

Terremoto de 23 de Abril de 1909.

9th Summer School Workshop

FINAL RECAP

Rita Bento

Instituto Superior Técnico, 7th July 2023

Benavente — Largo do Calvario PORTUGAL

INFRARISK- Analysis and Mitigation of Risks in Infrastructures

FCT PhD Programme



Started **2013**

Institutions:

- Four universities:
 - IST- University of Lisbon
 - FEUP- University of Porto
 - University of Minho
 - University of Aveiro
- National Laboratory of Civil Engineering (LNEC)
- A research unit within IST: CERIS-ICIST



INFRARISK- Analysis and Mitigation of Risks in Infrastructures

FCT PhD Programme



Main Objectives:

- Conduct hazard assessment;
- Perform vulnerability analysis of the several infrastructures, including the interdependence effects;
- Propose and prioritize solutions and techniques for the strengthening and rehabilitation of infrastructures to reduce their vulnerability;
- Contribute to define prevention and preparedness policies and measures aiming at the enhancement of socio-economic resilience.

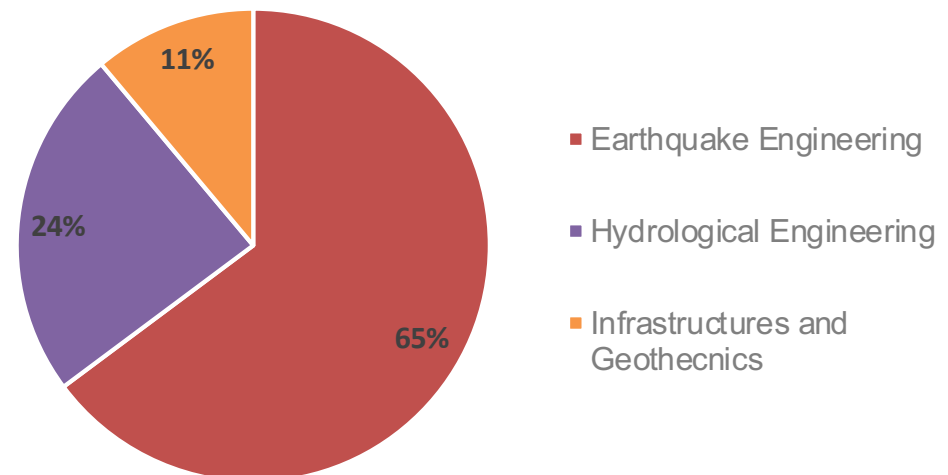
INFRARISK- Analysis and Mitigation of Risks in Infrastructures

FCT PhD Programme

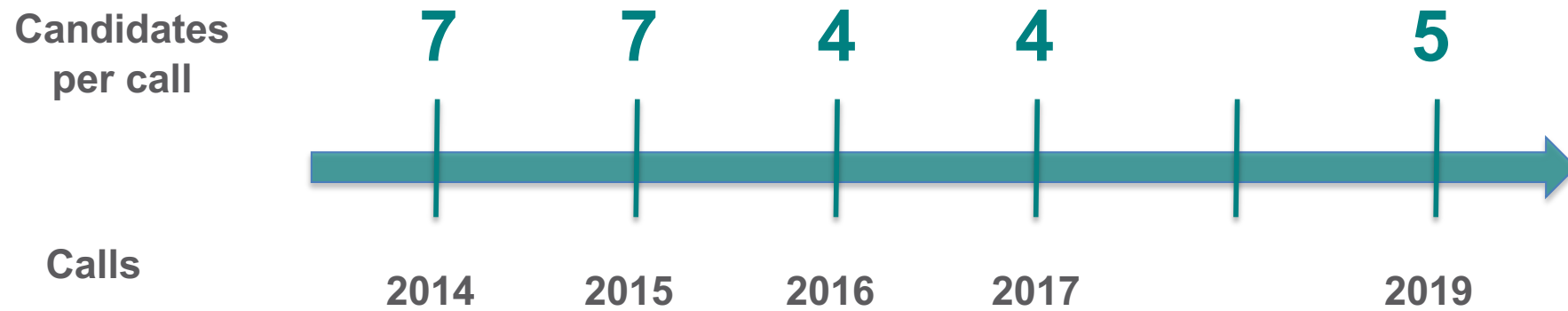


Risks:

- **Earthquake Engineering** (Earthquakes and Tsunamis);
- **Hydrological Engineering** (Hydrological, including Floods, Coastal Environment and Maritime Structures);
- **Infrastructures and Geotechnics** (Geotechnical, Collapse of large infrastructures, i.e. dams, Operation of transportation systems).



Candidates

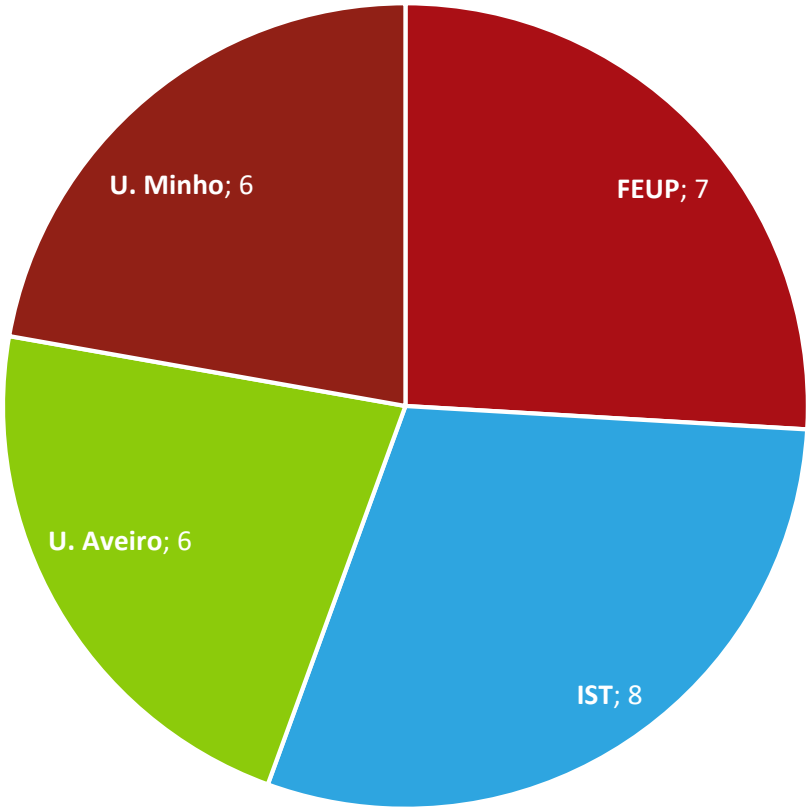
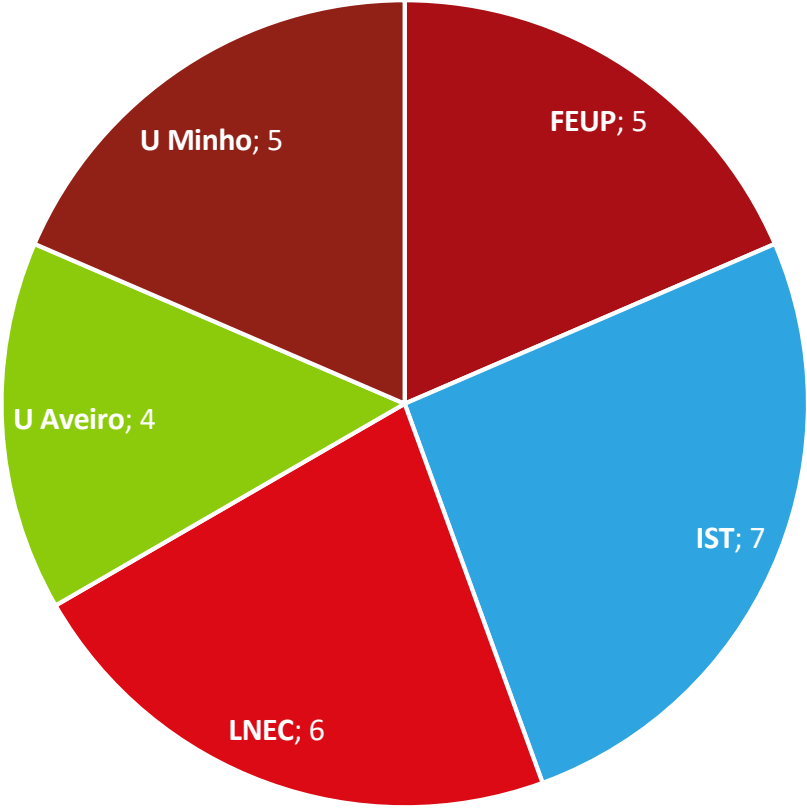


