



Instituto Superior de Engenharia do Porto

Erasmusline: Executive Information System

2010 / 2011

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Score	
Observations	
Additional Info.	

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I would like to thank Daniel for his experience which proved invaluable, and professor Nuno for going forward with this project, from which I learned a lot. - **Pedro Ferreira**

Abstract

MUTW stands for Multinational Undergraduate Team Work. The goal of MUTW is to let students of eleven different universities work together on one common project. The assignment of this year was to implement the ErasmusLine web application. The purpose of this application was to digitalize the complete Erasmus process, so that students who want to go on Erasmus didn't have to fill in all the forms by hand, but everything would happen digitally.

The eleven universities taken part in this project were separated into two teams, namely team Orange and team Blue. Those two teams would then work for about three months on implementing the application and at the end of those three months, they would have to give a presentation with their final result.

The implementation of the application itself was divided in eight modules, which were distributed among the universities in each team. By dividing this project in different modules, each university could work independently on their own module, but this made the communication part of the project very important. Although each university could work independently on their modules, nevertheless did some modules depend on others.

The web application was written in XHTML with PHP as server-side scripting language. Besides XHTML and PHP, the Orange Team also used the MySQL database as a data layer and JavaScript/jQuery as client-side scripting language. The course-matching module used the Python programming language.

This assignment was a very enriching experience for the whole team. During the implementation of the ErasmusLine web application, some issues were encountered and bugs to fix, but eventually a working application was presented at the final meeting in Heraklion, Greece.

Keywords

Database, data-management, user-management, sql, security-levels, homepage, main-menu, privileges, permissions, interoperability, interface, data transfer, file transfer, encryption, security, JSON, 3DES, cURL, Erasmus, forms, server-side, validation, client-side, persistence, process flow, signatures, exams, interface, institution, coordinator, student, statistics, analytics, trends, charts, pivot tables, data warehouse, data refreshment, executive information system, EIS, online analytical processing, OLAP, extract transform load, ETL, data mining, facts, dimensions, measures, posix, daemon, mysql, php, html, jquery.

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Glossary

XHTML eXtensible Hypertext Markup Language, a subset of the HTML markup language which includes XML rules for more structured, accessible and faster processing web-sites.

MySQL A popular, generally available Open Source Relational Database Management System.

UTF-8 A multibyte character encoding for Unicode. It has a wide range of characters in which all European characters are included.

Plonk An open source PHP Library developed by Bramus Vandamme, implementing the Model-View-Controller design architecture.

MVC (Model View Controller) A software architecture to separate the logical code apart from the layout (view), the data management (model) and the business Workflow (controller).

cURL A short version for “Client for URL”. Developed 1997 by Daniel Stenberg and open source under the MIT – Licence.

JSON (JavaScript Object Notation) A text based standard design for data interchange, used initially on Javascript code and spread to other technologies due to it's lightweight syntax.

3DES (Triple Data Encryption Standard) The application of the Data Encryption Standard algorithm three times on target data blocks, making it harder to brute force hacking attempts.

HTTPS The encrypted form of the Hypertext Transfer Protocol used on websites.

ODS An operational data store is a database designed to integrate data from multiple sources for additional operations on the data.

DW A Data Warehouse is a database used for statistical and reporting purposes.

OLAP (Online Analytical Processing) Interactive analysis of data that has been transformed from raw (operational) data into understandable enterprise-wide data.

Objective Tangent goals the EIS is trying to demonstrate and are later translated to KPI's.

KPI (Key Performance Indicator) Statistical value that indicates progress or predicts future progress of a business process.

Dimension A dimension is a structural attribute acting as an index for identifying measures within a multidimensional data model. A dimension is basically a domain, which may be possibly partitioned into an hierarchy of levels. For example, in the context of selling goods, possible dimensions are product, time, and geography; chosen dimension levels may be Product category, Month, and District.

Measure A measure is a point into the multidimensional space. A measure is identified if for each dimension a single value is selected. For example, a “sales volume” measure is identified by giving a specific product, a specific sale time, and a specific location.

