

SASICE: Safety & Sustainability In Civil Engineering

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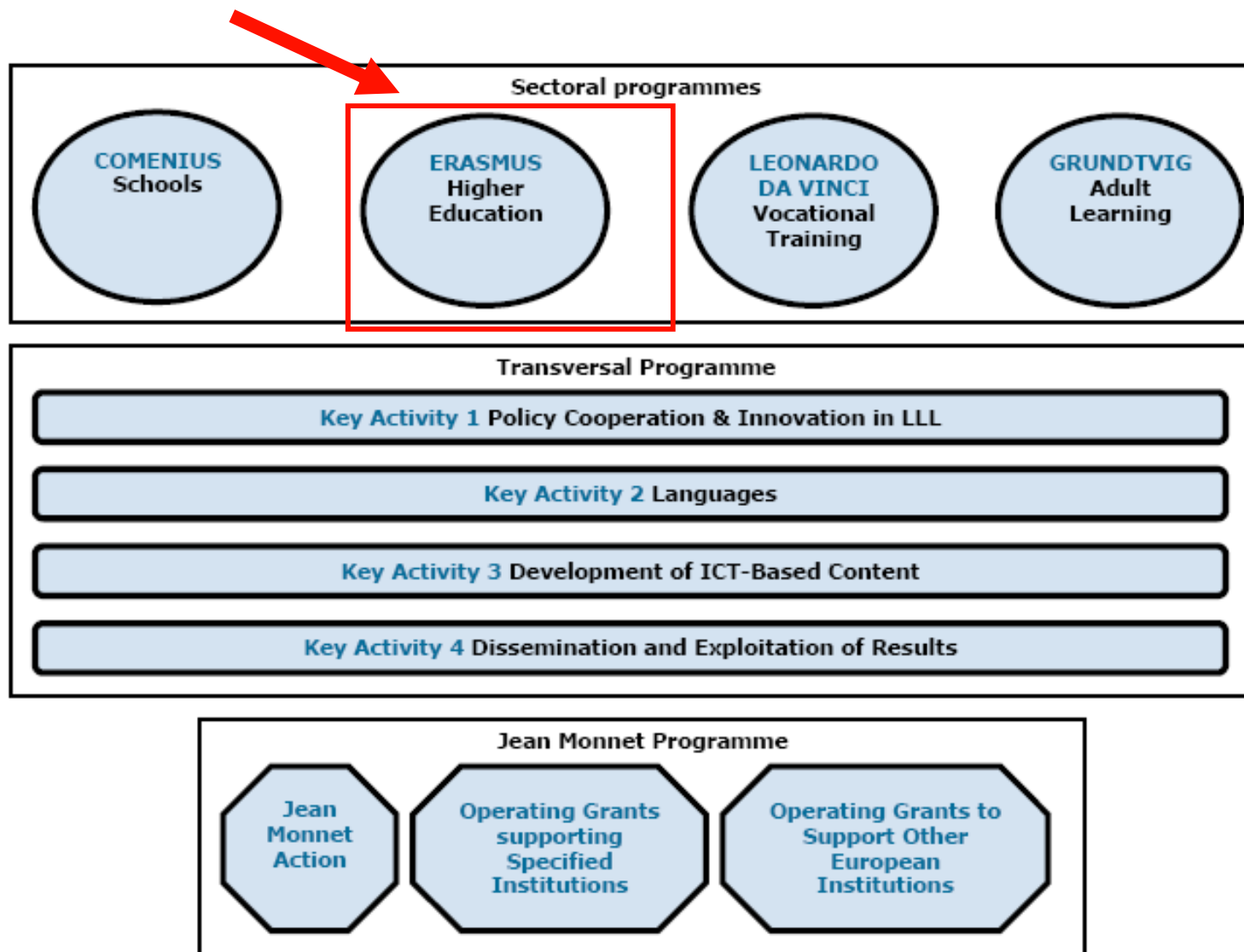
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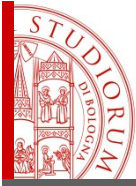


UCEET CONFERENCE – November 24-25 2011, Patras



LifeLong Learning Programme (LLP)





ERASMUS Curriculum Development Projects

Programme	LIFELONG LEARNING
Subprogramme	ERASMUS
Action Category	MULTILATERAL PROJECTS
Action	ERASMUS Curriculum Development Projects

OBJECTIVES

- **integrated programmes** covering a complete cycle of study and leading to a recognised double or joint degree;
- **teaching modules in highly interdisciplinary areas** or in areas with a specific need for strong transnational cooperation in teaching.



