellowships offered addressed the same topic as my Master’s thesis, I decided to apply. The selection process consisted in screening the top-5 applicants for each fellowship and inviting them for an interview and a committee selected the early-stage researchers (ESRs) based on their background, previous experiences, motivations and potential to deliver results.

In your experience, what are the advantages offered by the MSCA scholarship over other funding programmes?

The projects funded by the MSCA are robust and innovative. These high-profile programmes are multidisciplinary and promote intense collaboration between scientists and the non-academic sector. In my opinion, this is the main advantage of MSCA scholarship when compared to other funding opportunities. Besides that, the programme has a very holistic approach involving education based in 4 pillars: research, exchange with the non-academic sector, structured training courses, and participation in public outreach activities. This framework allows us to improve and develop both technical and soft skills, which is definitely valuable for our future careers.

Under this MSCA programme, you will conduct research in different EU countries. What are the benefits of mobility on your training and career? What about trans sectorial mobility - with the non-academic sector?

The cross-organisational mobility required by the MSCA programmes is a great opportunity to work in a different environment and open up perspectives. The most valuable benefit from this is, in my opinion, the chance to connect with different cultures. Being exposed to an international environment allows us to understand and respect different perspectives, learn from new ideas and improve community relations, which certainly makes a difference in our career development. I am currently doing my secondment at Ghent University (Belgium), where I will work for 6 months. It has been a very good experience, especially to exchange information with other researchers and learn about the different projects in which they are involved.

Regarding trans sectorial mobility, it is definitely a relevant opportunity to directly interact with the non-academic sector. In 2018, I did an internship at a consulting company called Simbiente (Portugal) as part of my joint doctorate programme. Personally, the experience was a great chance to learn about how the projects are developed and undertaken, the distribution of tasks within the team and the importance of effective communication for greater results in a consulting company. It was also valuable for having feedbacks about my research with a non-academic point of view, which gave me other perceptions and inspirations.

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Are there any tips that you would like to give to prospective MSCA candidates?

Some advice I would give to prospective candidates is to be very persistent and truly believe in your potential. In order not to miss any good opportunity, keep updated on the offers by the MSCA, and once you find interesting calls, check whether you have all documents ready for the application. Make sure you prepare them in advance as some of them might require quite a long time to be issued (legalized documents, proficiency tests, etc.). The ITN selection process is very transparent and focuses mainly on scientific excellence irrespective of the gender, age or nationality, so if you feel motivated to contribute to science and innovation, I definitely encourage you to join the MSCA community!

SuPER-W is a “European Joint Doctorate” programme for highly motivated young scientists, combining state-of-the-art research with a comprehensive joint training programme on Resource, Product and Energy Recovery from Wastewater with a strong collaboration between academic and private partners.

It brings together eminent scientists and non-academic sector representatives from multiple key disciplines to train young professionals, to optimize existing technologies and develop novel integrated technologies for product, energy and resource recovery from wastewater. The aim is to identify (potential) bottlenecks in the implementation and exploitation of these technologies and to stimulate policy input formulation.

It has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska -Curie grant agreement No 676070.
Hot Topic – “Marie-Curie PhD, Advantages and Challenges...”

Piece originally published by Mahmood Mahmoodian, Marie Curie Early Stage Researcher, in MSCA project QUICS blog entry of the same title, accessible [here](https://example.com), and reproduced below with his consent.

“Is this a PhD or a kind of tour in Europe?” “Do you have time to do research as well? Or you only travel and teach at schools and kindergartens?” “Ah, you guys and your luxury PhD!”

These are typical comments and questions that we, as Marie-Curie (MC) fellows often hear from friends and colleagues. So, I thought that it might be relevant to write about advantages and challenges of this experience. This can give an overall idea about the situation for students who are interested in this fellowship and want to know more.

Being a Marie-Curie fellow in an ITN network, has numerous advantages as well as some challenges. I will try to list some of them briefly according to my personal experience in a sincere and honest way.

### 1) Advantages

Among many advantages that MC fellowship has, I can mention:

- **Reputation and being prestigious**
  
  A Marie-Curie fellowship is one of the most prestigious fellowships in Europe and perhaps one of the best in the world. The majority of academic people know about it and it can be considered as a valuable asset in the future, if you want to stay in academia, or even if you want to start working outside the academic world. (No need to mention that it is highly competitive to get selected).

- **International environment**
  
  Each project has various partners (universities, institutes, companies, etc.) all over Europe and even outside Europe. In case of the QUICS project, 9 partners and 7 associate partners which are located in 9 countries! This is truly a unique experience as a PhD student to be involved in a serious project in such an environment!

