

THE UNIVERSITIES' THIRD MISSION A CRUCIAL ENDEAVOUR

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BIN@Sheffield2011

2 November 2011

Sheffield, England

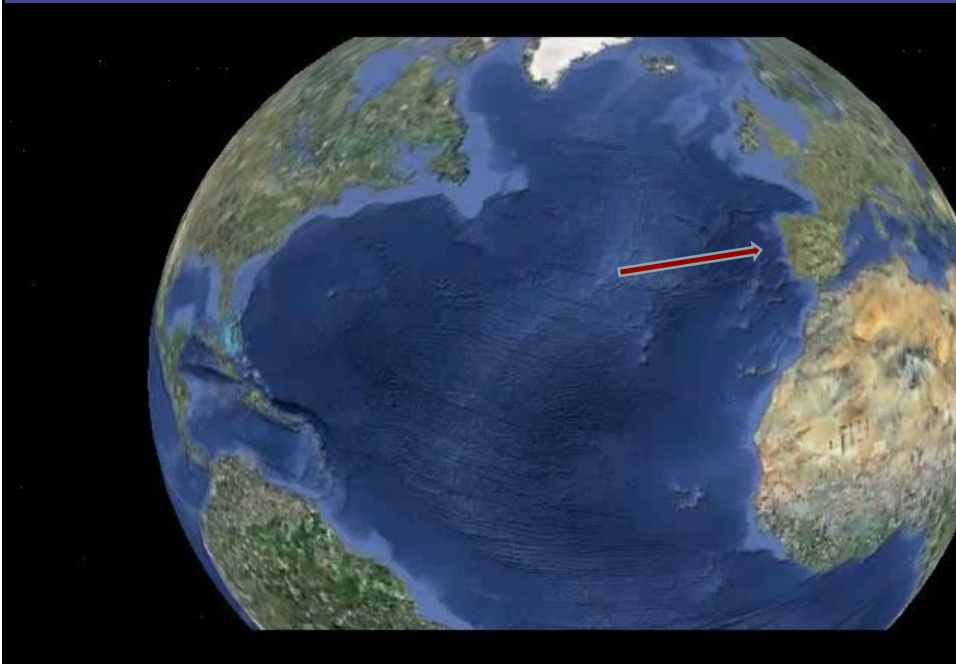
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TO SAY WHAT I AM GOING TO SAY...

- ① **Some historical and institutional notes**
  - ① **Portugal, Porto, The University of Porto, The Faculty of Engineering**
- ② **The Faculty of Engineering**
  - ② **The mission; Facts and Figures; The third mission within the mission – some real applications**
- ③ **Concluding Notes – Expectations for the future**

LOCATION

ACT LOCAL, THINK GLOBAL



THE MOST WESTERN COUNTRY OF THE EUROPEAN CONTINENT, THE OLDEST STABLE BOUNDARIES



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PORTO
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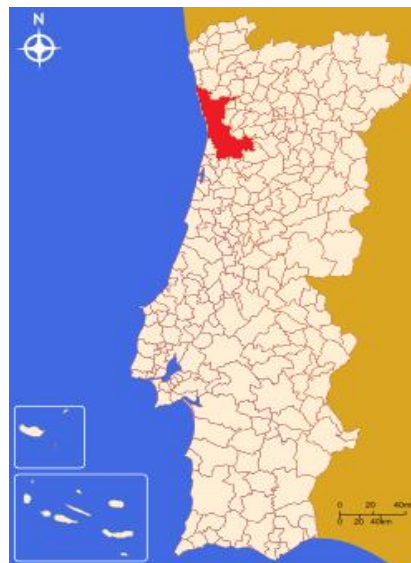
PORTUGAL: EURO-ATLANTIC HUB



Cantino Planisphere (1502): The oldest known map from the days of the

PORTO METROPOLITAN AREA

- **Figures and Facts**
  - 16 Municipalities
  - ~1.700.000 inhabitants
  - Porto, capital of the north region
- **Porto brands – assets and attractions**
  - Port Wine
  - The University of Porto
  - F.C. Porto
  - Culture, architecture, the bridges of Porto, World Heritage Site
- **2 Pritzker award winners**
  - 1992 – Álvaro Siza Vieira
  - 2011 – Eduardo Souto de Moura



PORTO AND GAIA –FROM THE DAYS OF THE ROMANS...