27 candidates

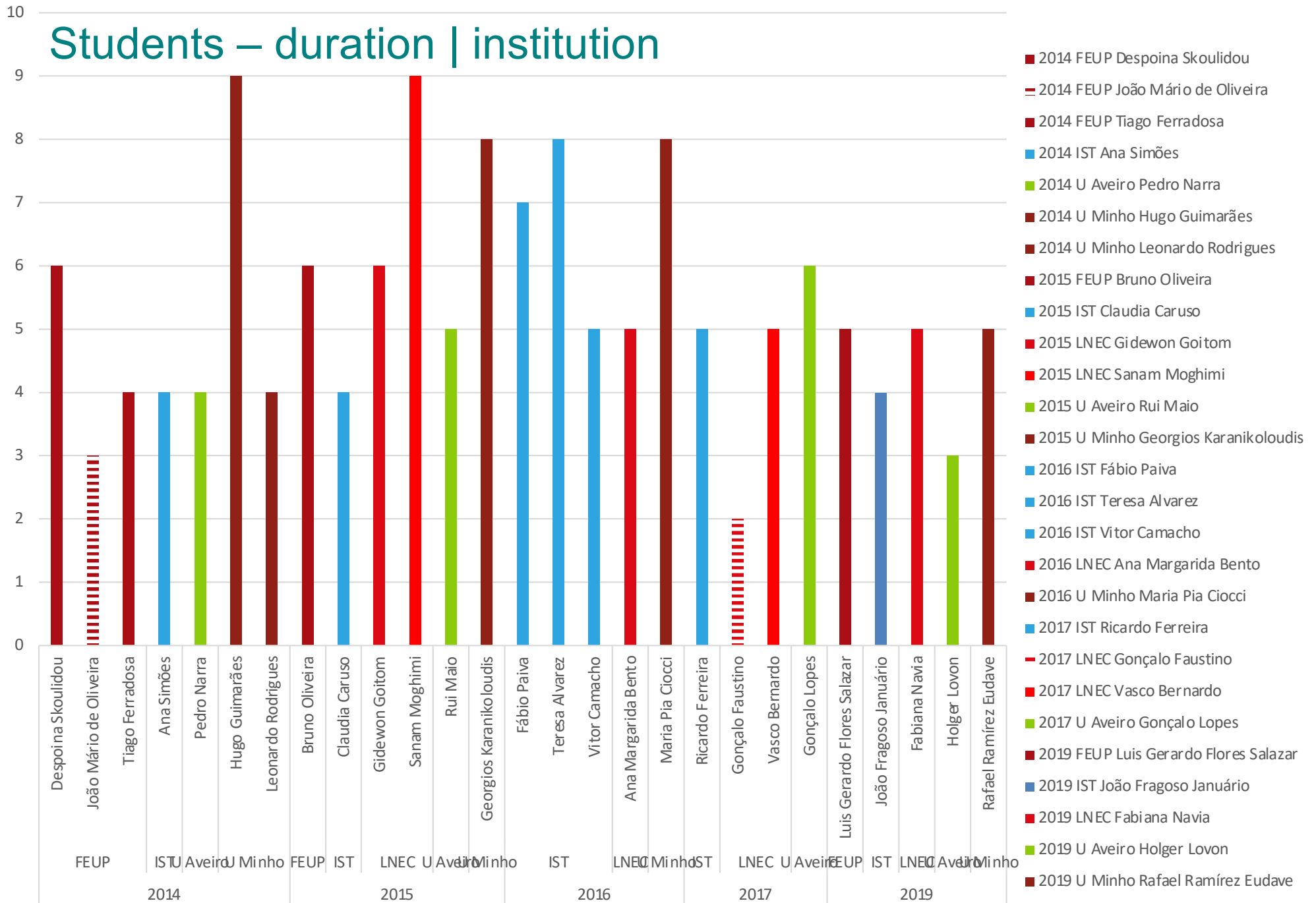
Candidates per Institution



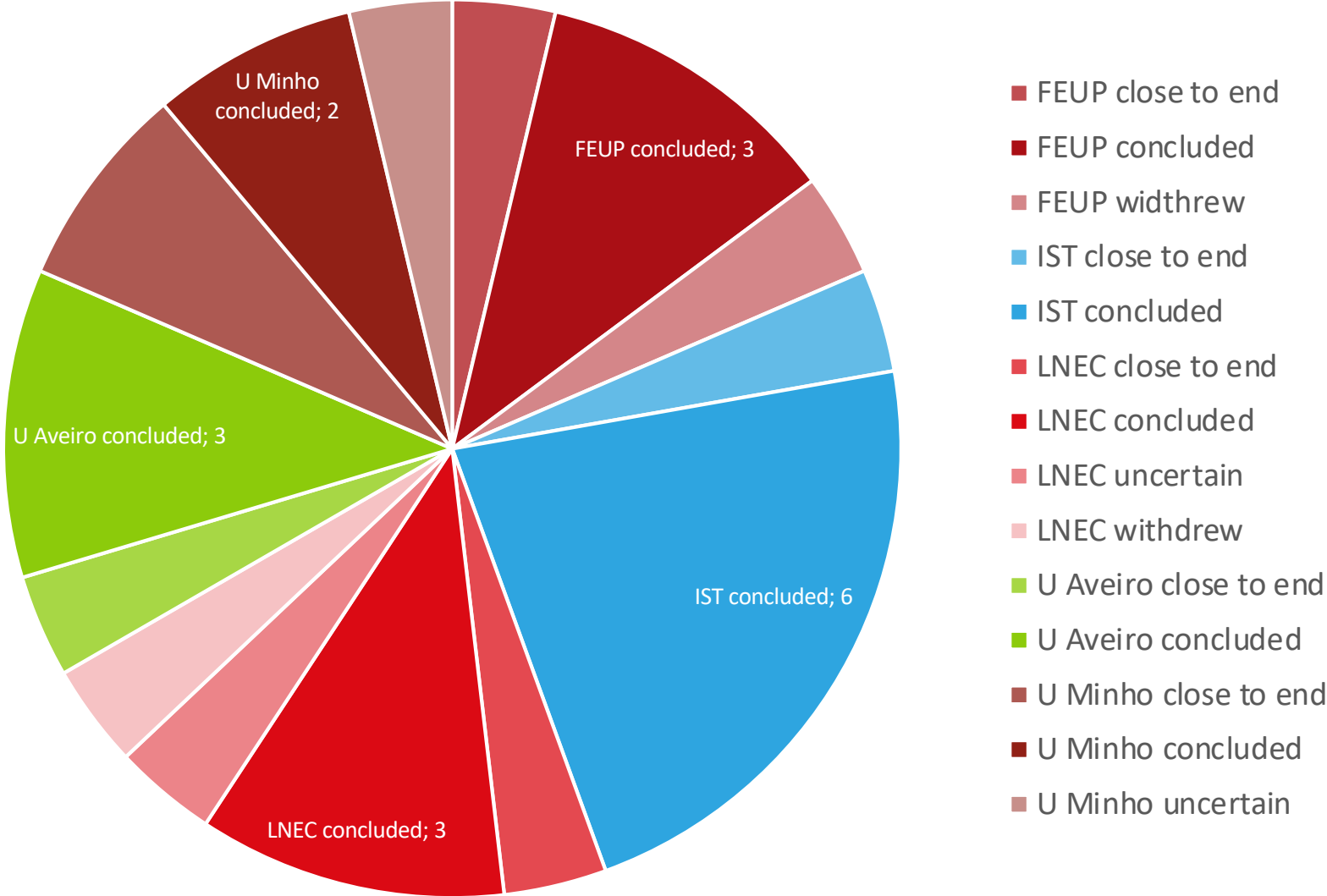
■ FEUP ■ IST ■ LNEC ■ U Aveiro ■ U Minho