Drill-Down The navigation among levels of data ranging from higher level summary (up) to lower level summary or detailed data (down). The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions. An example query is: for a particular product category, find detailed sales data for each office by date.

Roll-Up The querying for summarized data. Aggregation involves computing the data relationships (according to attribute hierarchy within dimensions or to cross-dimensional formulas) for one or more dimensions. For example, sales offices can be rolled-up to districts and districts rolled-up to regions; the user may be interested in total sales or percent-to-total.

Slice and Dice The process employed by users to explore and query multidimensional information within a OLAP cube interactively.

ETL(Extract,Transform,Load) Techniques used to integrate data from heterogeneous data sources into another data store.

Data Refreshment Plan Rules and guidelines to integrate information into the Data Warehouse.

SSD Solid State Drives are disk drives that can be accessed like a conventional Hard Drive but instead of electro-magnetized metal plates, SSD's use microchips to store information, like a conventional USB disk pen.

btrfs The B-Tree File System is a GPL licensed file system for GNU/Linux Operating Systems. Among other features, it supports crash recovery, snapshots, transactions and defragmentation.

UTC Coordinated Universal Time is the primary time standard based on International Atomic Time by which the world regulates clocks and time. Computer servers, online services and other entities that rely on having a universally accepted time use UTC for that purpose.

RSS A standardized XML file format used to publish updated work releases like website news headlines, blog posts, audio and video. These files can be read using proper software that periodically reads these files for new content.

UML Unified Modeling Language - A standard set of visual aids to be used in the field of object-oriented Software Engineering.

Chapter 1

Introduction

1.1 Project Scope

The MUTW (Multinational Undergraduate Team Work) Project is created by teachers and students from all over the Europe. It's main purpose is to collaboratively design a functional web application which is going to help the undergraduate students and coordinators avoid the bureaucracy of filling all the necessary forms and speed up the process, in case they want to use the Erasmus Program, and also keep statistical records of what is happening during each student's Erasmus mobility process.

The site which is called *Erasmusline* is approachable by the students by using their unique password given by their University and of course by the coordinators who will work as administrators for the site. Furthermore, this project has deeper goals to be achieved. Students have to work all together for three months in order to make the site completely functional. This requires teamwork and communication spirit. As a result, the participants will not only practice their English language skills, but also their skills in planning, analysis and technical expertise.

1.2 Project Description

The participants are students from eleven different Universities throughout Europe which use the Erasmus Program. Each University offers two students for the project. Every university has its own unique part in the project to prepare, and during these three months, pieces are getting together in order to make the final result, the site.

Eventually, this project turns out to be a unique and valuable experience which can open new doors to the team's academic world. The objective of the project is to create a totally functional website which is going to be used by all actors involved in the Erasmus program, that includes the students and coordinators.

The students will be able to fill the forms needed for getting accepted by the University abroad and the coordinators will be able to log in as administrators, so they will be having access in every form in order to make the appropriate moves for communicating with the other University.

Coordinators and students will also be able to consult global and institutional statistics, generally for decision making - for example, students who seek to study in institutions with specific traits - and detecting trends or anomalies - in case of executive staff members who need to analyze the Erasmus process success or failure in their own institution.

The beginning of the project took place in Kiel, Germany where all the participants met for the first time and each team made its first view of the project in a presentation. That presentation included the theoretical timeline until the final presentation and what was the plan for creating the website step by step.

There are two teams which take part in the project, the Orange and Blue teams. Each team consists of six Universities from all over Europe and in the final presentation the coordinators will evaluate each team according to the work which was done these three months and the presentation itself. Participants are gonna be also evaluated separately one by one.

This Project report will account for the process of planning and development of the Orange team, but mainly for the Portuguese members and their assigned project package, P8-STATS.

1.2.1 Project Planning

The Project development was controlled using the software tool OpenProj¹ and editing the existing Gantt Chart, accessible by the team's members in the SourceForge Git repository².

Every package member was responsible for filling out their package Work Breakdown Structure, assign each deliverable time boxes and regularly filling the percentage of their work done.