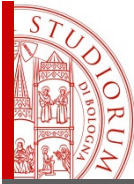
SASICE – Safety & Sustainability in Civil Engineering

MOTIVATIONS FOR THE PROJECT

The increasing demand concerning to safety and sustainability require a new class of specialized civil engineers with both technical and management competencies developed at the European level.










It is particularly important in the Civil Engineering context, due to the Lisbon agreement of the recognition of the University degrees.

The aim is to promote the **INTEGRATION OF SAFETY AND SUSTAINABILITY IN CIVIL ENGINEERING HIGHER EDUCATION.**



SASICE – Safety & Sustainability in Civil Engineering

The partner organizations

	Organisation Name	City	Country
	UNIVERSITY OF BOLOGNA	BOLOGNA	ITALY
	ARISTOTLE UNIVERSITY OF THESSALONIKI	THESSALONIKI	GREECE
	INSTITUTO SUPERIOR TECNICO	LISBON	PORTUGAL
	KATHOLIEKE UNIVERSITEIT LEUVEN	LEUVEN	BELGIUM
	UNIVERSIDAD DE CANTABRIA	SANTANDER	SPAIN
	UNIVERSIDAD POLITECNICA DE VALENCIA	VALENCIA	SPAIN
	UNIVERSITE JOSEPH FOURIER GRENOBLE	GRENOBLE	FRANCE
	UNIVESTITY OF PAVIA	PAVIA	ITALY
	UNIVERSITY OF SOUTHAMPTON	SOUTHAMPTON	UNITED KINGDOM



SASICE – Safety & Sustainability in Civil Engineering

Work Packages of the project

Workpackages			
Number	Type	Title	Lead partner
WP1	Management	Management of the project	P1
WP2	Dissemination	Dissemination of results during the project	P2
WP3	Exploitation	Exploitation of the project results	P6
WP4	Quality Plan	Quality Assurance programme	P5
WP5	Development	Needs in Europe of highly qualified education on Safety & Sustainability in Civil Engineering.	P4
WP6	Development	Teaching moduli: Safety in Construction	P9
WP7	Development	Teaching moduli: Natural Hazards and Management of Risk	P2
WP8	Development	Teaching moduli: Sustainability in construction	P1
WP9	Development	Teaching moduli: Sustainable Development and Environmental Protection	P7
WP10	Development	Development of innovative ICT-based content and services	P4
WP11	Development	Administration phase – Development of bilateral agreements	P3
WP12	Development	Teaching safety and sustainability: A pilot project	P8

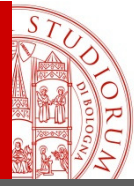


Work Packages of the project

WP5	Development	Needs in Europe of highly qualified education on Safety & Sustainability in Civil Engineering.	P4
WP6	Development	Teaching moduli: Safety in Construction	P9
WP7	Development	Teaching moduli: Natural Hazards and Management of Risk	P2
WP8	Development	Teaching moduli: Sustainability in construction	P1
WP9	Development	Teaching moduli: Sustainable Development and Environmental Protection	P7
WP10	Development	Development of innovative ICT-based content and services	P4
WP11	Development	Administration phase – Development of bilateral agreements	P3
WP12	Development	Teaching safety and sustainability: A pilot project	P8

Development WP's

- **Research of the needs for HE in CE**
- **Teaching moduli**
- **Bilateral agreements**
- **Teaching safety & sustainability**

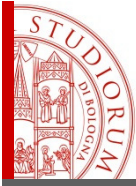


WP5 - Development

WP5: Needs in Europe of highly qualified education on Safety & Sustainability in Civil Engineering months 1- 6

The analysis will be carried out in close consultation with the professional world (construction companies, design offices, etc.). Quantitative (surveys and official statistics) and qualitative (personal interviews with leaders) data will be collected and analysed for the design of competences and university programmes.

