ACCREDITATION OF ENGINEERING PROGRAMMES

THE PORTUGUESE EXPERIENCE

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DOS
ENGENHEIROS

José M.P. Vieira

Poland, Gdansk, 9th October 2014

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ACCREDITATION OF ENGINEERING PROGRAMMES
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José M.P. Vieira | Gdansk, 9th October 2014

OUTLINE

▸ Engineering education in Portugal

▸ Accreditation of engineering programmes in Portugal

▸ The AcCEdE® system for continuing education

ENGINEERING EDUCATION IN PORTUGAL

▸ Geographical distribution of Engineering education

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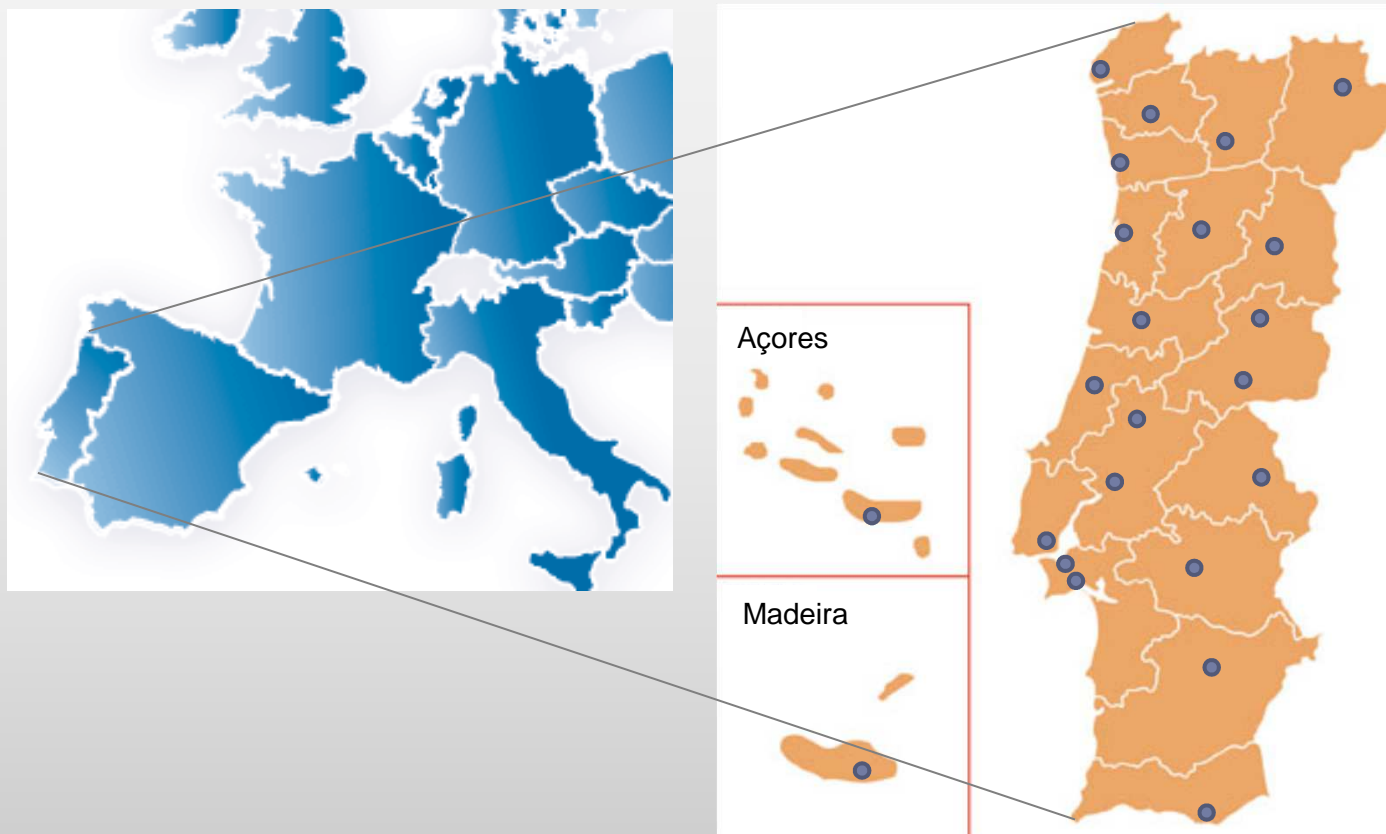
ENGINEERING EDUCATION IN PORTUGAL