		Name	Duration	Start	Finish	Predeces...	Percent C... F
1		ErasmusLine	65 days?	3/14/11 8:00 AM	6/10/11 5:00 PM		25%
2		P8-STATS	60.062 d...	3/14/11 8:00 AM	6/6/11 8:30 AM		72%
3	█	Analysis and Requirements gathering	12 days	3/14/11 8:00 AM	3/29/11 5:00 PM		86%
4		Business Rules	5 days	3/14/11 8:00 AM	3/18/11 5:00 PM		80%
5		EIS	5 days	3/21/11 8:00 AM	3/25/11 5:00 PM	4	90%
6		Measures	5 days	3/21/11 8:00 AM	3/25/11 5:00 PM		90%
7		Dimensions	5 days	3/21/11 8:00 AM	3/25/11 5:00 PM		90%
8		Report	2 days	3/28/11 8:00 AM	3/29/11 5:00 PM	4;5	80%
9		Data Warehouse	36.062 d...	3/30/11 8:00 AM	5/19/11 8:30 AM	3	90%
10		Database schema	4.031 days	3/30/11 8:00 AM	4/5/11 8:15 AM		90%
11		Define data source(s)	3 days	4/5/11 8:15 AM	4/8/11 8:15 AM	10	90%
12		Architecture	6 days	4/8/11 8:15 AM	4/18/11 8:15 AM	10	95%
13		DW refreshment	2 days	4/8/11 8:15 AM	4/12/11 8:15 AM	11	90%
14		ODS	4 days	4/8/11 8:15 AM	4/14/11 8:15 AM	11	90%
15	✓	Indexing Solutions	6 days	4/8/11 8:15 AM	4/18/11 8:15 AM	11	100%
16		Implementation	15 days	4/18/11 8:15 AM	5/9/11 8:15 AM	12	93%
17		DW refreshment	15 days	4/18/11 8:15 AM	5/9/11 8:15 AM		90%
18		ODS	15 days	4/18/11 8:15 AM	5/9/11 8:15 AM		90%
19	✓	Indexing	15 days	4/18/11 8:15 AM	5/9/11 8:15 AM		100%
20		Deployment	5.031 days	5/9/11 8:15 AM	5/16/11 8:30 AM	16	87%
21		DW refreshment	5 days	5/9/11 8:15 AM	5/16/11 8:15 AM		80%
22		ODS	5.031 days	5/9/11 8:15 AM	5/16/11 8:30 AM		90%
23		Data Marts	5 days	5/9/11 8:15 AM	5/16/11 8:15 AM		90%
24		Report	3 days	5/16/11 8:30 AM	5/19/11 8:30 AM	10;12;1...	50%
25		EIS	12 days	5/19/11 8:30 AM	6/6/11 8:30 AM	3;9	35%
26		Architecture	12 days	5/19/11 8:30 AM	6/6/11 8:30 AM	24	40%
27		Implementation	12 days	5/19/11 8:30 AM	6/6/11 8:30 AM	24	50%
28		Deployment	12 days	5/19/11 8:30 AM	6/6/11 8:30 AM	24	30%
29		Report	12 days	5/19/11 8:30 AM	6/6/11 8:30 AM	24	20%
30		P4-OUT	57 days?	3/14/11 8:00 AM	5/31/11 5:00 PM		6%
31		Collect Different forms	15 days?	3/14/11 8:00 AM	4/1/11 5:00 PM		20%
32	█	Setting up chart with the form flow	3 days?	3/25/11 8:00 AM	3/29/11 5:00 PM		0%
33	█	Agree with P-IN on layout forms	5 days?	3/28/11 7:00 AM	4/1/11 5:00 PM		0%
34	█	Determ which forms can be common	5 days?	4/4/11 7:00 AM	4/8/11 5:00 PM		0%

Figure 1.1: The project's Gantt Diagram on OpenProj

The detailed Gantt Chart can be found in the chapter *Appendix 5: Gantt Chart*, page 51 of this report.