The final outcome of the needs analysis will be a general and detailed report on the needs and expectations that will serve as a guideline for the development of the teaching moduli in WP6-WP9.



WP6 / 9 - Development

WP6-9: Teaching Moduli
months 7- 24

	CONSTRUCTION	ENVIRONMENT
SAFETY	WP6	WP7
SUSTAINABILITY	WP8	WP9

WP6 - Safety in Construction

WP7 - Natural Hazards and Management of Risk

WP8 - Sustainability in construction

WP9 - Sustainable Development & Environmental Protection

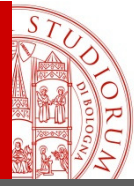
WP6 - Safety in Construction

L'AQUILA EARTHQUAKE (2009)



NEW CONSTRUCTIONS

**HISTORICAL
BUILDINGS**



WP6 - Safety in Construction

L'AQUILA EARTHQUAKE (2009)



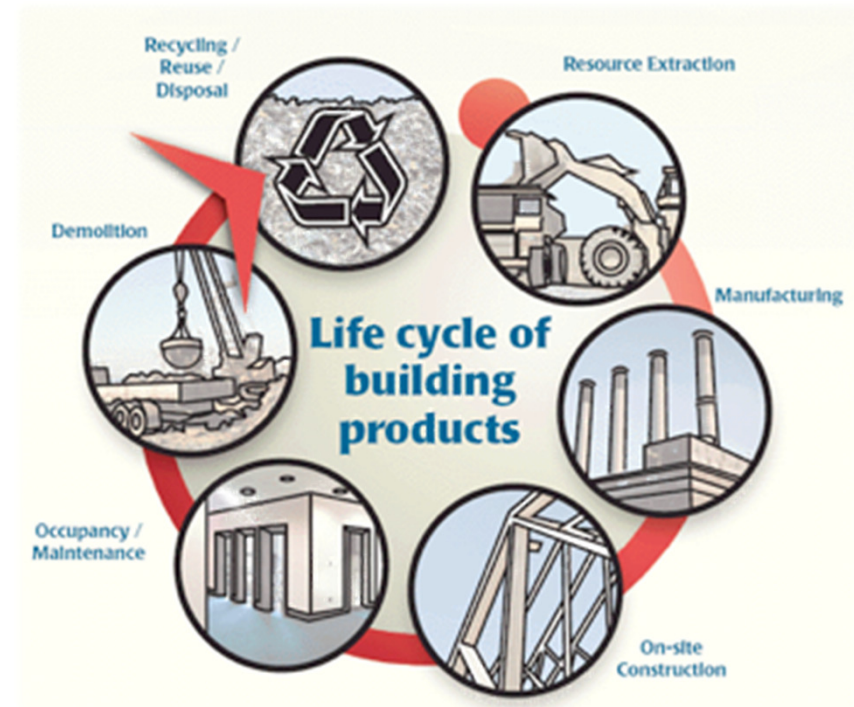
INNOVATIVE TECHNIQUES FOR SEISMIC PROTECTION



WP8 - Sustainability in construction

Sustainable Development should be addressed as a ***holistic*** issue but higher education is organised by disciplines which has led many academics to become “disciplincentric” (Velasquez, 1999)