▸ Driving forces for Bologna Process (since 2007):

- ▸ Globalisation and worldwide competition

- ▸ European Union and common European market

- ▸ European strategy for development in the political, social, cultural, and economical dimensions (Lisbon Strategy)

- ▸ Professional mobility and mutual recognition of academic diplomas (creation of the European Higher Education Area)

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ENGINEERING EDUCATION IN PORTUGAL

▶ Bologna Process consequences for the Engineering Programmes in Portugal:

- ▸ First-cycle (**180**-240 ECTS)

- ▸ Second-cycle (90-**120** ECTS) = stand alone Bologna MSc

- ▸ Full Programme (first cycle + second cycle): ≥ **300** ECTS

- ▸ Two-cycle Programmes with integrated studies (≥ **300** ECTS)

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ENGINEERING EDUCATION IN PORTUGAL

▶ **Bologna Process consequences for the Engineering Profession in Portugal:**

- ▶ Articulation of National Qualifications Frameworks with European Qualifications Framework

- ▶ Second Cycle Programmes should meet the requirements for professional recognition of the highest engineering level

- ▶ Professionally oriented First Cycle Programmes must offer relevant competences in the engineering profession

- ▶ First Cycle Degrees offered within theoretically oriented profiles do not meet immediately the requirements for professional recognition of First Cycles

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ENGINEERING EDUCATION IN PORTUGAL

▸ Bologna Process consequences for the Engineering Profession in Portugal:

LEVEL OF PROFESSIONAL QUALIFICATION	ACADEMIC LEVEL		PROFESSIONAL TITLE
2nd Cycle **LEVEL 7**	Master (Integrated)	Master (2nd Cycle)	Engineer (E2)
1st Cycle **LEVEL 6**	Licenciatura (BSc) in Engineering Science	Licenciatura (BSc) in Engineering	Engineer (E1)

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ The OE accreditation System in 1992. The need

- ▸ High number and diversity of Engineering programmes
- ▸ Lack of assurance of the quality and standards of the Engineering programmes
- ▸ OE duties as Competent Authority for professional Engineering activity regulation
- ▸ Nonexistence of a National official accreditation Agency

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ The OE accreditation System in 1992. The effects

  ▸ Credibility of Institutions and Engineering programmes

  ▸ Exemption of examination for OE membership for candidates holding a diploma from an accredited course

  ▸ Recognition by the society of OE as an authoritative and respected institution in quality control of Engineering programmes

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ The National accreditation System in 2007. A3ES

- ▸ The Agency for Assessment and Accreditation of Higher Education - A3ES

- ▸ Private law foundation recognised as being of public utility

- ▸ The assessment and accreditation regime developed by the Agency is defined in Law

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ Objectives of A3ES

- ▸ To develop the quality assessment of the performance of higher education institutions and their study programmes

- ▸ To determine the accreditation criteria in order to translate their results into qualitative appreciations, as well as to define the consequences of assessment for the operation of study programmes and institutions

- ▸ To promote the accreditation of study programmes and institutions, for the purpose of ensuring the fulfilment of the legal requirements for their recognition

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▶ Engineering study programmes accredited by A3ES

Cycle of Studies	Universities			Polytechnics			TOTAL
	Public	Private	Total	Public	Private	Total	
1st Cycle	85	48	133	194	19	213	346
2nd Cycle	233	25	258	69	0	69	327
Total	318	73	391	263	19	282	673