RIBEIRA AND PONTE DA ARRÁBIDA – ARRÁBIDA BRIDGE



WORLD HERITAGE SITE - UNESCO 1996

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RABELOS BOATS AND BRIDGE LUIS I, TEÓFILO SEYRIG, 1886-1887



WORLD HERITAGE SITE - UNESCO 1996

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A BOAT RACE IN DOURO RIVER PORT WINE AND THE UNIVERSITY OF PORTO... TOGETHER



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PORTO, CITY OF ARCHITECTURE: SERRALVES MUSEUM, ARQ. ÁLVARO SIZA, 2005



PORTO, CITY OF CULTURE: CASA DA MÚSICA – CONCERT HALL



Arq. Rem Koolhaas, Pritzker Winner, RIBA European Award 2007

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PORTO, CITY OF TRADE, WITH EXCELLENT EASY ACCESSES



2nd Best European Airport (ACI award 2011)

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PORTO, CITY OF SCIENCE: THE UNIVERSITY OF PORTO



1837-1911 Polytechnic Academy, the Rectorate of U.Porto since 1911

The teaching of engineering in Portugal started in this building, in 1837

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UNIVERSITY OF PORTO A COMPREHENSIVE RESEARCH UNIVERSITY

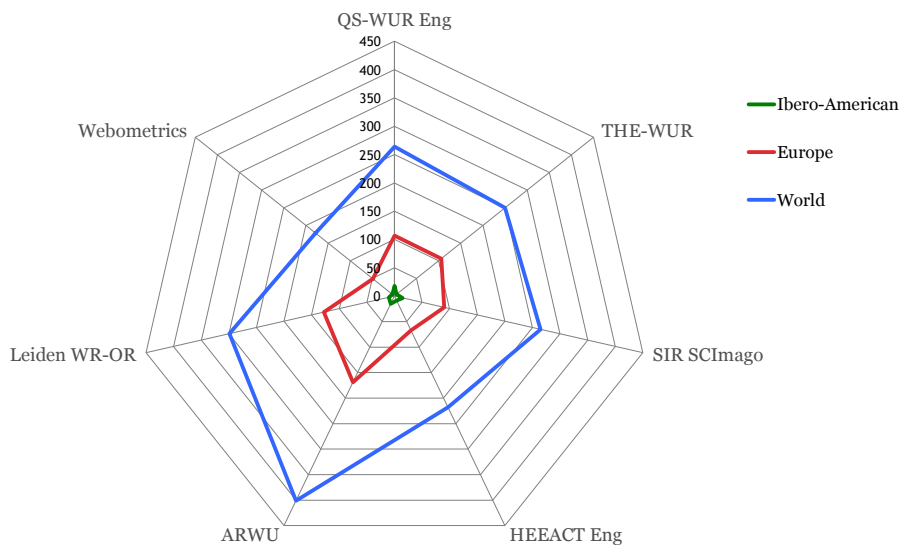
- ☞ **The University of Porto is the largest comprehensive University in Portugal**
  - **Organised in 3 main campuses in the city**
  - **more than 30.000 students (10% plus foreign students)**
  - **14 Faculties and a Business School.**
- ☞ **A leading research University in the country**
  - **60 R&D units**
  - **responsible for ~22% of the published scientific papers in Portugal**

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UNIVERSITY OF PORTO

International Rankings U.Porto 2010



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UNIVERSITY OF PORTO

Three campuses



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Faculty of Engineering buildings, 1937-2000



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Faculty of Engineering buildings in Asprela, 2000 -