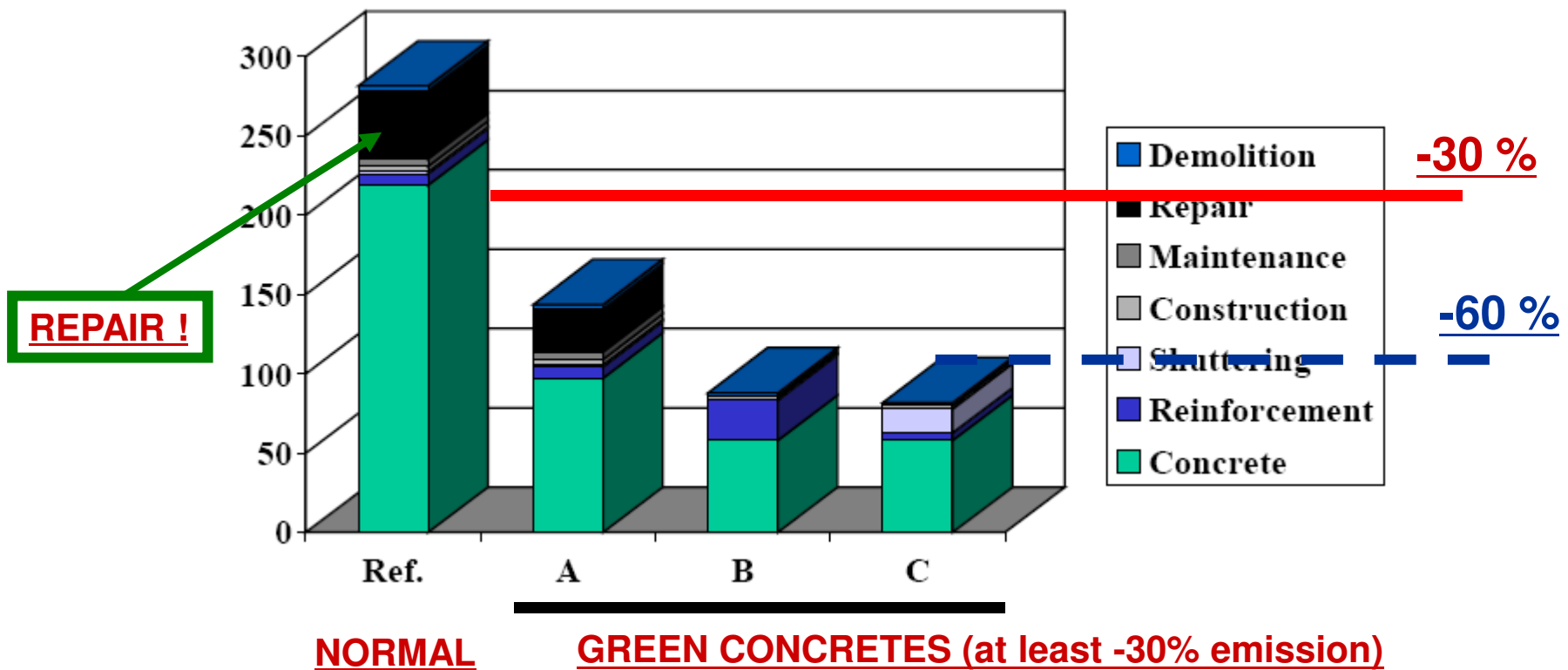
- material production
- impact of the construction tech.
- energy efficiency
- idurability during time.



In the teaching moduli, these aspects will be considered, and quantitative techniques and protocols to quantify and certify the sustainability of a construction, such as the Athena or the ITACA protocols, or the LEED system of certification of the United States Green Building Council (USGBC) will be studied.

WP8 - Sustainability in construction

MATERIALS



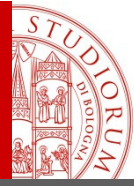
WP8 - Sustainability in construction

**Use of recycled concretes
(up to 98% of recycled materials)**



Replacement of 35W Bridge (MN)





