

Information and Communication Technologies Institute  
**Carnegie Mellon | PORTUGAL**

AN INTERNATIONAL PARTNERSHIP

# An Education, Research and Innovation Ecosystem

**FCT** Fundação para a Ciência e a Tecnologia  
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

## Carnegie Mellon Portugal Program

The Carnegie Mellon Portugal Program is a platform for education, research and innovation that brings together Portuguese universities, research institutions and companies, and Carnegie Mellon University.

### Mission

Its mission is to place Portugal at the forefront of innovation in key focused areas of Information and Communication Technologies (ICT), by promoting cutting-edge research, world-class graduate education and a close collaboration with the Portuguese industry.



# Carnegie Mellon Portugal Program

## Overview

### STRATEGIC AREAS



### INSTRUMENTS



The activities of the Carnegie Mellon Portugal Program are financed by Fundação para a Ciência e a Tecnologia (FCT), supported by the Conselho de Reitores das Universidades Portuguesas (CRUP) and co-financed by industry partners and by Carnegie Mellon University.

### PARTNERS



The partnership was launched in 2006, and in 2012 it was renewed for another five years, until 2017. In its ten years of existence, it has established in Portugal a successful international innovation engine in ICT, and is building on the achievements of its first years to carry out an ambitious Roadmap, crafted by the Program community, for its Phase II.



# Talent Development

Dual Degree Ph. D. Programs

Dual Degree Professional Master  
Programs

Faculty Exchange Program

Undergraduate Internship Program

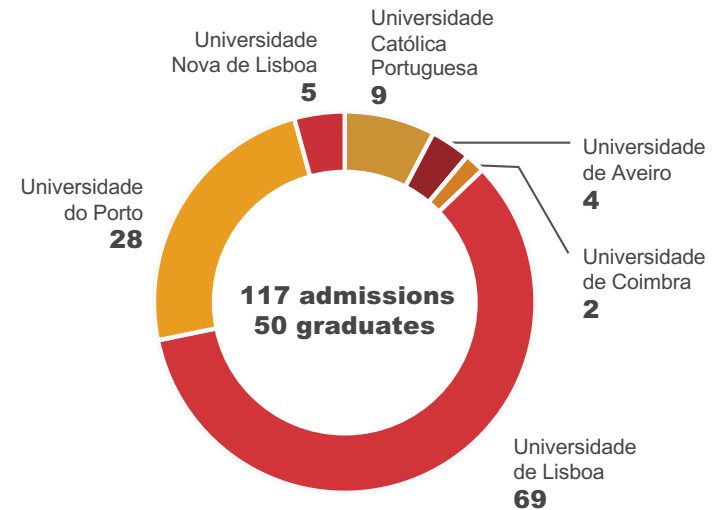
# Talent Development

## Dual Degree Ph. D. Programs

Applied Mathematics (Math)	FCT-UNL   IST
Computer Science (CS)	FCT-UNL   FCUL   FCUP (MAP-i)   IST
CS/Robotics (CS/R)	IST
Electrical and Computer Engineering (ECE)	FCUL   FCUP (MAP-i)   FEUP   IST   UA
Engineering and Public Policy (EPP)	FEUP   IST
Language Technologies (LT)	FCT-UNL   IST
Software Engineering (SE)	FCTUC
Technological Change and Entrepreneurship (TCE)	CLSBE   IST

### Highlights

- One diploma from a Portuguese University and another from Carnegie Mellon University
- 8 programs with 8 schools in Portugal
- Typical duration of five years, three years in Portugal and two years at Carnegie Mellon University
- Co-supervised by a faculty member in each university
- Other sources of financial assistance available