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UNIVERSITY OF PORTO	Asprela: the Technology Campus
	More than 17.000 people work in science and technology, within U.Porto, at Asprela • 7 Faculties • 6 main R&D Interface Institutes, • 2 Hospitals • The Science and Technology Park, supporting today 58 innovative companies
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FACULTY OF ENGINEERING	Mission
☞ Core activity ✓ Education – all cycles of the European Qualifications Framework adopted within the Bologna Process agreements ✓ Research & Development ✓ Activities of the Third Mission ☞ Education, including cultural, ethical and civic education ☞ Underlying principles – keywords are ✓ Quality, Internationalisation, Cooperation ✓ Building trust through reputation	
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- ☞ **Lifelong learning education**
- ☞ **Human resources – transfer to industry and public services other than academic institutions**
- ☞ **Intellectual property**
- ☞ **Spin offs**
- ☞ **Contracts with industry**
- ☞ **Contracts with Public Bodies**
- ☞ **Participation in policy making**
- ☞ **Involvement in social and cultural life**
- ☞ **Public understanding of science**

* After Philippe Laredo, *Toward a third mission for Universities*, UNESCO research seminar for the Regional Scientific Committee for Europe and North America, Paris 5-6 March 2007.

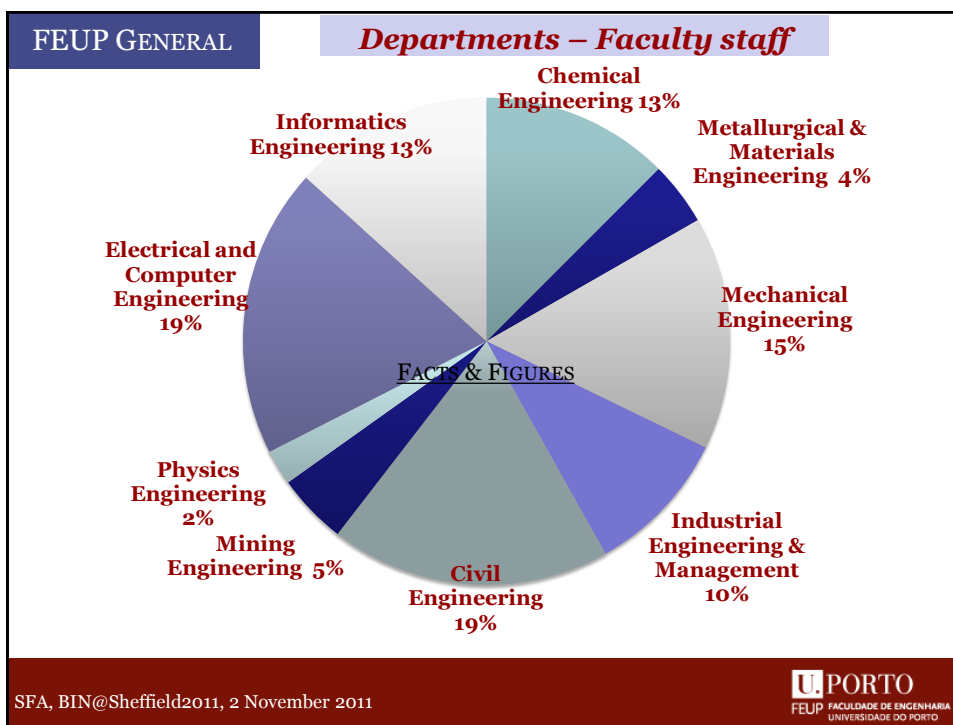
FEUP GENERAL FACTS & FIGURES

FEUP GENERAL		Campus Infrastructures	
Total campus constructed area		~84 000 m2	
Green area		23 000 m2 (30% of total)	
Library area/seats		5 694 m2 (500 seats)	
Computers for teaching		1350	
Computer labs		30 (open 365d/24h)	
Teaching labs		63	
Multimedia equipped classrooms		43	
Investment in Lab equipment		1,81 M€ (2010)	
Services: bookstore, printing, merchandising, snack-bar, restaurant, canteen			

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The logo for FEUP (Faculdade de Engenharia da Universidade do Porto) is located in the bottom right corner. It consists of a stylized 'U' with 'PORTO' to its right, and 'FEUP FACULDADE DE ENGENHARIA UNIVERSIDADE DO PORTO' in smaller text below.