As for October 2014

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ EUR-ACE system:

- ▸ Meta-accreditation European system
- ▸ Promote and co-ordinate national accreditation agencies
- ▸ Pan-european de-centralised system
- ▸ Accreditation at 2 levels: Bachelor & Master
- ▸ Consistent with objectives pursuit by Bologna process:
    - ▸ Quality
    - ▸ Transparency recognition
    - ▸ Mobility

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▶ EUR-ACE accreditation agencies:

- ▶ Germany – ASIIN
- ▶ France – CTI
- ▶ UK – EC
- ▶ Ireland – EI
- ▶ Portugal – OE Ordem dos Engenheiros (PT)
- ▶ Russia – RAEE
- ▶ Turkey – MÜDEK
- ▶ Romania – ARACIS
- ▶ Italy – QUACING
- ▶ Poland – KAUT
- ▶ Switzerland – OAQ
- ▶ Spain – ANECA
- ▶ Finland – FINEEC

European Accreditation of Engineering Programmes
EUR-ACE®

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▶ EUR-ACE Labels awarded by OE (October 2014)

Programme	School	Duration	ECTS Credits	Awarded Degree	Accredited	
					From	Until
Integrated Master in Electronics & Telecommunications Engineering	University of Aveiro	10 semester	300	Master	2008	2014
Integrated Master in Mechanical Engineering	University of Porto (FEUP)	10 semester	300	Master	2008	2014
Integrated Master in Biological Engineering	Technical University of Lisbon(IST)	10 semester	300	Master	2008	2014
Master (2nd cycle) in Communication Networks Engineering	Technical University of Lisbon(IST)	4 semester	120	Master	2009	2015
Master (2nd cycle) in Electronics Engineeriing	Technical University of Lisbon(IST)	4 semester	120	Master	2011	2017
Integrated Master in Chemical Engineering	University of Aveiro	10 semester	300	Master	2011	2014
Integrated Master in Civil Engineering	University of Aveiro	10 semester	300	Master	2012	2018
Master (2nd cycle) in Electromechanics Engineeriing	University of Beira Interior	4 semester	120	Master	2012	2018

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▸ EUR-ACE Labels awarded by OE (October 2014)

Programme	School	Duration	ECTS Credits	Awarded Degree	Accredited	
					From	Until
Master (2nd cycle) in Civil Engineering	University of Beira Interior	4 semester	120	Master	2012	2015
Integrated Master in Civil Engineering	University of Porto (FEUP)	10 semester	300	Master	2012	2018
Integrated Master in Chemical Engineering	University of Porto (FEUP)	10 semester	300	Master	2012	2018
Integrated Master in Electrotecnics & Computer Engineering	Technical University of Lisbon(IST)	10 semester	300	Master	2012	2018
Master (2nd cycle) in Civil Engineeriing	University of Trás-os-Montes e Alto Douro	4 semester	120	Master	2012	2015
Master (2nd cycle) in Mechanical Engineering	University of Trás-os-Montes e Alto Douro	4 semester	120	Master	2012	2015
Master (2nd cycle) in Zootechnical Engineering	University of Trás-os-Montes e Alto Douro	4 semester	120	Master	2012	2015
Master (2nd cycle) in Informatics Engineeriing	Polytechnic of Porto (ISEP)	4 semester	120	Master	2012	2018

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ EUR-ACE Labels awarded by OE (October 2014)