¹<http://openproj.org>

²<http://mutworange.git.sourceforge.net/>

Apart from checking the project's and each individual package's performance, the team acted on democratic decision - when selecting the tools, when resolving open ended questions – recurring to presential meetings through the software tool Adobe Connect³, IRC channels, direct email and the SourceForge Mailing List system.

Given the democratic nature of the team, each package team would also self-manage their own package planning, using their own tools but always reporting to a general Gantt Chart.

This project was developed during the second semester of 2011, between the 21st of March and the 17th of June. The following description lists show each packages main tasks and milestones, each with their corresponding time box - according to each country member's perspective.

P1-CONFIG (Germany)

• Database	21/03 – 29/04
– Design	
– SQL Script	
– Installation Script	
• Design	25/03 – 15/04
– Design Mock Templates	
– Integration with Plonk Templating library	
• User Account	18/04 – 29/04
– Login functionality	
– User roles and permissions	
– Account page	

P2-INFOX (Germany)

• Discussion about communication Protocol	28/03 – 01/04
• Define Security System	04/04 – 29/04
• Programming Outgoing data	02/05 – 13/05
• Programming Incoming data	02/05 – 13/05

P3-ALERT (Bulgaria)

• Research	22/03 – 06/04
• Making the daemon	07/04 – 20/04
• Synchronization with the others part of the project	21/04 – 27/04
• Email sending system	28/04 – 05/04

³<http://www.adobe.com/products/adobeconnect.html>

- Pop-ups 28/04 – 05/04
- GUI 05/05 – 09/05
- Testing 10/05 – 23/05

P4-OUT (Belgium)

- Collect Different forms 14/03 – 01/04
- Setting up chart with the form flow 25/03 – 29/03
- Agree with P-IN on layout forms 28/03 – 01/04
- Determine which forms can be common 04/04 – 08/04
- Implement non/common forms 11/04 – 29/04
- Creating ECTS forms 28/03 – 01/04
- Implement flow of forms 11/04 – 10/05
- Integrate information exchange module 18/04 – 22/04
- Intensive testing of flow 10/05 – 31/05

P5-IN (Greece)

- Research
- Develop the IN student forms
- Testing
- Report

P6-EXAM (Bulgaria)

- Research
- Making the student module
- Making the home coordinator module
- Making the host coordinator module
- Synchronization with other parts of the project
- Testing
- Report

P7-MATCH (Iceland)

- Research
- Develop data scrapper to match dummy data
- Develop production code
- Integration tests
- Testing
- Report

P8-STATS (Portugal)

- Analysis and Requirements gathering 14/03 – 29/03
 - Business Rules
 - Key Performance Indicators
 - * Measures
 - * Dimensions
 - Report
- Data Warehouse 30/03 – 19/05
 - Database schema
 - Define data sources
 - Architecture
 - * DW ETL / Data refreshment
 - * ODS and Metadata structure
 - * Indexing Solutions
 - Implementation
 - * DW ETL / Data refreshment
 - * ODS and Metadata structure
 - * OLAP module development
 - Deployment
 - * DW ETL / Data refreshment
 - * ODS and Metadata tables
 - * Data Marts – Local and Remote DW
 - Report
- EIS Interface 19/05 – 06/06
 - Architecture
 - User Stories
 - Implementation
 - Deployment

- Report

ErasmusLine (Orange Team)

• Integration	16/05 – 31/05
– Integration Tests	
– Debugging	
• Final Report	01/06 – 17/06
– User Manual	
• Presentation	08/06 – 17/06
– Presentation Notes	

1.2.2 Project Meetings

As agreed on the first presential meetings, the team met initially remotely each week on mondays on 18 o'clock according to the UTC-0 time zone. Each meeting would last from fifty minutes to two hours if necessary. During the requirements gathering and development stages of the project, the topics in each meeting discussed by each package members, were the in the following list:

- Report last week's activity
- Plan next week's activity
- Express difficulties and problems encountered, but not solve them right away

Each package team would prepare in advance what to express in this first part of the meeting to keep it short and quickly address issues in the third topic. This first part of the meeting lasts twenty minutes and helps the team stay updated and motivated with the evolution of the project.