FEUP GENERAL		Academic Community – Staff (2010)	
☞ Faculty staff		604	
		FTE	460,2 (78,6% with a Ph.D)
☞ Research staff		34	
(5 year contracts)			
☞ Technical staff		338,5	
☞ Ratios:			
Technical / Faculty staff (FTE)		0,74	
Student / Faculty (FTE)		14,6	
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FEUP GENERAL

Academic Community – Students (2010)

Degree programmes		
Undergraduate	202	
Integrated Masters	5739	(23,4% female)
Independent Masters	417	(50,2% female)
Doctoral Programmes	754	(34,9% female)
Non-degree programmes		
Specializations	24	
Advanced Studies	9	
Total	7145	
Continuous training		
Refresher courses	789	
Course units	370	

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FEUP EDUCATION – FACTS & FIGURES



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FEUP EDUCATION

Bologna Process – QF in the EHEA

3rd Cycle
Doctoral Programmes (PhD)

2nd Cycle
Masters (MSc)

1st Cycle
Licences (BSc)

Integrated
Masters

2 years

3 years

5 years

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FEUP EDUCATION		Programme Portfolio 2011	
<i>Degree programmes</i>			
Undergraduate Programmes		3	
Integrated Masters		9	
Independent Masters		13	
Doctoral Programmes		22	
<i>Non-degree programmes</i>			
Specializations /2nd cycle level)		7	
Advanced Studies (3rd cycle)		4	
<i>Continuous education</i>			
Refresher courses		14	
Course units		119	
Summer courses		4	

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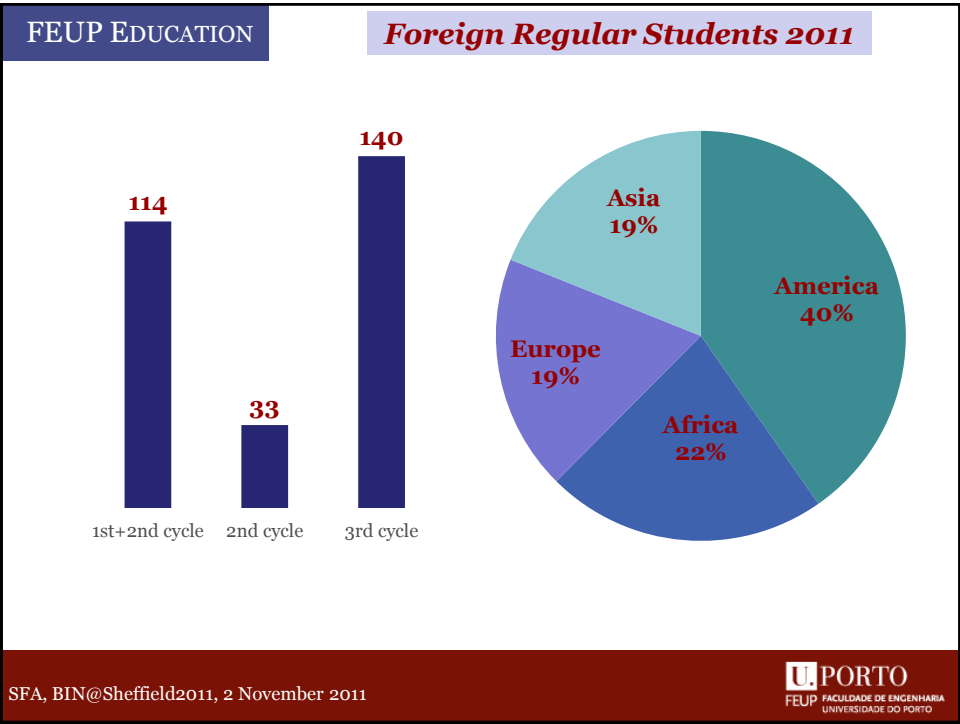