Programme	School	Duration	ECTS Credits	Awarded Degree	Accredited	
					From	Until
Int. MSc. in Informatics & Comp. Engineering	University of Porto (FEUP)	10 semester	300	Master	2012	2018
Int. MSc. in Elect. & Computer Engineering	University of Porto (FEUP)	10 semester	300	Master	2013	2019
Int. MSc. in Industrial & Management Engineering	University of Porto (FEUP)	10 semester	300	Master	2013	2019
Int. MSc. in Environmental Engineering	University of Porto (FEUP)	10 semester	300	Master	2013	2019
Int. MSc. in Metalurg. & Materials Engineering	University of Porto (FEUP)	10 semester	300	Master	2013	2019
Master (2nd cycle) in Mines & GeoEnvironm. Engineering	University of Porto (FEUP)	4 semester	120	Master	2013	2019
Int. MSc. in Bioengineering	University of Porto (FEUP)	10 semester	300	Master	2013	2016
Int. MSc. in Physical	University of Aveiro	10 semester	300	Master	2013	2016

ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ EUR-ACE Labels awarded by OE (October 2014)

Programme	School	Duration	ECTS Credits	Awarded Degree	Accredited	
					From	Until
Master (2nd cycle) in Environmental Engineering	University of Aveiro	4 semester	120	Master	2013	2018
Master (2nd cycle) in Chemical Engineeriing	Polytechnic of Porto (ISEP)	4 semester	120	Master	2013	2016
Master (2nd cycle) in Eletrical Engineering – Eletrical Power Systems	Polytechnic of Porto (ISEP)	4 semester	120	Master	2013	2016
Master (2nd cycle) in Electrotecnics & Computer Engineering	Polytechnic of Porto (ISEP)	4 semester	120	Master	2013	2016
Master (2nd cycle) in Informatics Engineering	Inst. Univ. Lisbon (ISCTE)	4 semester	120	Master	2013	2019
Master (2nd cycle) in Telecom. & Informatics Engineering	Inst. Univ. Lisbon (ISCTE)	4 semester	120	Master	2013	2016
Licenciatura (1st cycle) in Informatics Engineering	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor	2013	2019
Licenciatura (1st cycle) in Chemical Engineering	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor	2014	2020

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▶ EUR-ACE Labels awarded by OE (October 2014)

Programme	School	Duration	ECTS Credits	Awarded Degree	Accredited	
					From	Until
Licenciatura (1st cycle) in Eletrical Engineering – Eletrical Power Systems	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor	2014	2020
Licenciatura (1st cycle) in Electrotecnics & Computer Engineering	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor	2014	2020

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ACCREDITATION OF ENGINEERING PROGRAMMES IN PORTUGAL

▸ EUR-ACE Labels in assessment (October 2014)

Programme	School	Duration	ECTS Credits	Degree
Master (2nd cycle) in Geotechnical and Environmental Engineering	Polytechnic of Porto (ISEP)	4 semester	120	Master
Integrated Master in Chemical Engineering	Technical University of Lisbon(IST)	10 semester	300	Master
Licenciatura (1st cycle) in Informatics Engineering	Inst. Univ. Lisbon (ISCTE)	6 semester	180	Bachelor
Licenciatura (1st cycle) in Telecom. & Informatics Engineering	Inst. Univ. Lisbon (ISCTE)	6 semester	180	Bachelor
Licenciatura (1st cycle) in Geotechnical and Environmental Engineering	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor
Licenciatura (1st cycle) in Mechanical Engineering	Polytechnic of Porto (ISEP)	6 semester	180	Bachelor