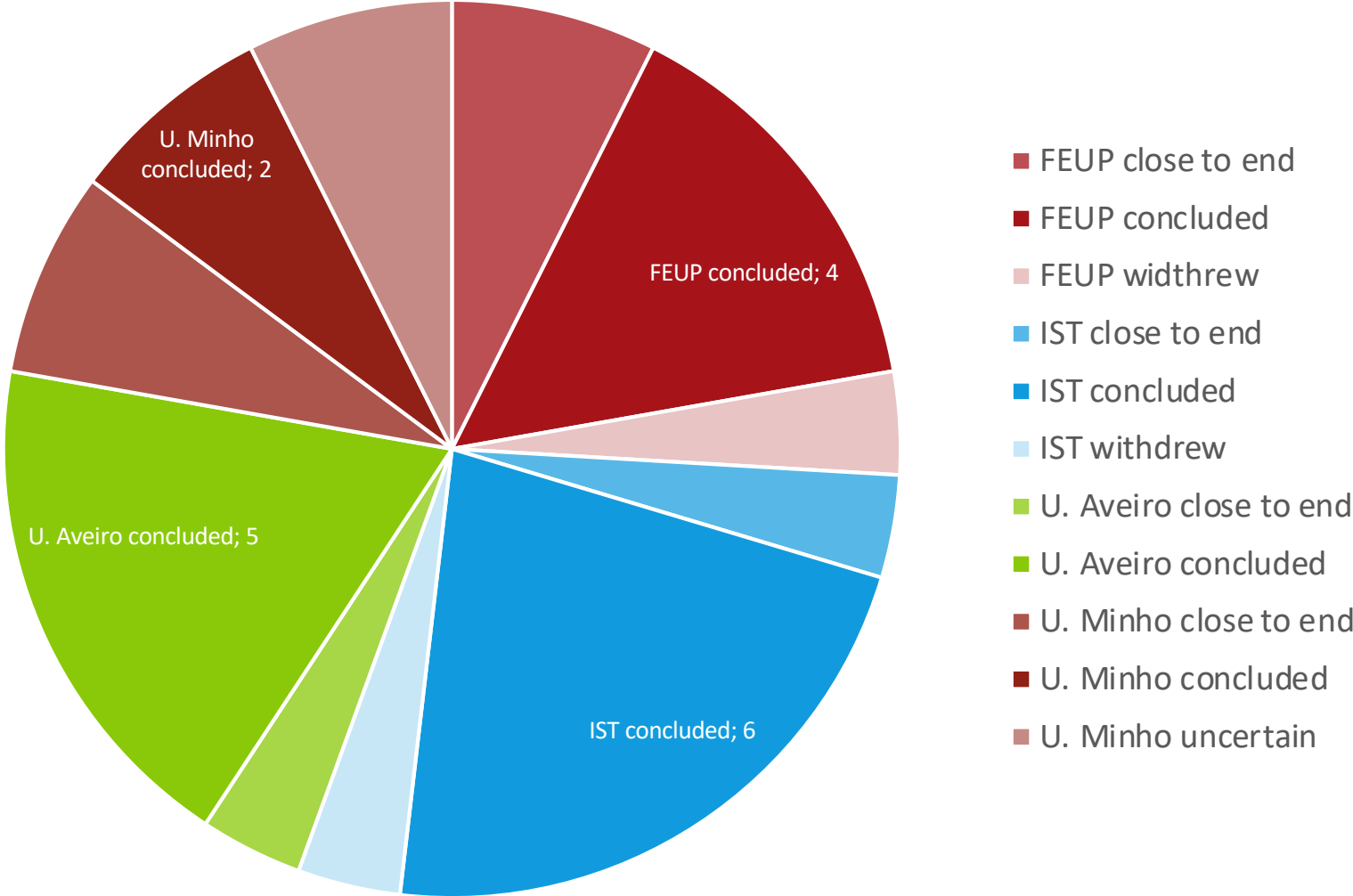
Students – duration | institution



Institutions State

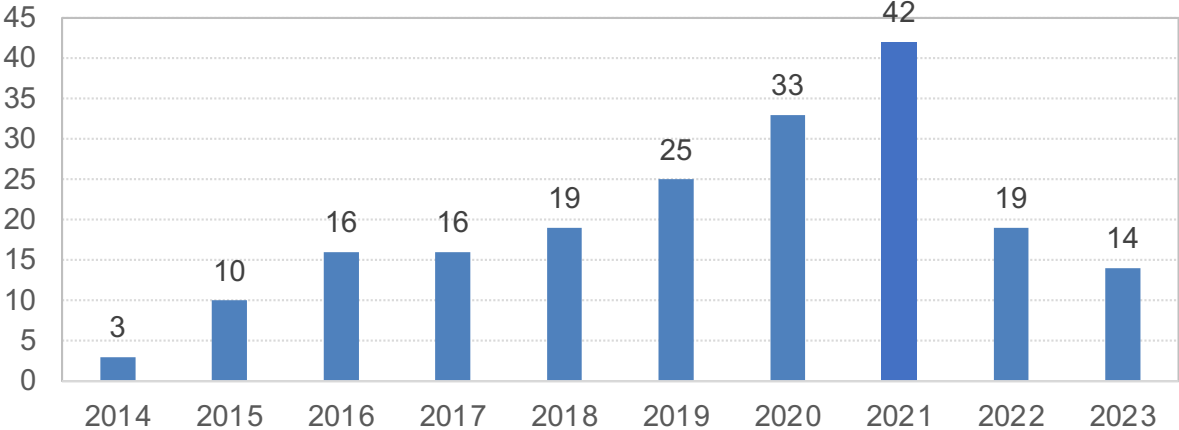


Institutions Degree State