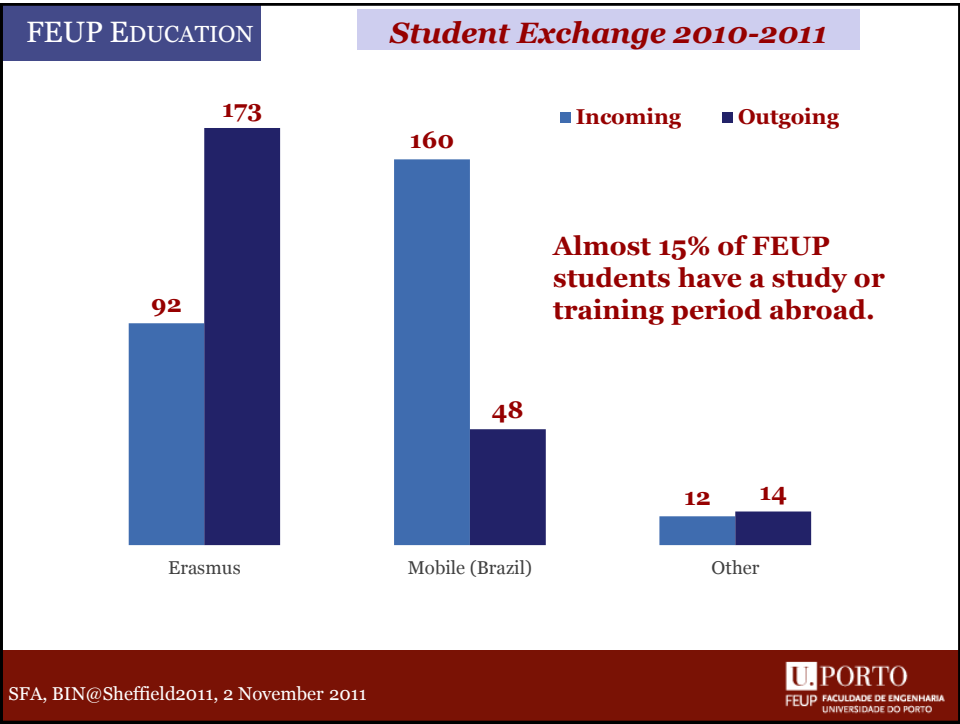
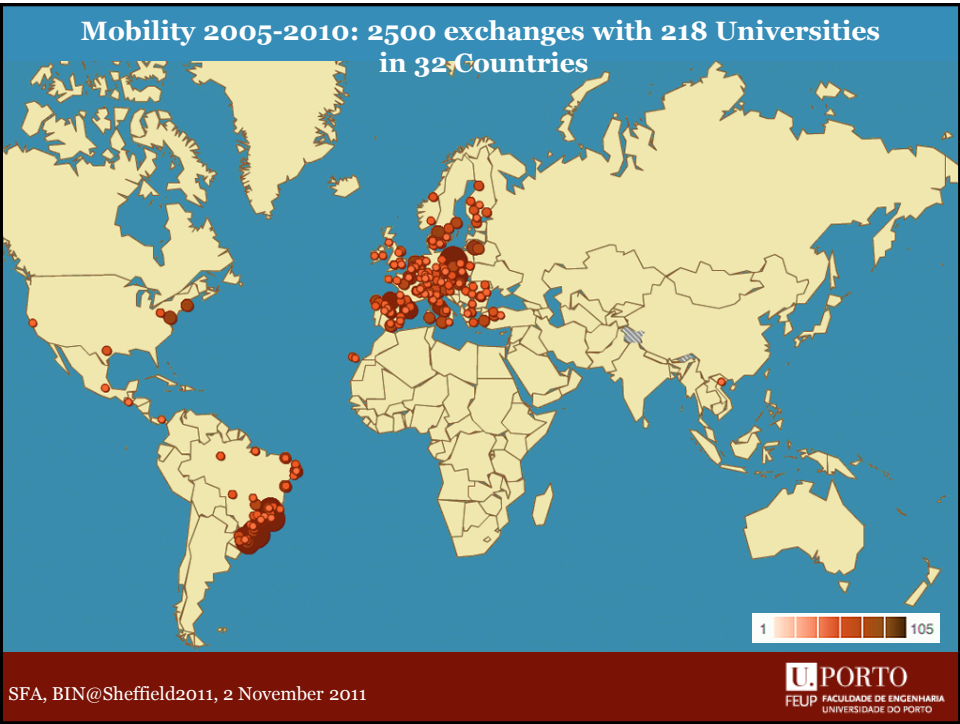
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FEUP EDUCATION		Academic work outside FEUP 2010	
☞	Cooperation agreements with companies (active)	93	
	Master dissertations undertaken in		
	companies (2009/2010)	235	(24.0%)
☞	Cooperation agreements with international universities	526	
	Master dissertations undertaken within		
	mobility programmes	40	(4.1%)