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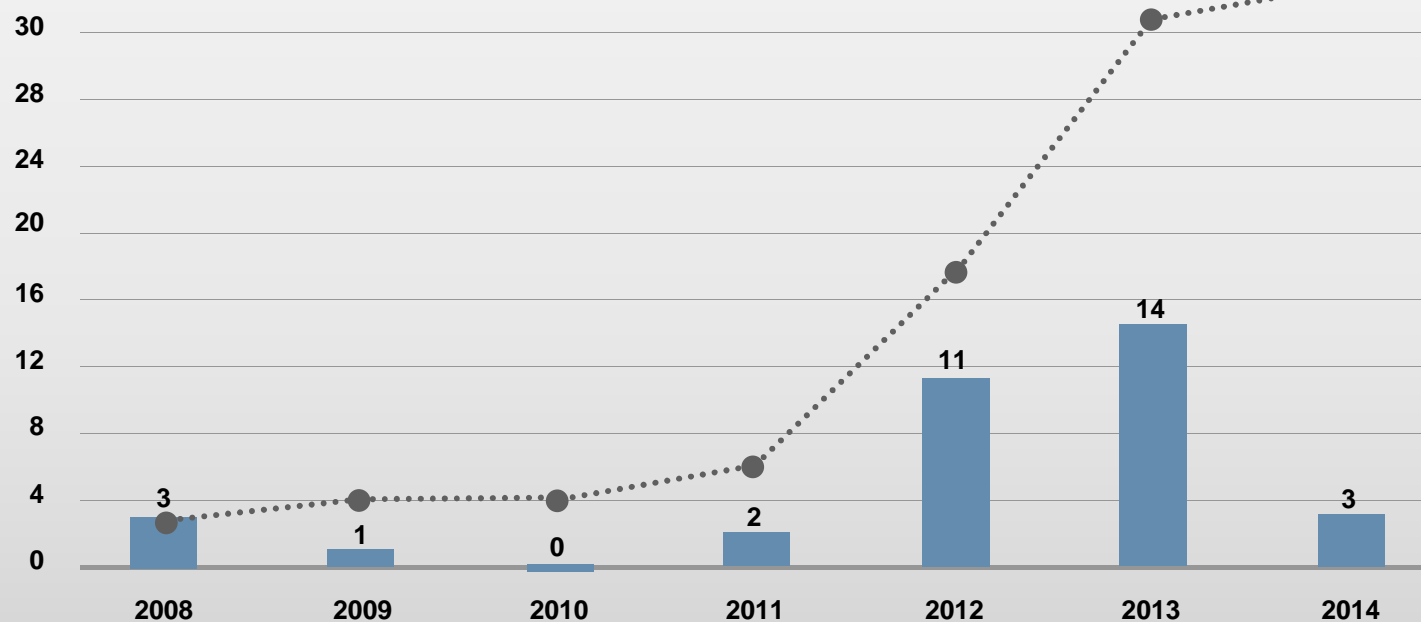
THE ACCEDE® SYSTEM FOR CONTINUING EDUCATION

▶ Continuing education. Rationale

  ▶ Rapid technological evolution (innovation)