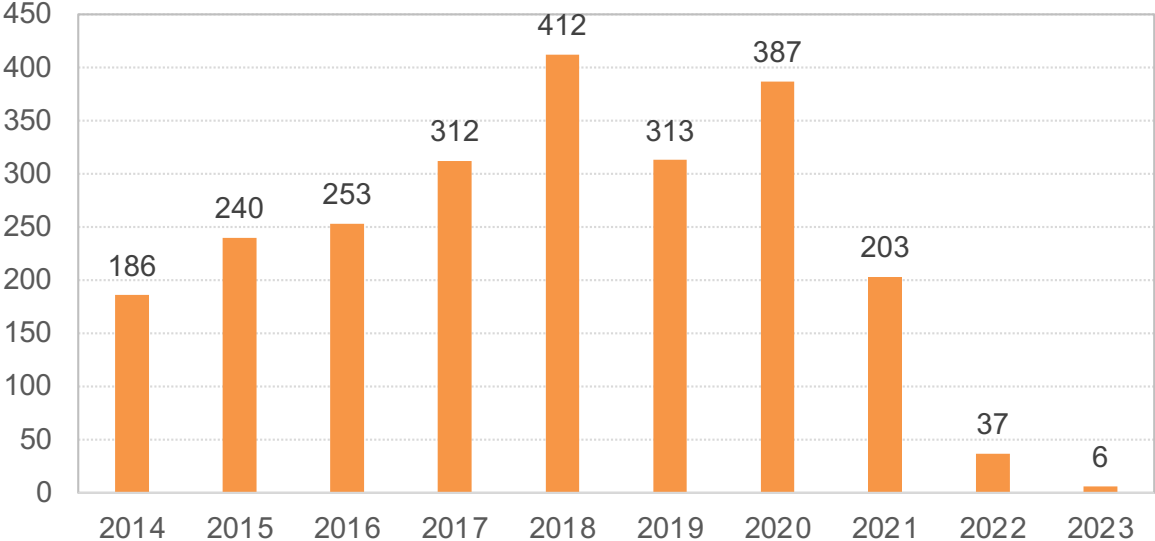
Outcomes

Number of SCOPUS Publications



Number of Citations

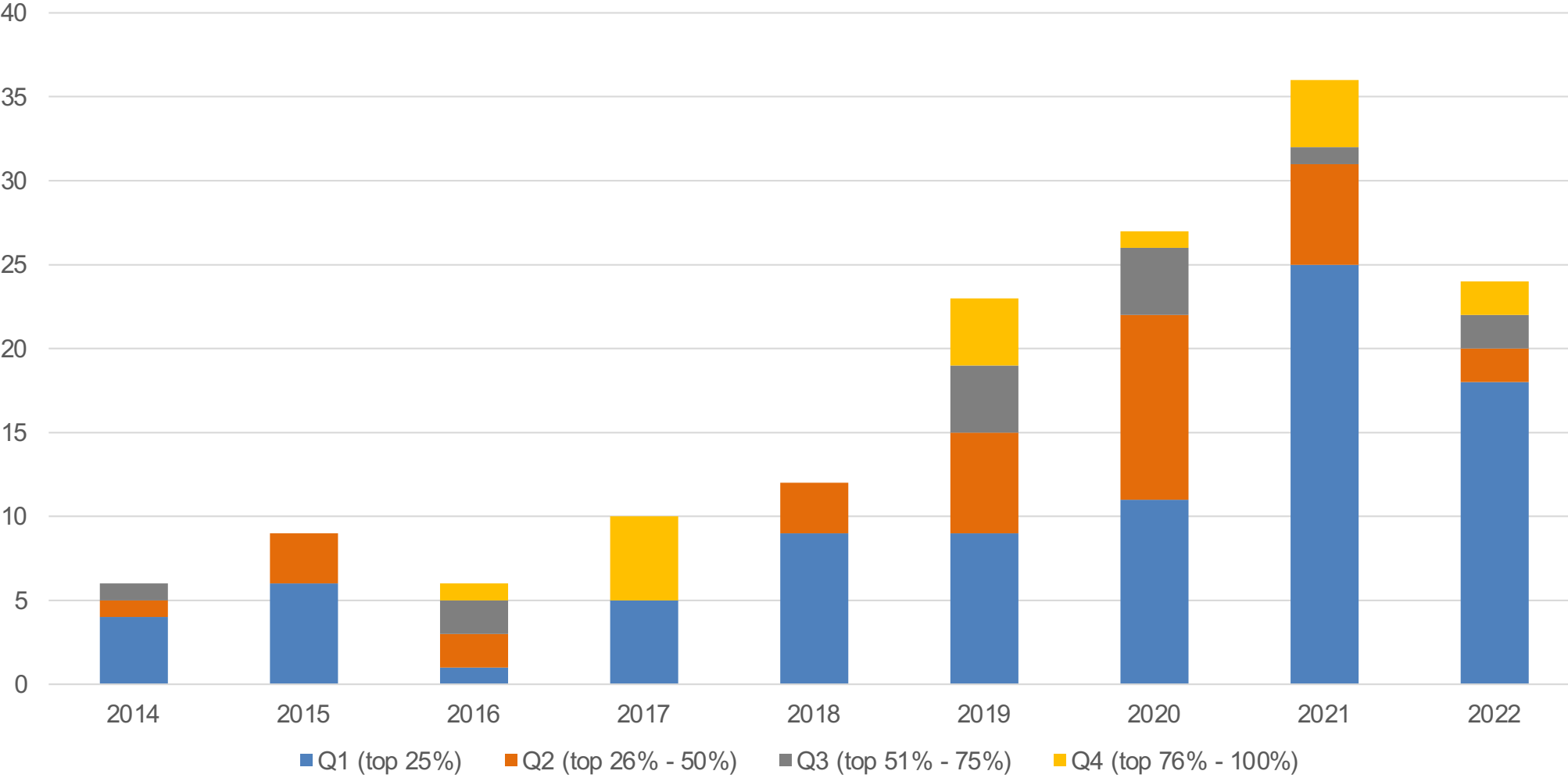
(Credits Romeu Vicente)