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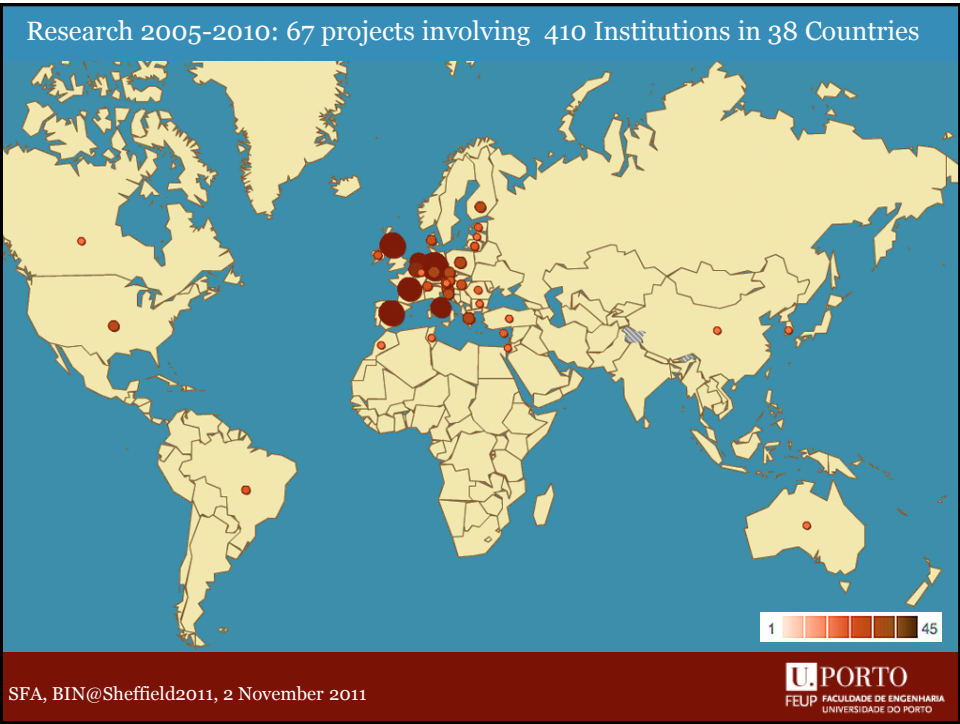






RESEARCH & OUTREACH	Organization <i>R&D Units – Interface Institutes</i>
☞ Research, Development and Extension work of Faculty Staff is carried out in ➤ 9 R&D Units recognized and financed by the National Foundation for Science and Technology based in FEUP ➤ 22 other Units based in institutions other than FEUP (within U.Porto's other Faculties, within Interface Institutes or within other Universities) ☞ Interface Institutes – non-profit organizations of which U.Porto or U.Porto-FEUP are shareholders ➤ More flexible organizations for cooperation with stakeholders in general ➤ They also house R&D Units of the National Foundation	
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RESEARCH & OUTREACH	Some indicators <i>Publications, Contracts, patents, spin-offs, 2010</i>
☞ Publications ISI WoS	489
➤ Publications / PhD (FTE) - 1,25	
☞ Contract work (active)	30
☞ Patent applications filed in 2011/Cumulative total	2/46
☞ Spin-off companies set up in 2011/Cumulative total	3/20
☞ 11-13 % of the budget comes from provision of service to the economic activities	
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 Carnegie Mellon | Portugal**Information and Communication Technologies Institute**