WP8 - Sustainability in construction

Sustainability is attained when the maintenance costs are reduced

DURABILITY IS FUNDAMENTAL



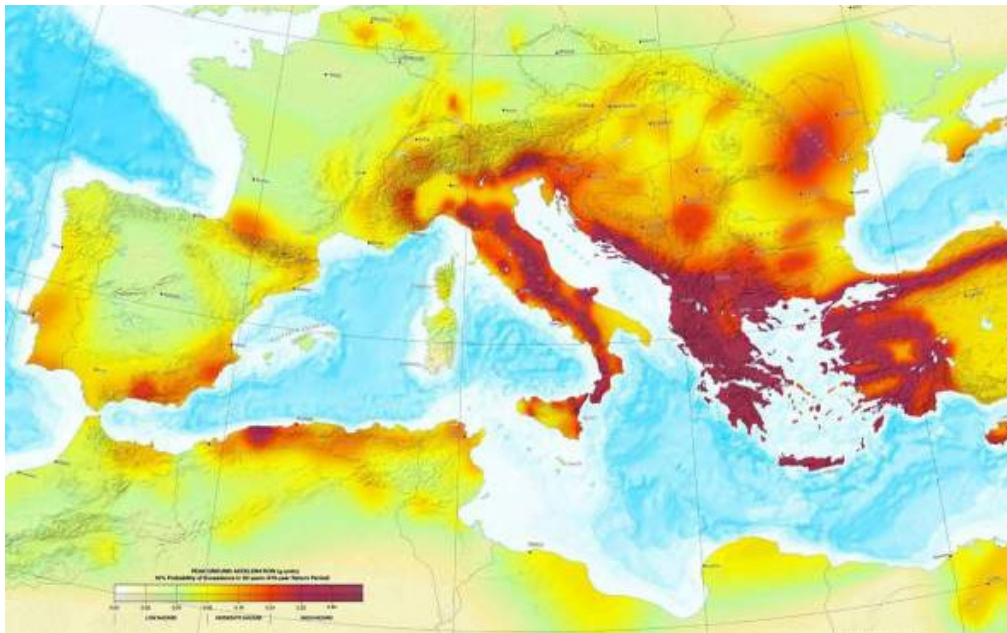


**Sustainability and safety are
strictly interconnected !**

WP7 - Natural Hazards and Management of Risk

Two main categories:

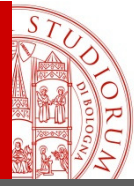
- (a) Physical Processes: the physical processes of extreme events. Basics from meteorology, hydrology, economics, engineering and planning sciences will be mapped out.
- (b) Integrated Risk Management: risk analysis (hazard determination, vulnerability determination and risk calculation), risk evaluation and mitigation within a system of an integrated risk management.



WP9 - Sustainable Development & Environmental Protection



The areas of hydraulics and hydrology, geotechnics, transportation will mainly contribute. A central concern of these moduli will be to give a critical understanding of the SD debate and practice, unveiling the political, social and economic forces underlying environmental conflicts and exploring concrete approaches to address their causes.



WP6 / 9 - Development

WP6-9: Teaching Moduli (cont') months 7- 24

Starting from the traditions and field of expertise of each partner Department, **SHORT MODULI (e.g. 3 CFU) WILL BE DEVELOPED:** course programs, competence skills, knowledge and abilities .

The different teaching approaches of universities will be discussed with the objective of developing joint methods.

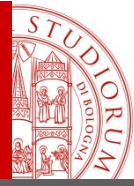


ERASMUS Curriculum Development Projects

After the development phase, these programmes/modules will be delivered by partner institutions in a genuinely integrated manner, involving student and staff mobility (3° year – pilot project).

The students will receive multiple or joint degrees (or certificates for modules), recognised by the participating institutions and countries.

The last year (3° year) will be devoted to the **implementation and dissemination of the joint delivery of the course/modules/curricula, agreement on admission criteria, learning outcomes, assessment, quality assurance and recognition** (use of the ECTS and DS).



WP10 - Development

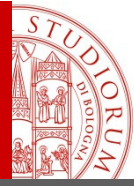
WP10 : Development of innovative ICT-based content and services

months 19- 36

ICT media for teaching:

- Recording and webcasting of lectures,
- Interactive videos,
- Social networks and other distribution media

more and more used by the leader universities to increase the diffusion of their media contents



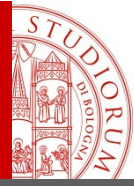
WP11 - Development

WP11 : Administration phase –
Development of bilateral agreements
months 13- 24

The rules of Civil Engineering in the partner Universities will be studied in order to (3 different levels of integration):

- a) Introduce the **teaching moduli in the curricula** offered by the Partner universities,
- b) Develop a **joint CE curriculum**, offered by some partner universities, by side of the regular curricula, mainly devoted to safety and sustainability problems,
- c) Joint competences with development of **double curricula** between the partner universities

(NOT COMPULSORY FOR ALL THE UNIVERSITIES)



WP12 - Development

WP12 : Teaching safety and sustainability: A pilot project months 25- 36

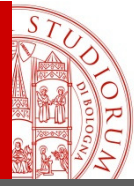
The Universities involved in WP10, WP11 will teach the moduli developed by the network in a coordinated manner.

A **teaching plan** will be prepared, with professors going to give lectures in foreign Universities.