  ▶ New materials and methods in engineering

  ▶ High mobility of engineers in Europe

  ▶ New skills and opportunities for adequate training programmes

  ▶ Professional qualification of engineers

  ▶ Embracing lifelong learning in quality culture

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THE ACCEDE® SYSTEM FOR CONTINUING EDUCATION

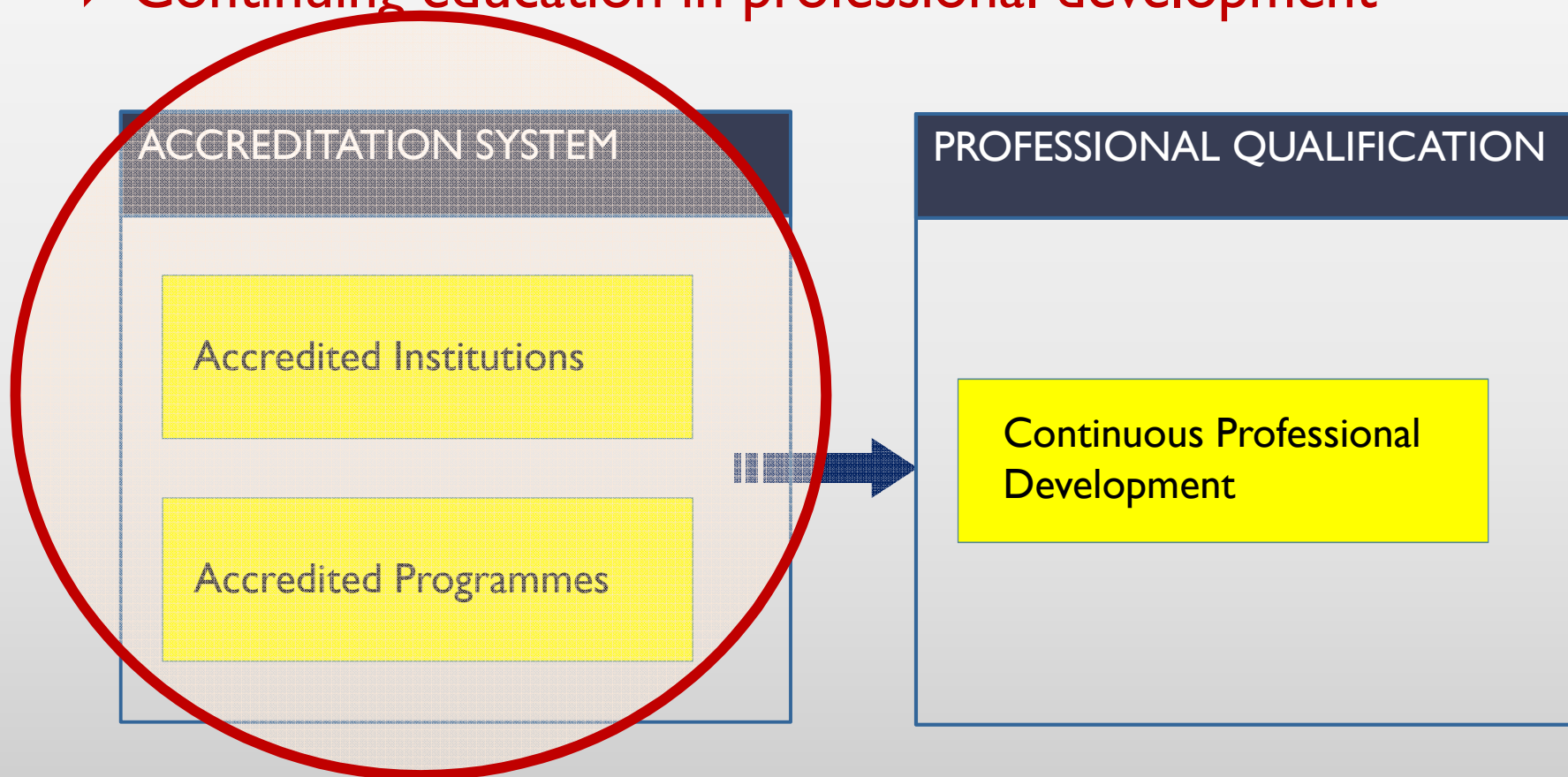▸ OE⁺AcCEdE® system accreditation approach

- ▸ Institutional accreditation: assesses institutions as a whole
- ▸ Programme accreditation: assesses quality of a specific programme
  - ▸ Programme accreditation is complimentary to institutional accreditation