- **Security and Critical Infrastructure Protection**
- **Future Internet Services and Technologies**
- **Services and Technologies for Interactive Media**
- **Software Engineering**

 MIT | Portugal

- **Stem Cell Engineering for Regenerative Medicine**
- **Sustainable Energy and Transportation Systems**
- **Materials and Design-Inspired Products**
- **Fundamentals of Engineering Systems**

 UT Austin | Portugal

- **CoLab - International Collaboratory for Emerging Technologies**
  - **PhD programme in Digital Media**
- **UTEN-University Technology Enterprise Network - Professionalizing and Advancing S&T Commercialization in Portugal**

 Fraunhofer Portugal Research Center

- **Assistive Information and Communication Solutions**

 IBM Portugal Center for Advanced Studies**Enterprise Engineering and Management**

HEEACT – Engineering areas

	Europe	World
Mechanical	17	62
Chemical	20	85
Civil	36	126

OUTREACH

**Support 4 Internationalisation :
UKTI today ...**

- 126 locations, 96 markets, 98 of global GDP
- 2.300 staff, 55% outside UK
- 24k UK firms assisted to export in 2009
- 1500 new investors brought to UK
- 67% report significant business benefits

BIN@FEUP
BUSINESS & INNOVATION
NETWORK@FEUP

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FEUP Alumni go abroad

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Applied Research – some Industrial Partners

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Tech Transfer – Our spin-offs

SPIN•OFF FEUP





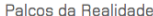






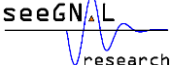









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OUTREACH

Technology Transfer – real application








New bone graft for regenerative medicine. Bonelike it is an international patented product.

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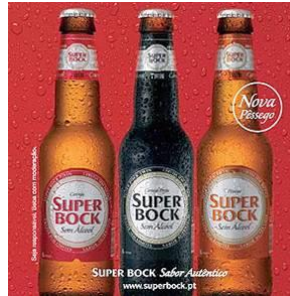
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OUTREACH

Technology Transfer – real application



Launched on the Portuguese market in 2007, the new Super Bock alcohol-free beer is the result of an innovative patented production process, developed in a partnership of Unicer with FEUP. This new process keeps all the original flavour of the beer with the convenience of a 0° alcohol graduation.



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OUTREACH

Technology Transfer – real application

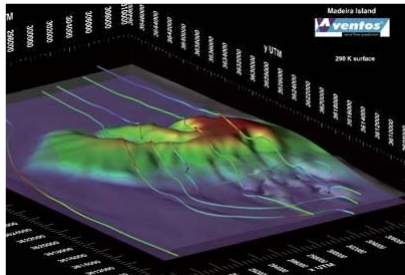


Underwater remote operation vehicles.



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VENTOS - Wind flow prediction software



To support decisive agents in the search for sustainable mobility solutions.



OUTREACH

Technology Transfer – real application



Inspired by the way natural structures work (Biomimicry), specifically the human muscle, the Organic PreStressing System is a set of cables, hydraulic jacks, sensors and other components, that are attached to self-launching gantries (large, heavy equipment used in bridge construction), performing in order to compensate the charges the metallic structure is subject to.



BERD
BRIDGE ENGINEERING RESEARCH & DESIGN

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OUTREACH

Technology Transfer – real application



Clean technologies and natural resources perfume design.

isensis

 **LSRE**
LABORATORY OF SEPARATION AND REACTION ENGINEERING

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OUTREACH

Technology Transfer – real application



Environmental and industrial fluid engineering technologies.
RIMcop® New Technologies for Reaction Injection Moulding, NETmix® Innovative Static Mixer Technology and ROBpaint® Laboratorial Robot for Decorative Paints Testing.



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OUTREACH

Technology Transfer – real application



High purity Oxigene and Xenon production unit.



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OUTREACH

Technology Transfer – real application



WalkinSense is an easy to use wireless portable patented device that gathers and processes data of lower limb movements during walking, measuring both diabetic patient mobility patterns and plantar pressure.