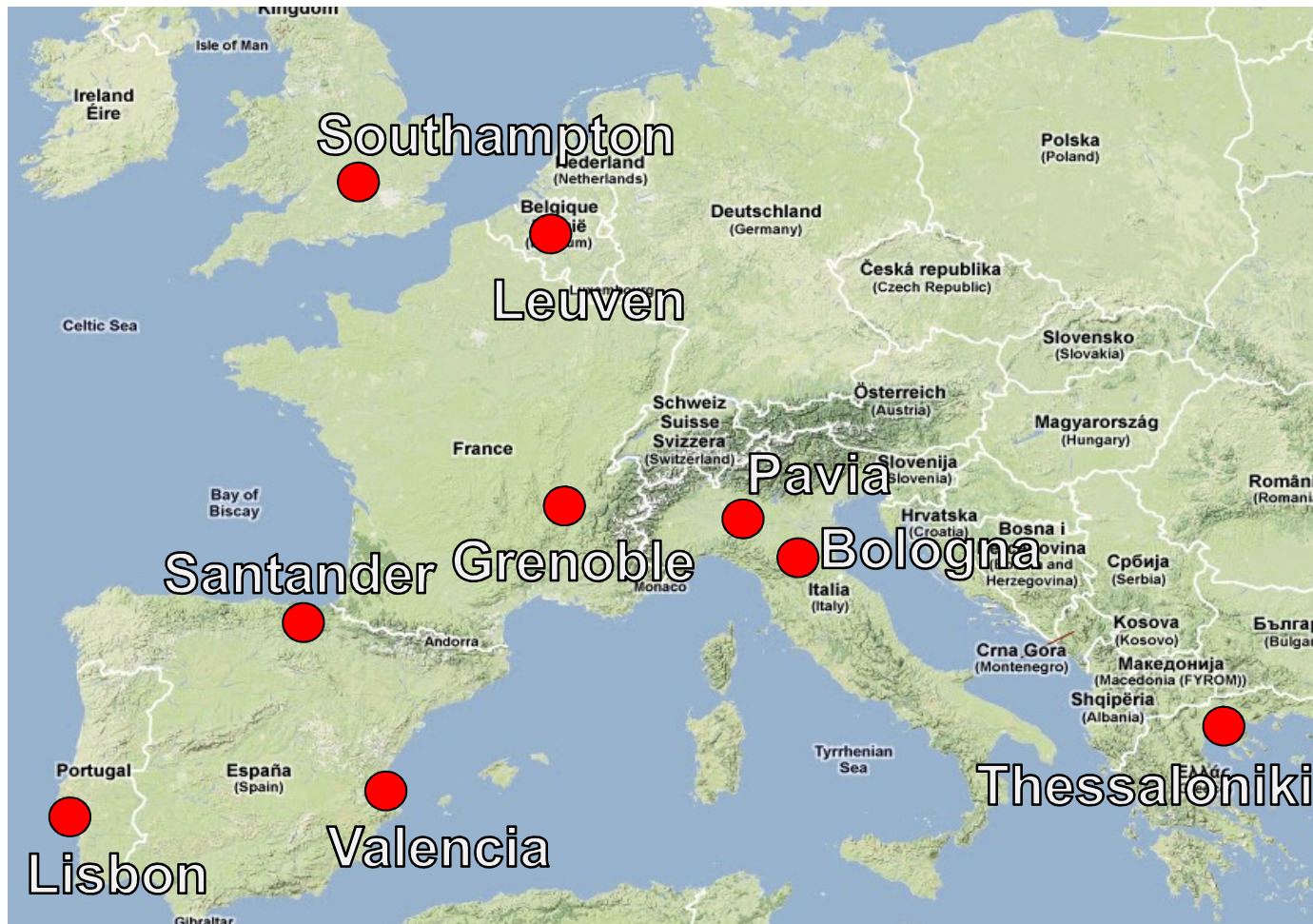
mid-term tests, final exams and homeworks will be given to the students in the same manner,

evaluation criteria established and agreed by the partners be applied to give the student scores will be used.

(Part of the funds is dedicated to the mobility of the teachers)



WP12 - Development



Thank you