Total number of Ph. D. students enrolled

# Talent Development

## Dual Degree Ph. D. Alumni



**Ana Venâncio**  
Assistant Professor  
ISEG,  
Portugal  
TCE - 2007/11



**André Martins**  
Head of Research  
Unbabel,  
Portugal  
LT - 2007/12



**Filipe Militão**  
Software Engineer  
Feedzai,  
Portugal  
CS - 2009/15



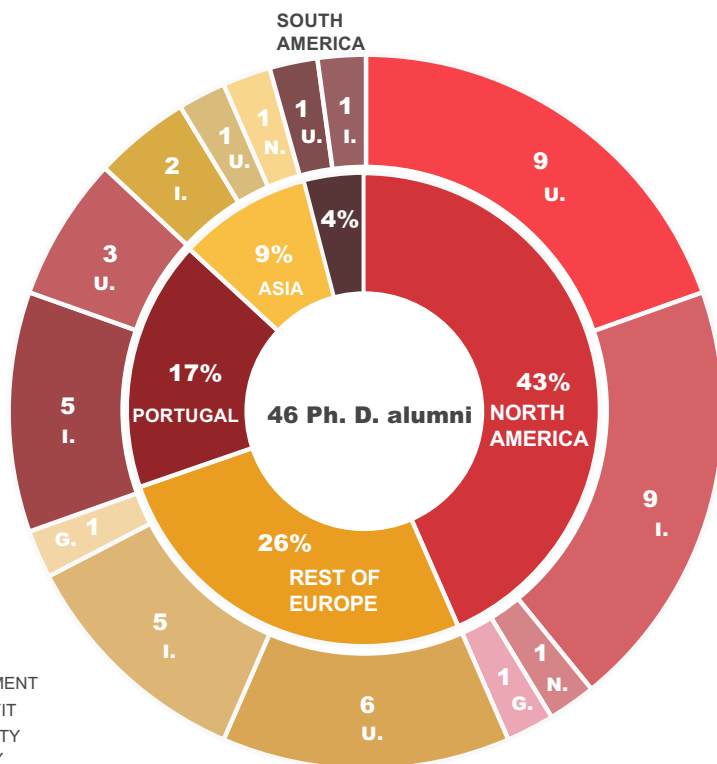
**Hugo Gonçalves**  
Engineer  
Synopsys Inc.,  
Portugal  
ECE - 2010/15



**Sabina Zejnilovic**  
Data Scientist  
NOS,  
Portugal  
ECE - 2011/16



**Susana Brandão**  
Programming Analyst  
SISCOG,  
Portugal  
ECE - 2009/15



G. – GOVERNMENT  
N. – NONPROFIT  
U. – UNIVERSITY  
I. – INDUSTRY

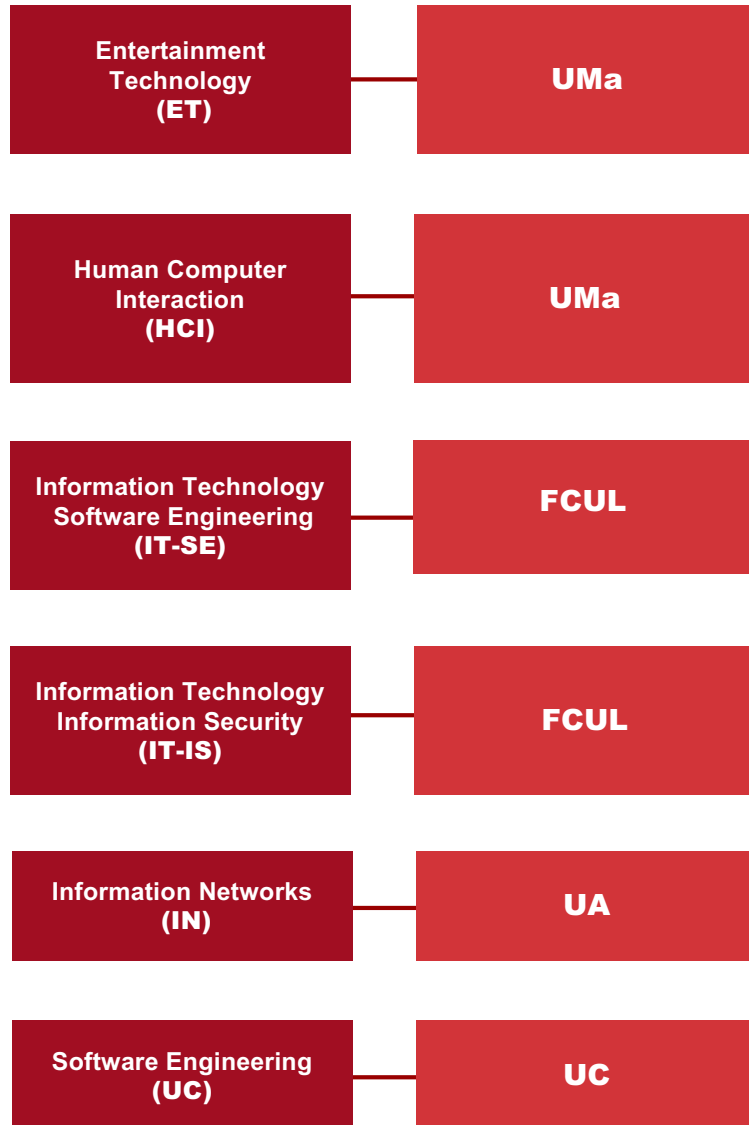
Ph. D. alumni by employer category and country, from a total of 50 alumni

