THE UNIVERSITIES’ THIRD MISSION
A CRUCIAL ENDEAVOUR

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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
The most western country of the European continent, the oldest stable boundaries.

Porto – Portugal
Portugal: Euro-Atlantic Hub

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

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

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

RIBEIRA AND PONTE DA ARRÁBIDA – ARRÁBIDA BRIDGE

WORLD HERITAGE SITE - UNESCO 1996
RABELOS BOATS AND BRIDGE LUIS I, TEÓFILO SEYRIG, 1886-1887

WORLD HERITAGE SITE - UNESCO 1996

A BOAT RACE IN DURO RIVER
PORT WINE AND THE UNIVERSITY OF PORTO... TOGETHER
PORTO, CITY OF ARQUITECTURE: SERRALVES MUSEUM, ARQ. ÁLVARO SIZA, 2005

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

Arq. Rem Koolhas, Pritzker Winner, RIBA European Award 2007
**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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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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3. Concluding Notes - Expectations for the future
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

**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
The Third Mission

- 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

### 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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### 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
### Departments – Faculty staff

- Chemical Engineering: 13%
- Electrical and Computer Engineering: 19%
- Informatics Engineering: 13%
- Metallurgical & Materials Engineering: 4%
- Mechanical Engineering: 15%
- Industrial Engineering & Management: 10%
- Civil Engineering: 19%
- Mining Engineering: 5%
- Physics Engineering: 2%
- Engineering: 19%

### 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
**Bologna Process – QF in the EHEA**

- **3rd Cycle**
  - Doctoral Programmes (PhD)
- **2nd Cycle**
  - Masters (MSc)
- **1st Cycle**
  - Licences (BSc)
  - Integrated Masters

- **Years**
  - 2 years
  - 3 years
  - 5 years
### Programme Portfolio 2011

#### Degree programmes
- Undergraduate Programmes: 3
- Integrated Masters: 9
- Independent Masters: 13
- Doctoral Programmes: 22

#### Non-degree programmes
- Specializations /2nd cycle level: 7
- Advanced Studies (3rd cycle): 4

#### Continuous education
- Refresher courses: 14
- Course units: 119
- Summer courses: 4

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### 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%)
Foreign Regular Students 2011: 286 FTE students from 49 Countries
Almost 15% of FEUP students have a study or training period abroad.

Mobility 2005-2010: 2500 exchanges with 218 Universities in 32 Countries
Internships 2005-2010: 172 internships in 47 Countries

Research & Outreach – Facts and Figures
Research & Outreach

Organization
R&D Units – Interface Institutes

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

Research & Outreach

Some indicators
Publications, Contracts, patents, spin-offs, 2010

Publications ISI WoS
- 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
Research 2005-2010: 67 projects involving 410 Institutions in 38 Countries
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
### International Rankings Engineering (2010)

**HEEACT – Engineering areas**

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<tr>
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<th>Europe</th>
<th>World</th>
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<tbody>
<tr>
<td>Mechanical</td>
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<td>62</td>
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<td>Chemical</td>
<td>20</td>
<td>85</td>
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<tr>
<td>Civil</td>
<td>36</td>
<td>126</td>
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</table>
New bone graft for regenerative medicine. Bonelike it is an international patented product.
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 0º alcohol graduation.

Underwater remote operation vehicles.
VENTOS - Wind flow prediction software

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

TRIENMO
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.

Clean technologies and natural resources perfume design.

High purity Oxigene and Xenon production unit.
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.

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.
OUTREACH

**Feeding Innovation**

Parque de Ciência e Tecnologia da Universidade do Porto

- 107 start-ups
- 100% occupancy rate

**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
### 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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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