(Credits Romeu Vicente)

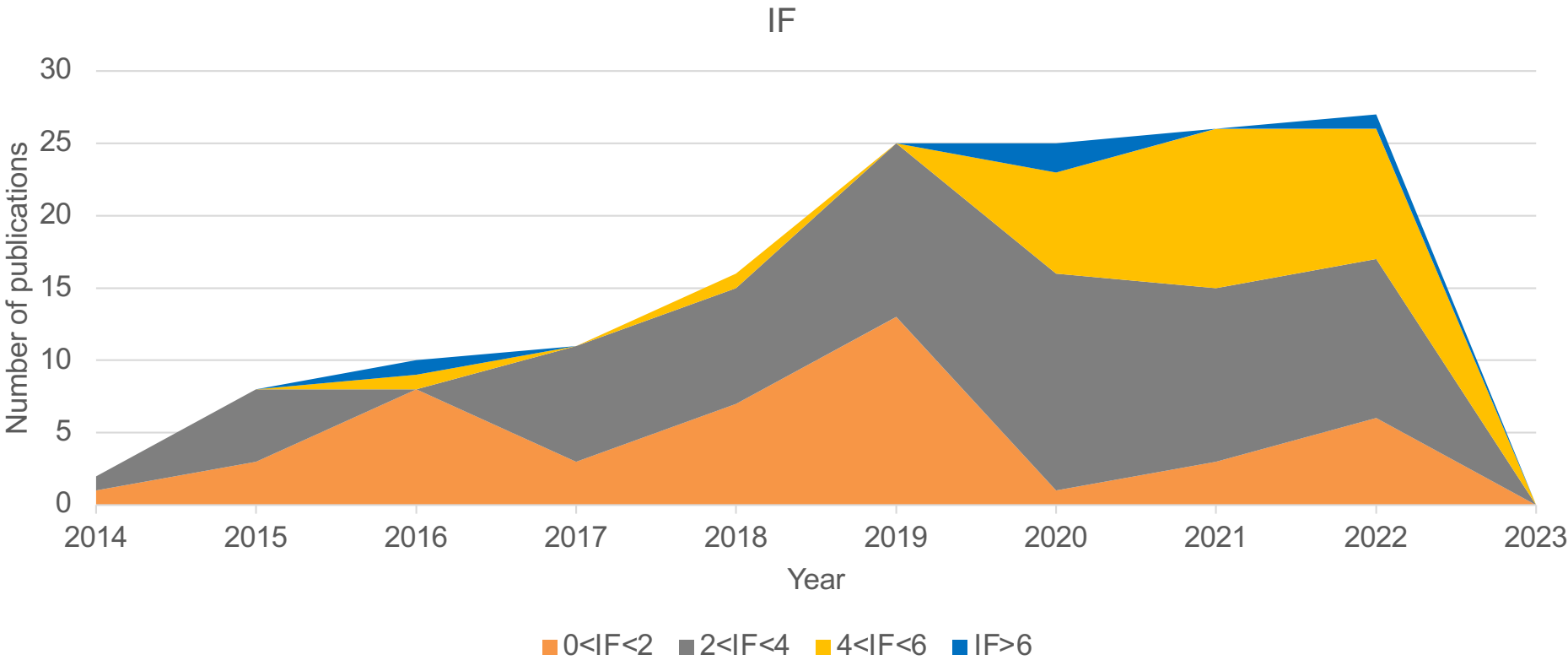
Outcomes

QUARTILES



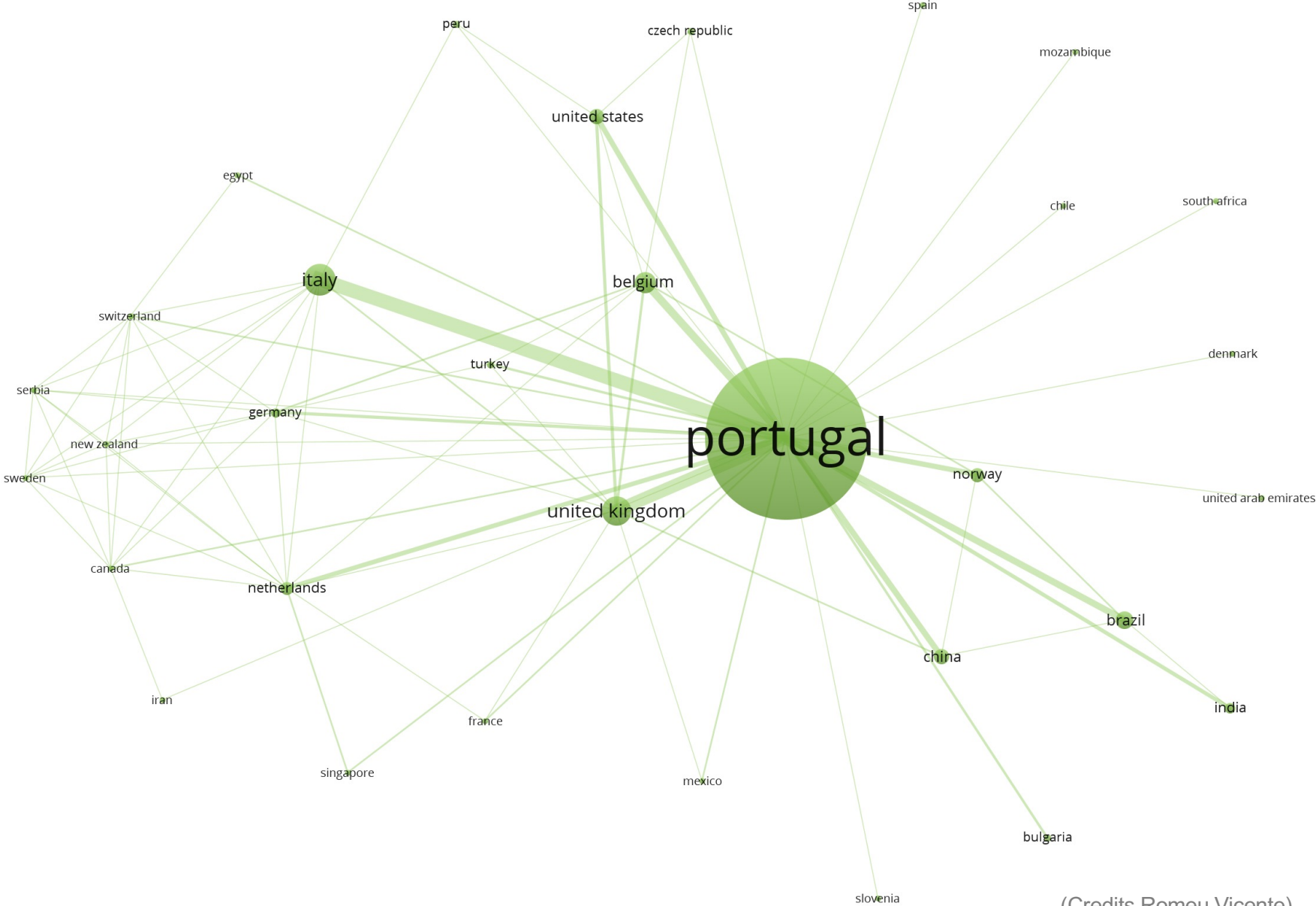
(Credits Romeu Vicente)