## Opportunities

- Two countries, two diplomas, one world-class education and research experience
- The dual-international graduate credentials give students an excellent basis to build their careers
- While pursuing their Ph. D., students:
  - Access greatest ICT companies, through internships, like Apple, Google, Qualcomm, Cisco, Novabase, Feedzai, among others;
  - Learn and publish papers with top research experts on ICT field;
  - Are immersed on an Alumni network that won several prizes like IBM Scientific Award

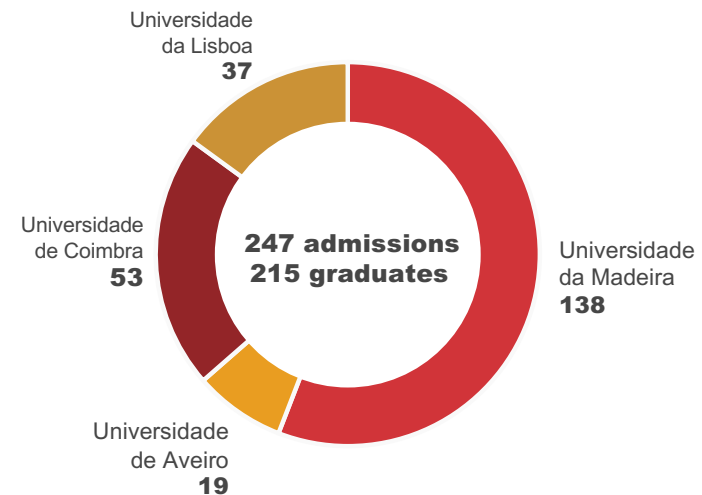
# Talent Development

## Dual Degree Professional Master Programs



### Highlights

- One diploma from a Portuguese University and another from Carnegie Mellon University
- 6 programs created; only MHCI operating since 2015
- Typical duration of 16 months, one semester at Carnegie Mellon University and two in Portugal
- Industry-oriented, real-world projects
- Cybersecurity at PT, Software engineering at Novabase, Capstone and studio projects with OutSystems, Critical Software, CGI, among other
- Self-funded double degree in ECE at Carnegie Mellon University/MBA at Porto Business School



Total number of masters students enrolled

# Talent Development

## Dual Degree Masters



**Andreia Gonçalves**  
Interaction Designer  
Nokia,  
Portugal  
MHCI - 2009/11



**Inês Oliveira**  
Head of UX/UI  
Altice,  
Portugal  
MSIT - 2007/08



**Marco Vieira**  
Product Manager  
Miniclip,  
Portugal  
MET - 2013/15



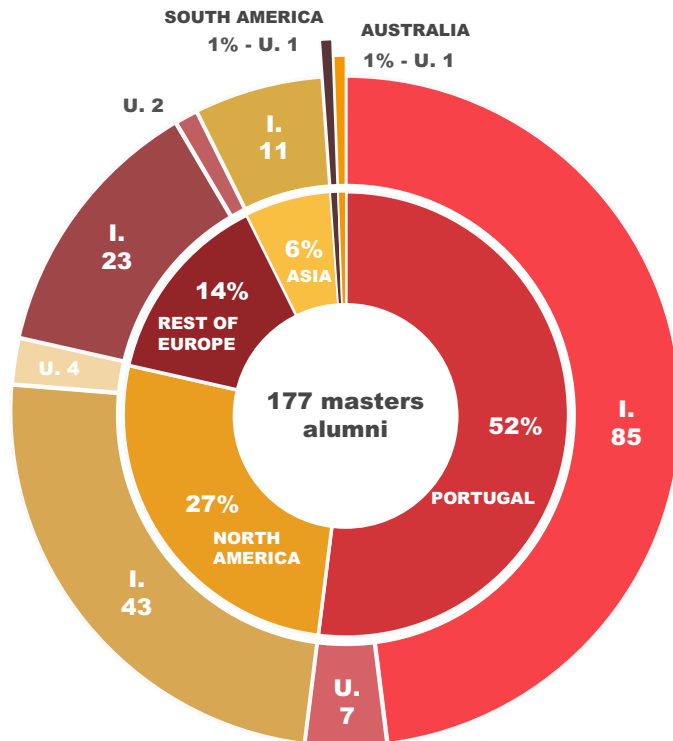
**Miguel Duarte**  
Software Enginner  
Equal Experts,  
Portugal  
MSE - 2009/10