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THE ACCEDE® SYSTEM FOR CONTINUING EDUCATION

▸ Continuing education in professional development

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THE ACCEDE® SYSTEM FOR CONTINUING EDUCATION

▸ Accreditation standards

INSTITUTIONS

Crit. 2: Policy and Strategy

Crit. 1: Leadership

Crit. 3: People

Crit. 5: Processes

Crit. 4: Partnerships and Resources

RESULTS

Crit. 6: Consumers Satisfaction

Crit. 7: People Satisfaction

Crit. 9: Key Business Results

Crit. 8: Society Satisfaction

Learning and Innovation
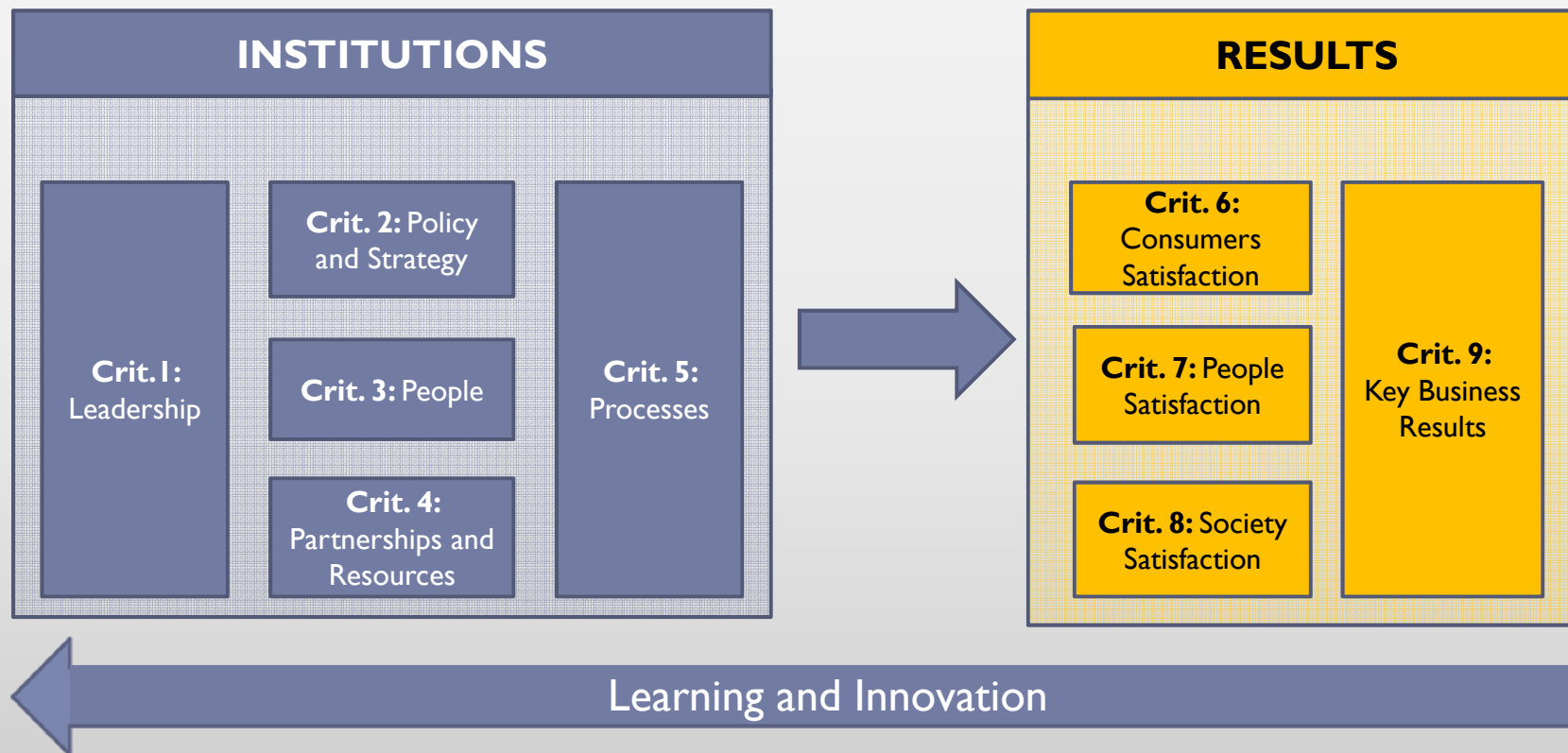
(model adapted from EFQM-European Foundation for Quality Management)

THE ACCEDE® SYSTEM FOR CONTINUING EDUCATION

▸ Challenges for AcCEdE

- ▸ Explicit understanding that accredited continuing education can measure the required professional skills

- ▸ The label acceptability is dependent of a good perception of its relevance by academia, industry and society

- ▸ Being 2015 the first year of implementation, this label must have a test period in order to share the experience with similar European initiatives

Thank you for your attention

José M.P. Vieira

Poland, Gdansk, 9th October 2014