Outcomes



(Credits Romeu Vicente)

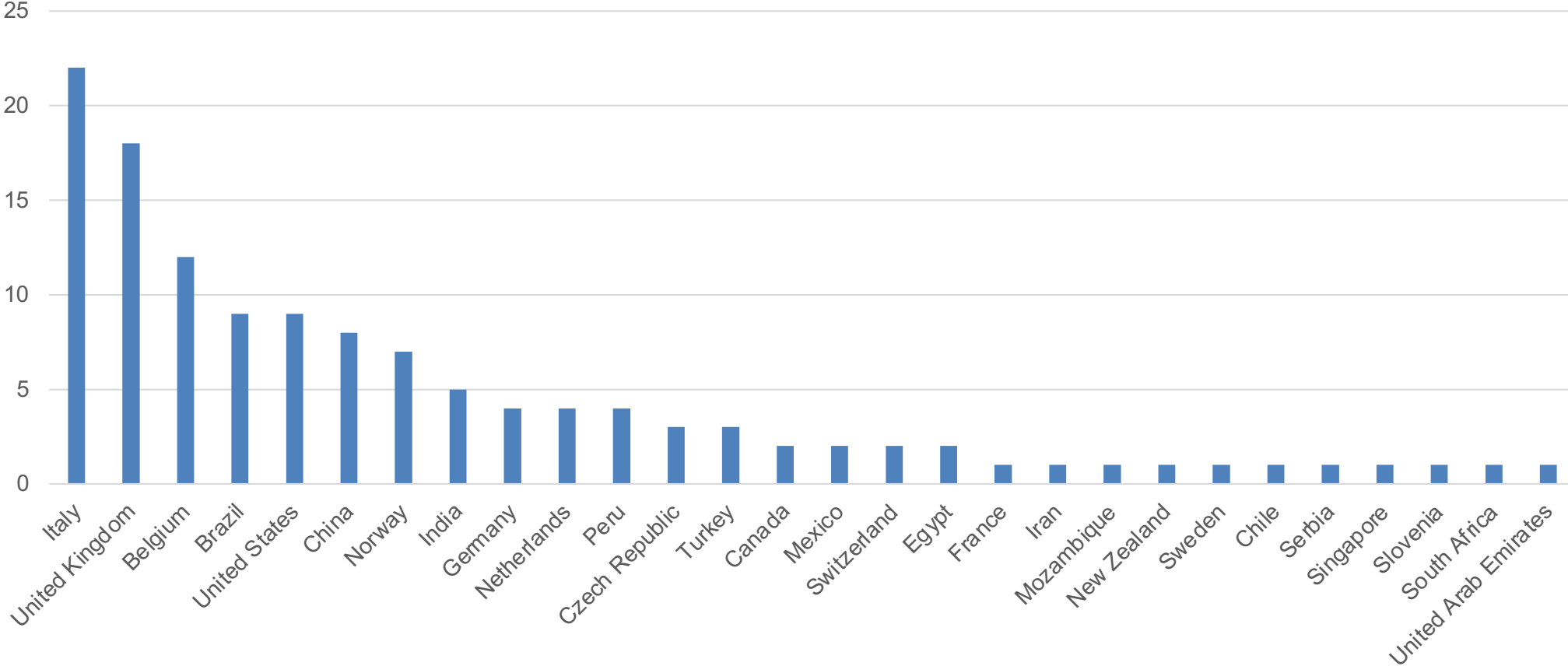
Outcomes



(Credits Romeu Vicente)

Outcomes

Collaboration



(Credits Romeu Vicente)

INFRARISK- | Summer Workshops

1st Summer Workshop – University of Aveiro, **3rd July 2015**

Microzonation for earthquake hazard – A. Ansal



2nd Summer Workshop – FEUP University of Porto, **8th July 2016**

Risk Engineering at the Boundary between Science, Policy and Politics –D. Hartford



3rd Summer Workshop – LNEC, **28th July 2017**

An application of Natural Hazards Risk Modelling: Wine! – J. Daniell



4th Summer Workshop – IST, **18th July 2018**

The hydraulic modelling of extreme flood events – S. Proust



5th Summer Workshop – University of Minho, **15th July 2019**

Spatial and temporal incidence of disastrous floods and landslides in Portugal during the last 150 years – J. Zêzere



6th Summer Workshop – University of Aveiro, **11th September 2020**

Current research activities on disaster resilience and emergency response after disasters in Italy– G. P. Cimellaro