**Nuno Loureiro**  
CEO/Founder  
Probe.ly,  
Portugal  
MSIT-IS - 2008/09



**Teresa Frazão**  
Senior Adviser  
KPMG,  
Portugal  
MSIT-SE - 2009/13



U. - UNIVERSITY  
I. - INDUSTRY

Masters alumni by employer category and country, from a total of 215 alumni

## Opportunities

- Two countries, two diplomas, one world-class education and research experience
- The dual-international graduate credentials give students an excellent basis to build their careers
- Strong connection with the industry, corporate affiliates provide financial support to students in the Program
- High rates of international enrolment, nearly half of alumni are from other countries
- Alumni are currently working in leading technological companies in Portugal and abroad such as Critical Software, EDP, Novabase, Apple, BBC, Disney, Dropbox, eBay, Google, IBM, Microsoft, PayPal, Samsung, and many others
- Students are part of an organized Alumni Chapter that is inclusive and active

# Talent Development

## Faculty Exchange Program

Launched in 2007, the Faculty Exchange Program supports an extended exposure to research and education best practices at Carnegie Mellon University, and **fosters** the **integration** of faculty members from Portuguese universities in international **knowledge networks**.

Faculty members can spend one term working in **research**, **education** and **innovation** at Carnegie Mellon University, to experience its **culture** and **best practices**.

### Most frequent activities

#### At CMU

Attend invited talks	Participate in periodic seminars and discussion forums	Preparation of joint publications
Interact with additional faculty and researchers	Presentation of research findings	Interaction with companies

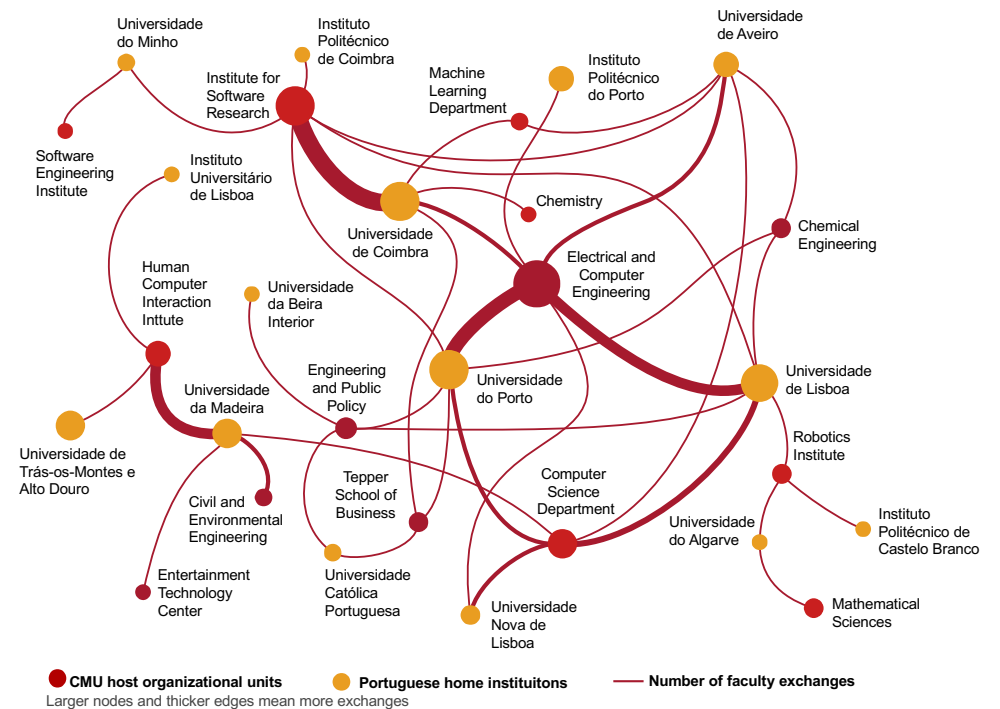
#### Post - exchange

Incorporate best practices in classes and supervision	Joint publications	Preparation of joint proposals
Continue joint research further collaborations	Co-supervise students and internships	Open doors for collaborations beyond CMU