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c) Secondments
Each MC fellow has the requirement of undertaking so called “secondments” to other project partners. For instance, I have 9 months of secondments to spend at TU Delft (NL), University of Sheffield (UK), University of Laval (Canada) and RTC4Water (Luxembourg). Hence, there is a great possibility to exchange knowledge and learn more on your topic from other project partners. This mobility will definitely nurture your other life skills as well apart from academic life.

d) Lovely training budget!
A generous budget is allocated to each fellow to spend on their training and research as well as transfer of knowledge. We, Marie-Curie fellows, love it! It gives the fellow a great opportunity to attend lots of courses, summer schools, trainings, conferences, and so on. As far as I know, this is not comparable with any other PhD grant. This gives you a unique opportunity to develop your discipline-related skills as well as soft skills and also to expand your professional network!

e) Networking
In an ITN project, it is all about networking and collaboration possibilities. You have the possibility to meet experts in your field during various project meetings, while attending conferences and training events, or when you are seconded to project partners. You may also have multiple supervisors from different universities and institutes, which is in fact another advantage in this regard.

f) Public outreach events
As an MC fellow, you are required to convey the general knowledge about your research to the non-academic audience as well. This normally includes some outreach events for public audience such as school students and pupils, technicians at companies and so on. Although it is really challenging to organize these activities in a tailor-made manner, they are really fun in the end! It is a skill to simplify your message to be easily understandable for public.

g) Collaboration
I think collaboration is one of the main keys to be more successful in research. With collaboration you can expand your knowledge, learn from others, and think outside the box. In the QUICS project there is a great collaboration opportunity at individual as well as institutional levels. For instance, at the moment I am collaborating with 2 other QUICS fellows to write a conference paper and hopefully a journal paper in the future.

h) Soft skills
PhD topics are normally very detailed and they are defined to solve specific and tiny problems in this complex world. You may be lucky to find another specific and similar research topic or a job title to continue your career after graduation; however, what would make you a more suitable candidate for a wider range of careers is your ‘soft skills’. For example: communication skills, teamwork and collaboration, adaptability, project and time management, critical thinking and so on. Personally, I do not assert that currently I am great in these skills, but I am sure that the Marie-Curie fellowship is helping me a lot in this regard. Most importantly, we develop our soft skills via "learning by doing". Besides, there are plenty of courses during our training events and also in our universities and institutes.
2) Challenges:
   a) Distraction!
   During the first year of my PhD, averagely, I had almost one work-related travel each month. This is really distracting when it comes to research. Add to this all the travel planning and the bureaucratic procedures. On one hand, they are good for your skills development and changing the monotonous working environment, but on the other hand they can easily distract you from the current step and you would totally forget what you were doing before!

   b) Project management and time management
   As a MC fellow, you are connected to multiple locations and entities, each of which brings different responsibilities. [...] To be honest, sometimes, I realize I am spending a considerable part of my time or a whole day only on bureaucratic tasks. Dealing with the numerous tasks related to my PhD position requires proper project management and time management skills that the MC fellow needs to develop over time.

   c) Managing secondments
   First of all, you need to define what your objectives are and what the “optimum time” is to go for a secondment. Then you need to plan and organize it:
   - Find another accommodation which is normally very difficult for short stays.
   - Apply for visa (if you need to) and plan your trips.
   - Adapt to the new work environment.
   - Do in parallel the responsibilities for your host institute.
   - Write a secondment report after finishing.

   d) Multi-supervisionship
   Having double, triple or even more supervision is another challenge. It is clear that having more than one supervisor is beneficial in terms of sharing the knowledge, experience and new ideas. But sometimes it can be a challenge too. For instance, receiving the feedback from all of them would take a considerable amount of time; sometimes, ideas can be contradictory; besides you need to keep in touch with all to avoid miscommunication.

   e) Uncertainty in visa applications! *
   I really “dislike” this part and almost everyone in QUICS project knows why…
   Imagine if you have to wait for about 6-7 months to get a visa to start your PhD in Luxembourg: you will understand very well the meaning of “uncertainty”. I do not want to go into political discussions here, but just a hint to those nationalities who are treated more strictly for entry visas: “Apply very well in advance”.
   Based on my experience after living in several countries and spending “n” hours in the embassies, there is no rule about granting visas. The uncertainty bound is too wide. These were totally personal experiences, but I hope I have conveyed the main message.

3) Summary:
   All in all, Marie-Curie PhD is a unique one. Although there are some challenges on the way, it will definitely help you to develop your skills as a researcher as well as a project manager. Go for it if you have the chance!

* EURAXESS can assist you with your visa application! Find out about all the free services EURAXESS provides to researchers and employers. You can save time and money by using more than 500 EURAXESS Centres around Europe to help you with a range of issues including visa requirements, work regulations, taxation and social security. More information here.