7th Summer Workshop – LNEC, **17th September 2021**

Seismic risk mitigation in steel moment-frame construction – C. Rebelo



8th Summer Workshop – FEUP, **4th November 2022**

Saving the planet, a new challenge for structural engineers – R. Pinho

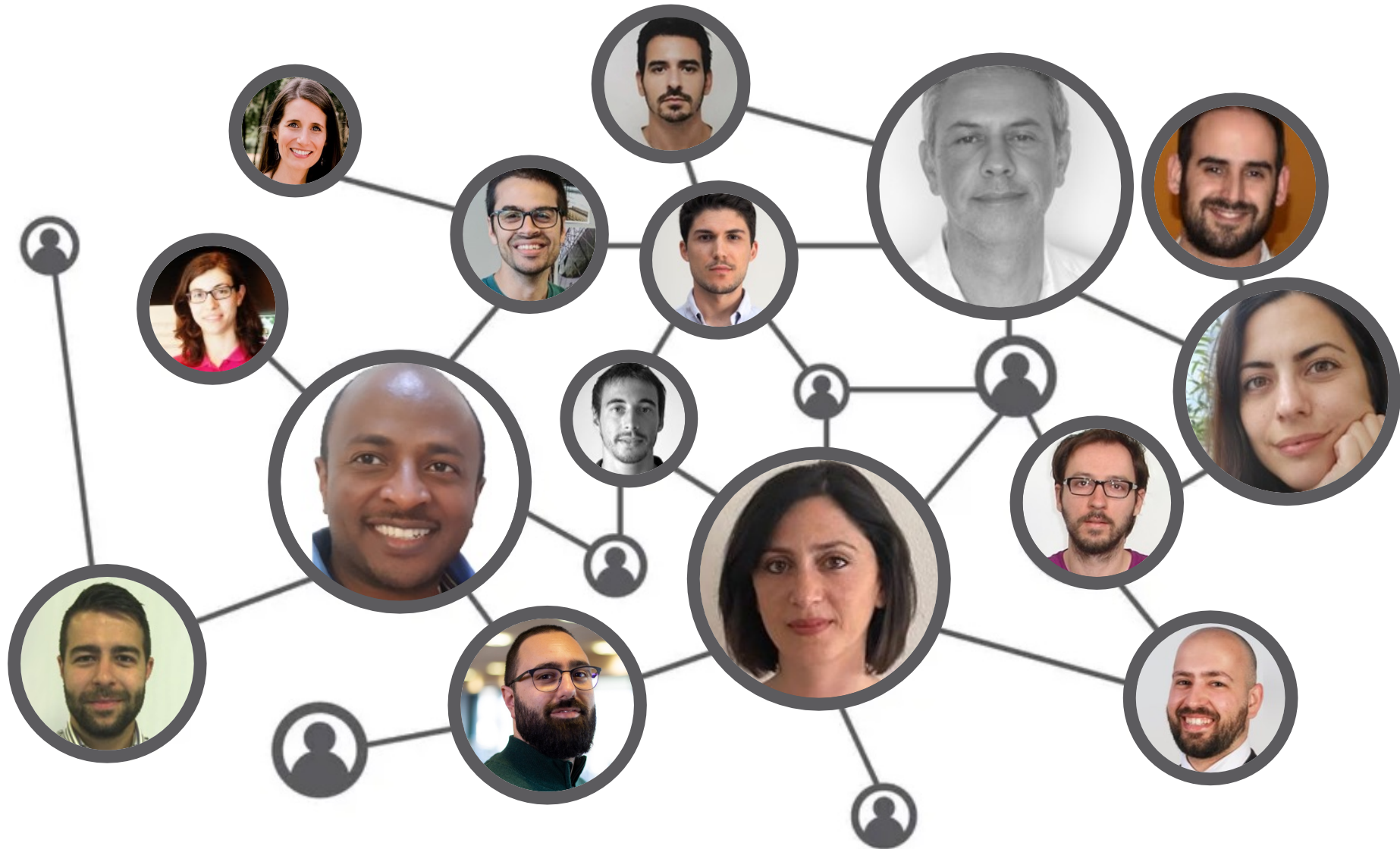


9th Summer Workshop – IST, **7th July 2023**

Needs & Challenges in Developing the Italian Seismic Risk Assessment of the School Buildings Stock– S. Cattari



Alumni Testimonials



Alumni Testimonials



1. Details of their professional journey since obtaining their doctorate
2. Their current professional situation
3. A list of a few reasons why the InfraRisk- doctoral program was either important or not for their professional work

Alumni Testimonials

Ana Simões

2014-2018

Evaluation of the seismic vulnerability of the unreinforced masonry buildings constructed in the transition between the 19th and 20th centuries in Lisbon, Portugal

Rita Bento, Sergio Lagomarsino and Paulo B. Lourenço

Current professional situation

Structural engineer at Barraferros, Lda.

Technical representation of 3Muri in Portugal

How important was the InfraRisk- doctoral program

Joining InfraRisk- was an amazing opportunity to proceed my studies on the seismic behaviour of masonry buildings. It provided access to new subjects in the field of risk analysis which were useful for the development of my PhD thesis. It provided a broad network between universities and PhD students open to share their knowledge. It was a great experience that gave a good set of tools to design my current professional career.



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Alumni Testimonials

Despoina Skoulidou

2014-2020

Performance-based seismic analysis of reinforced concrete buildings accounting for the angle of seismic incidence

Xavier Romão



Current professional situation

Currently, I am based in Greece, I am collaborating with Resilience Guard GmbH as a researcher, and I am teaching an undergraduate course in ATh.

How important was the InfraRisk- doctoral program

Since I won't be able to attend this final workshop, I would like to take this opportunity to cordially thank Rita Bento and the Board of Studies for giving me the opportunity to be part of the InfraRisk- program. It has been a milestone for my professional and personal life, and I hope I was able to meet your expectations. Finishing, I couldn't miss mentioning the overall amazing experience of living in Porto during my PhD, and all the great Portuguese food that I had the chance to try (very valuable for my professional career indeed).

Alumni Testimonials

Leonardo Rodrigues

2014-2018

Robustness of multi-story timber buildings in seismic regions

Luis Branco and Luís Neves



Current professional situation

Since March 2022, I have shifted my career focus from the resilience of timber buildings in seismic-prone regions to asset management for civil engineering infrastructures. I am currently working as a Knowledge Transfer Partnership Associate on a project that leverages the stochastic Petri-Nets approach.



How important was the InfraRisk- doctoral program

The InfraRisk doctoral program has been vital for my career. It equipped me with advanced methodologies in stochastic modelling, crucial for developing and delivering services to local authorities. These authorities can then make informed decisions about asset management, based on collected data and risk-based approaches. The subjects I learned during the first-year courses of InfraRisk, specifically Uncertainty Analysis and Risk and Reliability methods, were not only fundamental to achieving the objectives of my doctoral thesis but also formed the foundation of my professional development. They will surely allow me to play a significant role in serving economies and communities, not just in the United Kingdom, but worldwide.

Alumni Testimonials

Pedro Narra

2014-2018

CERA: GIS-Based Assessment of Coastal Erosion Risk

Carlos Daniel Coelho and Francisco da Ponte Sancho



Current professional situation

Currently, I am BIM Manager at Martifer Metallic Constructions.

How important was the InfraRisk- doctoral program

Although I didn't follow up exactly on the theme I approached in my doctorate. The InfraRisk was very important to me in the building of research and soft skills that have been essential for the progression of my career. Also some specific knowledge of programming, GIS, data management, were also important, and that I take advantage of every day.

Alumni Testimonials

Tiago Ferradosa

2014-2018

Reliability Analysis Applied to the Optimisation of Dynamic Scour Protections for Offshore Wind Foundations

Francisco Taveira Pinto, Luciana Paiva das Neves and Teresa Reis

Current professional situation

Currently, I am an Assistant Professor at FEUP and member of the Executive Committee of the Department of Civil Engineering. I am also the President of APRH Specialized Commission on Water and Energy and the Portuguese nominee for the Scour and Erosion TC of ISSMGE. I am the co-editor in Chief of the Proc. in Maritime Engineering (ICE, UK) and member of the Europe Leadership Division of the International Association for Hydro-Environment Engineering and Research.