### Highlights

- **Diverse** network developed by the **exchanges**
- **Promote** a positive **exchange** of culture and experiences
- **Visitors** are exposed to the same **environment** and working conditions as a colleague at Carnegie Mellon University
- **Experiencing** more student-centered teaching **methods**

### 68 Faculty exchanges



# Talent Development

## Undergraduate Internship Program

The main goal of the Undergraduate Internship Program is to provide **high-quality research opportunities** to talented **undergraduates**, while opening perspectives for graduate studies and career opportunities in cutting-edge fields of ICT.

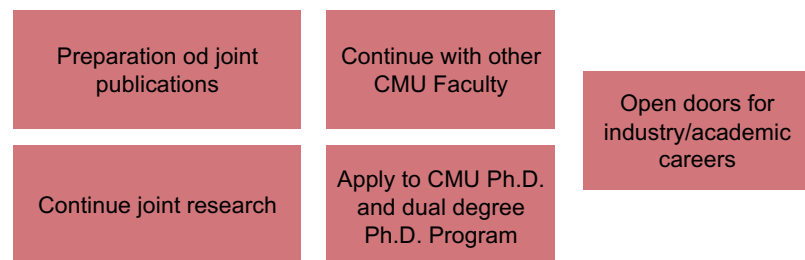
Launched in May 2014, this instrument offers an intensive eight to twelve weeks **research experience**, and the opportunity to be **mentored** by leading **faculty and researchers**, in a cultural immersion at **Carnegie Mellon University**.

### Most frequent activities

#### At CMU



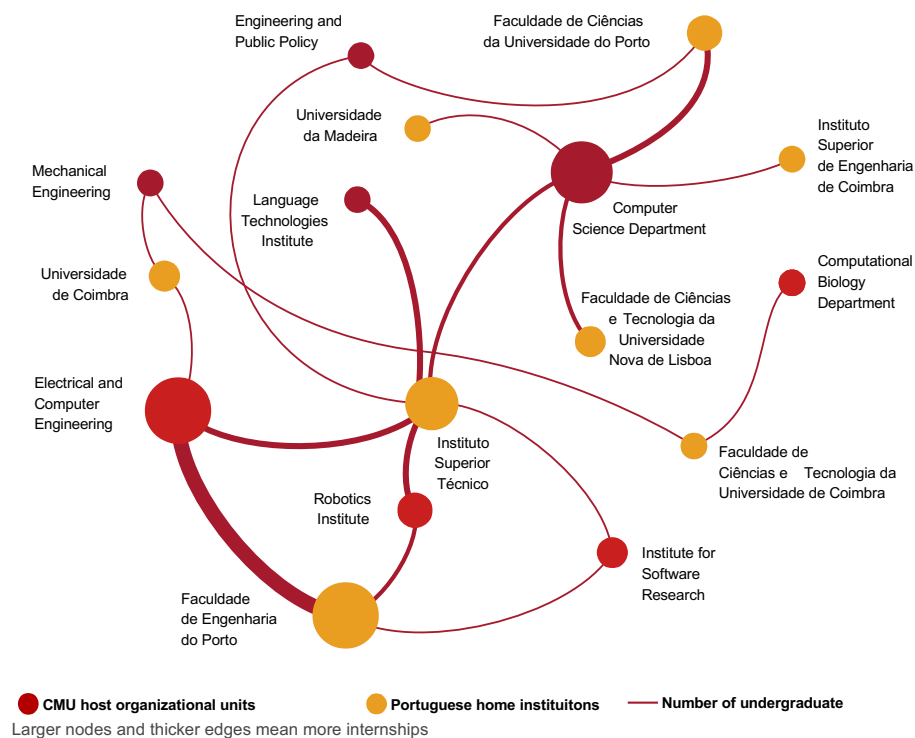
#### Post - internship




### Highlights

- **Develop** knowledge and **skills** as researchers
- **Participate** in state-of-the-art **research** projects
- **Interact** with Carnegie Mellon University faculty and researchers
- **Admission** to dual and regular **Ph. D.** Programs
- Preparation of joint **publications**

### 41 Undergraduate internships



A red-tinted photograph of students in a lab working on a robotic project. The image shows several students, with one in the foreground adjusting a component on a metal frame. The background is slightly blurred, showing other students and lab equipment. The overall mood is focused and collaborative.