After each team reported these topics, the whole team would follow-up with assigning team members to help solve the expressed problems in the third topic. If any other meetings were needed to solve pending issues, the affected members would arrange extra meetings during the week.

Initially, each package team would prepare and assume control of the meetings in a rotational fashion each week, at least once. This proved to be non-productive given that some team members didn't prepare nor had the skills to conduct the meetings.

After a democratic vote from the team, it was decided unanimously that the P8-STATS (Portugal) team should prepare and manage the meetings as well as the Orange team.

The following sub-sections are a description of most of the meetings, including the dates where held, as well the participants and discussed topics. All the members attended these meetings using the Adobe Connect collaboration platform (discussed on page ??), from their individual countries and homes.

1.2.2.1 Meeting 21/03/2011

Date: 21/03/2011

Start Hour: 5:05pm UTC

End Hour: 6:30pm UTC

Attending: Arne Reimer, Pedro Ferreira, Daniel Lopes, Nathan Assche, Stephan Polet, Aggeliki Katsiampouri, Mountrakis Stefanos, Thordur Bjornsson, Gudmundur Hallgrimsson, Ina Ivanova, Zvezdomir Tsvyatkov

Topics:

- * Status report (2-3min per country)
- * Discussion and final decision of meetings and communication protocols (5-10min)
- * Initial presentation of rules of defining future deadlines
- * Suggestions and final remarks (5-10min)
- * Reminder to set the task list until the next meeting (gantt chart)
- * Team discussion about the problems previously presented (5-10min)

1.2.2.2 Meeting 28/03/2011

Date: 28/03/2011

Start Hour: 18:30 UTC

End Hour: 19:45 UTC

Attending: Arne Reimer, Arne Lipfert, Pedro Ferreira, Daniel Lopes, Nathan Assche, Stephan Polet, Aggeliki Katsiampouri, Thordur Bjornsson, Gudmundur Hallgrimsson, Ina Ivanova

Topics:

1. What has been done

- * Germany: Gantt Chart, SQL-File, Forms, Templates
- * Belgium: tutorial, register-page, collecting forms
- * Portugal: business Workflow, statistical indicators, designing data model
- * Greece: designed the needed forms, client validation, server validation
- * Bulgaria: learning plonk and git, creating some more db-tables
- * Iceland: did some test with php and python to integrate it later

2. Discussion

Germany will present up to Three Layouts until next meeting.

1. Infox

Germany will try to get some more Information about how to transfer Data.

Everybody agrees that it has to be done very quickly because Portugal/Belgium and Bulgaria needs this information for their work.

2. Plonk

Belgium will try to get some more information about how to implement php-code into a template.

1.2.2.3 Meeting 04/04/2011

Date: 04/04/2011

Start Hour: 17:30 UTC

End Hour: 19:45 UTC

Attending: Arne Reimer, Arne Lipfert, Pedro Ferreira, Daniel Lopes, Nathan Assche, Stéphane Polet, Mountrakis Stefanos, Ina Ivanova

Topics:

- * What have we done this week (each team) + problems/questions
- * Database (discussion)
- * Main design: Germany presented 2 layouts
- * Signatures
 - Each team should ask their international office which forms really need an official signature and which ones we can skip.
- * Pre-candidate forms of all the teams (and other ..) + who provides internship
 - We only received the pre-candidate form from Portugal ..
 - Need internship forms as quickly as possible, because this is an important part of our module.
- * Information exchange

1.2.2.4 Meeting 07/04/2011

Date: 07/04/2011

Start Hour: 09:00 UTC

End Hour: 10:00 UTC

Attending: Arne Reimer, Arne Lipfert, Pedro Ferreira, Daniel Lopes, Nathan Assche, Stephan Polet

Topics:

- * Discussion back and forth about the DB:
 - a) Adding a Company table;
 - b) The deployment apparently won't affect the DB design;
 - c) Leaning towards not using a central repository (deployment wise).