How important was the InfraRisk- doctoral program

I am convinced that this program gave me a unique opportunity to pursue an academic career in risk analysis and civil engineering, along with the will to provide applied research towards knowledge transfer to socio-economic stakeholders. This program was just the beginning of a much longer path, with many challenges, learning lessons and happy moments, which resulted from the skills and the knowledge acquired in InfraRisk.



Alumni Testimonials

Bruno Oliveira

2015-2021

Risk-based analysis of river erosion and sedimentation propagation

Rodrigo Maia and Francesco Ballo

Current professional situation

Currently, I am the senior specialist responsible for the management of the technical area of hydrology and water resources at GEG and I am responsible for promoting the development of the technical area, as well as ensuring the quality of the work developed in this area.

How important was the InfraRisk- doctoral program

In my experience, water and hydraulics in general are growing in importance in engineering every year. At the same time, risk inherently informs a large part of the engineering practice worldwide. As this culture spreads and becomes the norm around the world, the knowledge that was acquired in the course of the InfraRisk- doctoral program has been growing ever more important, while at the same time serving as an internationally recognized and widely valued certificate of acquisition of this same knowledge.



Alumni Testimonials

Claudia Caruso

2015-2019

Definition of mitigation strategies for the seismic risk reduction of old RC residential buildings

Rita Bento and Miguel Castro



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Current professional situation

I am currently working as a Construction Science professor at Secondary High School at the Construction, Environment and Territory Courses

How important was the InfraRisk- doctoral program

My education and my experience as a student of the InfraRisk PhD program has enabled me to have many different experiences from the possibility to meet people from different cultures and ethnicity, to the opportunity to network with top scientists in my area of research. It also gave me a lot of chances to improve myself as well and allowed me to develop a solid technical background.

Alumni Testimonials

Georgios Karanikoloudis

2015-2023

Experimental methods for investigating the effects of soil settlements and vibrations in cultural heritage buildings, induced by underground structure Paulo Lourenço and J. Bilé Serra

Current professional situation

Currently I am working as a structural engineer consultant, under the Bagan Conservation Project of the Getty Conservation Institute (GCI), in Bagan, Myanmar. Among his duties are the management and technical support in the numerical modelling and structural assessment of building prototypes, the design of laboratory testing protocols, post-earthquake emergency response plans, and research products of traditional construction and retrofitting techniques, and micro-modelling.

How important was the InfraRisk- doctoral program

My participation in the INFRARISK FCT-PhD program had a significant impact in my professional growth as a structural engineer and researcher. I managed to gain a deep understanding of the process of analysing and mitigating risks in infrastructures, particularly related to natural hazards. I was exposed to diverse perspectives and performed collaborations with experts from different fields. Considering my focus on the structural assessment and retrofitting of historic masonry structures, I have successfully developed the skills to identify and assess potential hazards, performed vulnerability analyses and understood interdependencies, and performed and tested strengthening and rehabilitation techniques.



Alumni Testimonials

Gidewon Goitom

2015-2021

Real-time dynamic substructuring in shake table tests – application to a soil-structure system

António Araújo Correia and Anibal Costa



Current professional situation

Currently, I am working as a technical advisor for technology products while, at the same time, developing research ideas and publications.

How important was the InfraRisk- doctoral program

It is a program replete with amazing and professional people with diverse expertise. It includes excellent institutions with well established research experience, which is one of the reasons for the advancements registered in the program.

Alumni Testimonials

Vitor Camacho

2016-2021

Optimisation of seismic design of bridges

Mário Lopes and Carlos Sousa Oliveira

Current professional situation

Currently, I am a Lead Data Scientist at a company called Syone, where I am in charge of a team who designs data-driven cloud architectures and develops data and machine learning solutions. I am also head of R&D concerning applied machine learning projects

How important was the InfraRisk- doctoral program

Infrarisk was very important for the work that I currently do because it allowed me to initiate my data journey. During the PhD I delved into this data theme by mixing seismic engineering with data science, which was absolutely crucial to get to where I am now. I am very grateful to have been a part of this amazing program and I thank everyone who worked hard year after year making this program possible.



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Alumni Testimonials

Vasco Bernardo

2017-2022

Contribution to Seismic Safety & Risk Assessment of Pre- Code Masonry Buildings

Aníbal Costa and Paulo Candeias



Current professional situation

Vasco joined the Institute for Sustainability and Innovation in Structural Engineering (ISISE) at University of Minho and is currently a postdoctoral researcher (ERC grant) in the project Stand4heritage – New Standards for Seismic Assessment of Built Cultural Heritage, funded by a European Research Council Advanced Grant..



How important was the InfraRisk- doctoral program

Develop a high level of expertise and specialization in seismic vulnerability and risk assessment;
Development of critical thinking and problem-solving;
Opportunity to collaborate with experts and researchers in my field (networking);
Contribute to the existing body of knowledge and to societal progress by addressing pressing issues.

Alumni Testimonials

Ricardo Ferreira

2017-2022

BRD_AI prototype – Development of aluminium alloy hysteretic system: System configuration and analysis

Jorge Proença and António Sousa Gago

Current professional situation

Currently, I am working as a Project Manager at I.P., SA.

How important was the InfraRisk- doctoral program

The InfraRisk Doctoral programme was extremely important to me.

Having had a previous professional career in Structural Design and a special interest for seismic protection systems and seismic behaviour of structures, the InfraRisk programme gave me the opportunity to develop my knowledge in these subjects and also the opportunity to develop research work related to an innovative seismic protection system, composed by a fit-to-purpose aluminium alloy, able to sustain considerable low cyclic fatigue resistance.

During this doctoral programme, I tried to design a dissipative bracing system, composed by a material usually neglected in structural applications and, in particular, seismic protection systems.



Alumni Testimonials

Gonçalo Lopes

2017-2023

BIM-based methodology for the seismic performance assessment of existing URM-RC buildings

Romeu Vicente and Miguel Azenha



Current professional situation

Currently I am working within the project ASSIMILATE and from 01/07/2023 I expect to be working within the project SAFENET (with expected duration of 3 years).

How important was the InfraRisk- doctoral program

The InfraRisk- doctoral program was very important for my professional work for the following reasons:
Specialized Knowledge: Through this program, I have gained specialized knowledge and expertise in the field of seismic risk assessment and seismic engineering. It has equipped me with a deeper understanding of risk analysis, decision-making processes, and resilience in infrastructures. This specialized knowledge has significantly enhanced my professional work and made me an asset in this field.

Terremoto de 23 de Abril de 1909.

9th Summer School Workshop

DISCUSSION & CLOSE SESSION

Instituto Superior Técnico, 7th July 2023

Benavente — Largo do Calvario

PORTUGAL