# Knowledge Creation

Research in Phase I

Entrepreneurial Research  
Initiatives

Early Bird Projects

Publications

# Knowledge Creation

## Research in Phase I

During Phase I, the Program held three calls for collaborative research projects, involving at least two different institutions in Portugal, one or more companies, and Carnegie Mellon University.

- **2008 Call** – 10 projects concluded in 2012-2013
- **2009 Call** – 15 projects concluded in 2013-2014
- **2009 Call** – 3 projects concluded in 2014, in Applied Mathematics, Joint call with the UT Austin Portugal Program

## Talent Development

- 60** Ph. D. dissertations
- 80** Masters dissertations

## Knowledge Creation

- 250** journal papers
- 550** conference papers
- 350** conference presentations
- 30** books or book chapters
- 40** awards

## Innovation

- 3** spinoffs
- 90** prototypes and testbeds
- 5** patents

#### 12 Entrepreneurial Research Initiatives

- Integrated activities in research, innovation, advanced education;
- with industry collaboration;
- for real world impact;
- 12 proposals approved;
- approximately 11.5 million Euros;
- four years.

#### 10 Early Bird Projects

- Jumpstart new high-impact initiatives;
- emphasis on exploratory research;
- 10 proposals were approved;
- approximately 300 thousand Euros;
- one year;
- two EBPs continued into ERIs in the second call.

#### 2017 Call for Exploratory Research Projects

- Identify emerging key strategic areas for a potential third phase;
- expected to finance 7-10 awards;
- approximately 1.2 million Euros;
- one year.



## Knowledge Creation

### Publications

The Program has been an enabler of the increase in the number of high impact publications for research groups in Portugal.

The total number of publications reported by the Program community is now more than 1,300.

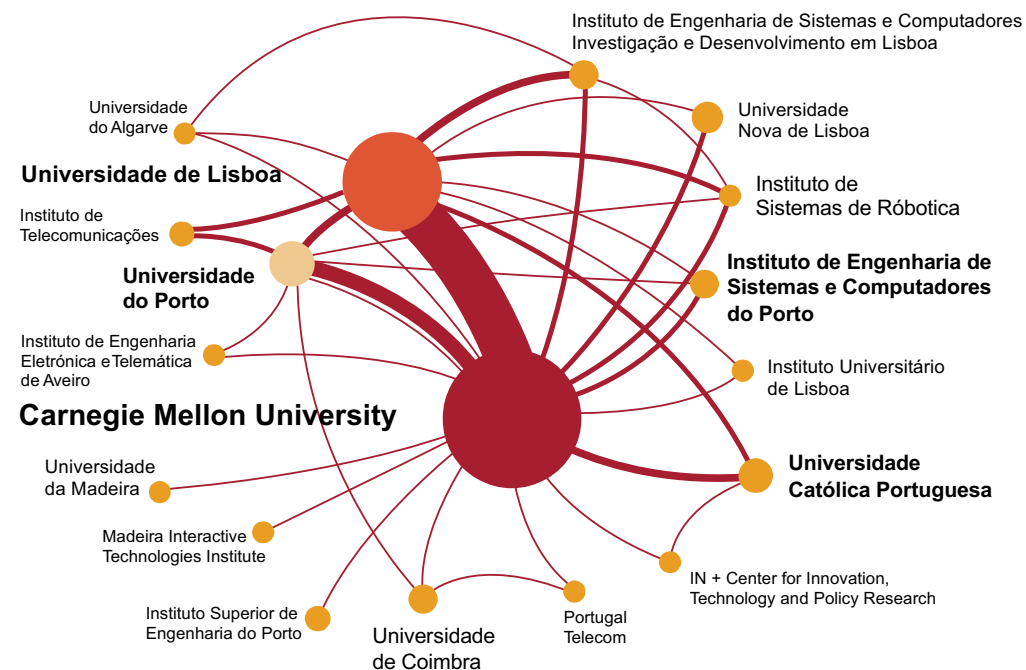
### Publications between 2007 and first quarter of 2017