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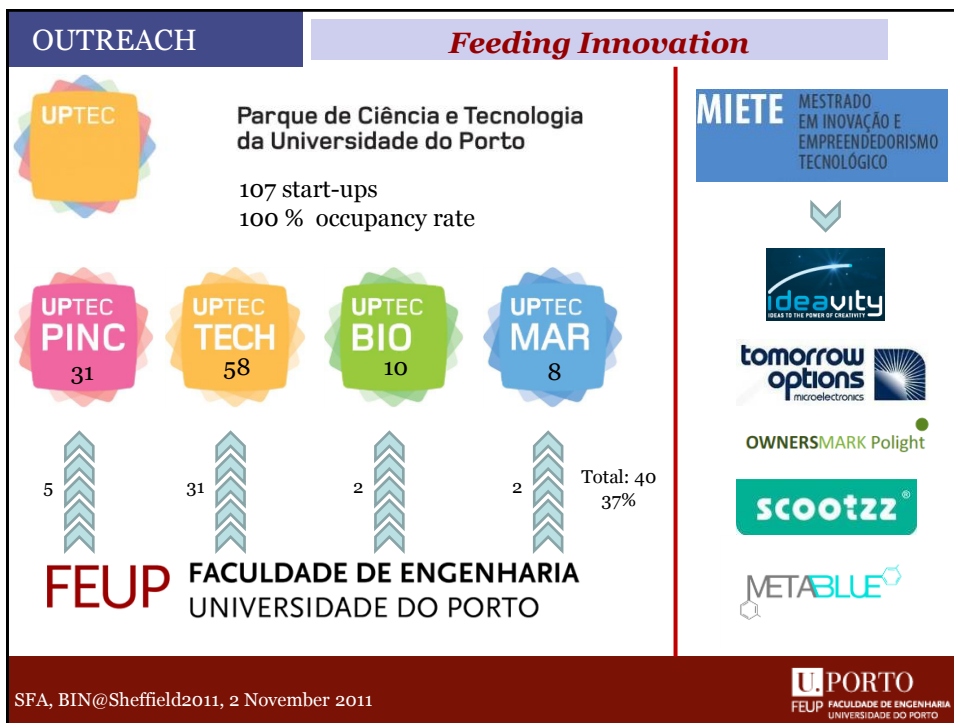
Technology Transfer – real application



Wireless and portable skinfold caliper wireless developed at FEUP. It allows a reliable and quick way of measuring body fat. It's a patented device.

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OUTREACH

Scientific and Cultural Events

- ☞
The Conference Centre provides professional services related with the production, communication and technical and logistic support of events.
- ☞
The campus has significant facilities for large and complex events
- ☞
225 Events in 2010
  - **33 Internacional Conferences**
  - **50 Scientific**
  - **68 Academic**
  - **27 Institucional**
  - **25 Cultural**
  - **21 Other external**

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OUTREACH

Institutional Reputation and Media Notoriety

☞ **The institution has recognized expertise in a wide number of engineering areas.**

☞ **FEUP attracts the best students in engineering in the country and is committed with the valorization of the knowledge that is created through university research.**

☞ ***Media notoriety in 2010***

Press releases	65 (12 for international media)
Media clipping	
in press	935
in radio and television	142
online	899

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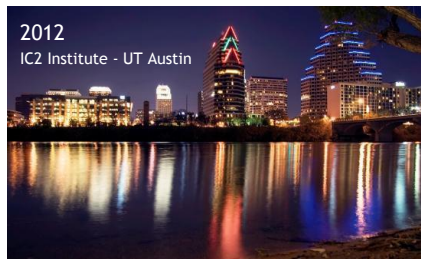
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THIRD MISSION – A MUST...

- ☞ **Our duty within the mission**
- ☞ **Obviously, a significant source of financial support**
- ☞ **But, attention** - a careful balance should be kept between contract work and research work
  - **Knowledge and innovation should go together or in close paths**
  - **Knowledge is the basis for innovation, without creating knowledge the potential for innovation slowly, but steadily would fade away**
- ☞ **The way for the future is tough, but clear...**
  - **Research and Innovation, International Cooperation, Mobility, Trust through quality perceived by all stakeholders**

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