### Highlights

- Over **1,300 publications** between 2007 and 2017
- Diverse and strong **co-authorships** between **Carnegie Mellon University** and **institutions** in Portugal
- Increasing level of co-authorships among **Portuguese** institutions

### Network of co-author affiliations



Network of **co-author affiliations** in joint publications between **Carnegie Mellon University** and **Portuguese institutions** between 2013 and 2015

# Innovation



Industry Involvement

Startups

inRes – Entrepreneurship in Residence

## Innovation Industry Involvement

Companies contribute to the Program with important guidance in the design and operation of its multiple instruments, the promotion of a culture of **innovation** and **internationalization**, knowledge of product and service design, manufacturing and delivery, and financial and in-kind support.

The recent involvement of new companies in **Entrepreneurial Research Initiatives, Early Bird Projects**, and **inRes**, has raised to more than **120** the number of companies that have been actively engaged with the initiatives of the Carnegie Mellon Portugal Program.

### Benefits

- New solutions for industry problems
- Competitive or complementary products
- Internal capabilities and best practices
- Insights on performance improvement
- Increased visibility
- Access to international knowledge networks



... and more

# Innovation

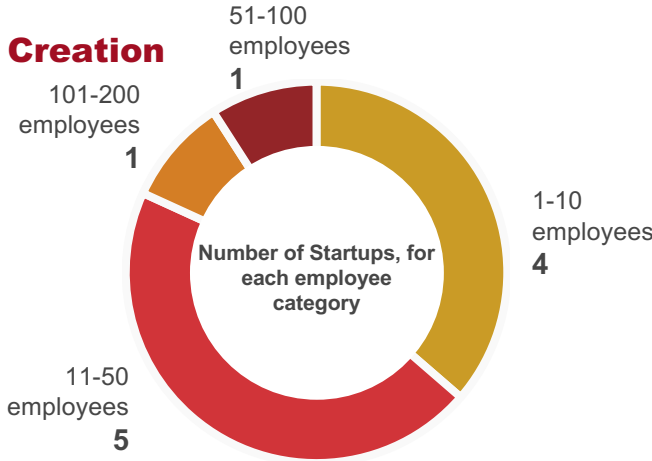
## Startups

The Program has also provided conditions and **opportunities** for faculty members, students or alumni involved in the partnership to launch their own **entrepreneurial initiatives**.

### Highlights

- **11 startups** have been created within the Program
- **67 million USD** raised by four of the 11 startups
- **400 highly qualified job positions** are estimated to have been created by these startups
- **20 members of the startups' teams** are involved in the Program activities

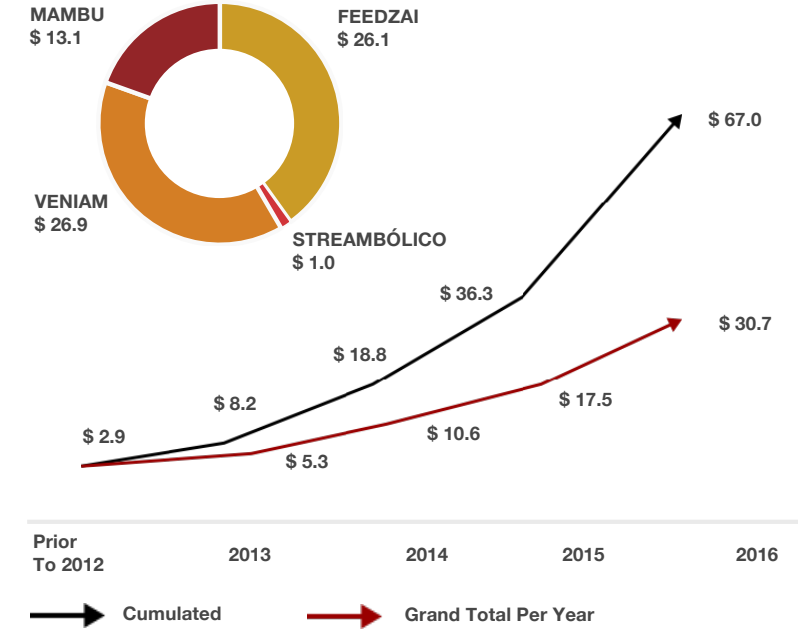
### Job Creation



## Startups



### Funding Raised



Funding raised by Feedzai, Mambu, Streambolico, and Veniam (USD millions)

## Innovation

### inRes – Entrepreneurship in Residence

The inRes program was launched in 2014 as a very early stage **acceleration** program for **entrepreneurial** teams working in ICT, in Portugal. This initiative builds on the experience of a pilot program run on 2011.

inRes provides teams with a very specific profile **exposure to Carnegie Mellon University's innovation ecosystem** and enables them to harness its potential to **grow** their **ideas** into viable **business** opportunities capable of reaching relevant **markets** and **succeeding**.

### Structure

**Phase I** – Preparation in Portugal - 4 Workshops

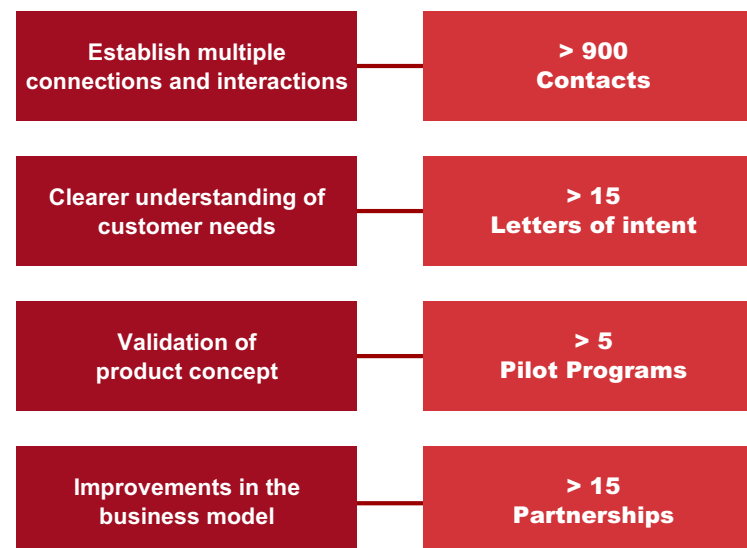
**Phase II** – 7 weeks immersion at Carnegie Mellon University, in Pittsburg and Silicon Valley Campuses

- Networking and business development
- Internship at an accelerator
- Training program

**Phase III** – Final public session

Showcase the projects and the results achieved

### Highlights



### Partners

Hovione  
Capital *for Health.*



### Participating Teams



adaptech

displr



Followprice

SoftBionics

sceelix



twevo

SCRAiM

XHOCKWARE

## Innovation

20

inRes – Entrepreneurship in Residence



### Investment and job creation

5.5 million euros – Total of investment received by 6 of the startups from the first two editions

>70 – The estimated total of highly qualified job positions created by these startups. A significantly fast growth in job creation, for such recent startups

### Investors



inRes Team	Project Creation (Year)	Company Creation (Year)	Industry	City
<b>inRes 2014</b>				
AddVolt	2013	2014	Automotive	Porto
Displr	2013	2013	Media	Braga
Followprice	2013	2015	e-commerce	Lisbon
Xhockware	2014	2014	Retail	Porto
<b>inRes 2015</b>				
Adapttech	2014	2015	Medical Devices	Porto
Playsketch	2014	-	Video Games	Coimbra
Sceelix	2015	2016	Computer Graphics	Porto
Scraim	2014	2014	Internet	Porto
<b>inRes 2016</b>				
All in Surf	2013	2015	Technology	Porto
Helpier	2013	2014	Software Develop.	Porto
SoftBionics	2013	2016	Medical Devices	Coimbra
TWEvo	2014	2017	IT	Leiria

In its 10 years, the Program has built a creative environment in which Portugal and Carnegie Mellon University have collaboratively engaged with the challenges of knowledge societies and their ICT foundations.

Strengthened by its achievements, the Program remains firmly committed to creating a future with Portugal at the forefront of Science and Innovation.

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# An Education, Research and Innovation Ecosystem

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