1.2.2.5 Meeting 25/04/2011

Date: 25/04/2011

Start Hour: 18:00 UTC

End Hour: 18:50 UTC

Attending: Arne Reimer, Arne Lipfert, Pedro Ferreira, Daniel Lopes, Nathan Assche, Aggeliki Katsiampouri, Mountrakis Stefanos,

Topics:

1. What has been done
2. Plonk installation integration
3. Assign next week's meeting coordinators

1.2.2.6 Meeting 09/05/2011

Date: 09/05/2011

Start Hour: 18:00 UTC

End Hour: 20:00 UTC

Attending: Arne Reimer, Arne Lipfert, Pedro Ferreira, Daniel Lopes, Nathan Assche, Stéphane Polet, Aggeliki Katsiampouri, Zvezdomir Tsvyatkov

Topics:

- * What have we done this week (each team) problems/questions
- * Zvezdomir had some problems getting the site online and with the login functionality. We will try to figure out the problem this week.
- * Belgium and Germany are going to put 2 applications online in order to start testing the infox module.
- * Portugal will coordinate the next meetings. (vote)
- * Greece will finish their forms by wednesday and then push them to GIT.

1.2.2.7 Meeting 16/05/2011

Date: 16/05/2011

Start Hour: 18:05 UTC

End Hour: 19:00 UTC

Attending: Pedro Ferreira, Daniel Lopes, Arne Reimer,
Nathan Assche, Stéphane Polet, Ina Ivanova, Stefanos Mountrakis

Topics:

- What did the team do this past week
- What does the team plan to do next
- Any doubts/issues about their package
- Percentage of work done
- Creation of campus servers to test application workflow and communication
- DB, Infox changes successful, needs further testing
- Next meeting to discuss integration issues this week

1.2.2.8 Meeting 23/05/2011

Date: 23/05/2011

Start Hour: 18:05 UTC

End Hour: 19:00 UTC

Attending: Pedro Ferreira, Daniel Lopes, Arne Reimer,
Nathan Assche, Stéphane Polet, Stefanos Mountrakis, Arne Lipfert, Gudmundur Hallgrímsson

Topics:

- What did the team do this past week
- What does the team plan to do next
- Any doubts/issues about their package
- Is the integration going along well?
- How can we test the application?
- Given the time we have left, do we have to sacrifice features?

1.2.2.9 Meeting 30/05/2011

Date: 30/05/2011

Start Hour: 18:05 GMT

End Hour: 19:00 GMT

Attending: Pedro Ferreira, Daniel Lopes, Arne Reimer, Arne Lipfert, Nathan Assche, Stephane Polet, Stefanos Mountrakis, Gudmundur Hallgrímsson, Zvezdomir Tsvyatkov, Aggeliki Katsiampouri, Ina Ivanova

Topics:

- What did the team do this past week
- What is necessary to do this week:
 1. Finish code development
 2. Tie up loose ends
 3. Gather team members and do a live demo of the running application and fix whatever is left

1.3 Project Contribution

As a whole, the ErasmusLine project delivers a system that will:

- Organize and automate the student's and staff member's Erasmus workflow
- Provide a central point of communication between Higher Education Institutions
- Organizes information in a single web application
- Removes heterogeneous means of communication
- Tracks efficiency and efficacy patterns for each Institution
- Provides decision support tools for the Institutions' executive members

The innovation of this project is that it pushes the students into an “Enterprise” scenario that not only will test their knowledge but also make them deal with difficult decisions that will take the students out of their comfort zone and possibly making the wrong answer, but nonetheless taking the initiative and sustaining the decisions with strong arguments.

In the Portuguese team's case, it will allow to put in practice the experience gained during their learning period of the License degree, but also explore and gain new knowledge on Decision Support systems, something that currently is only lectured in a Master's degree.

1.4 Report Structure

Chapter 2

Context

2.1 Specifications

The MUTW Erasmus site – called ErasmusLine – is a web application providing a platform to support Erasmus mobility of students.

All actors involved in Erasmus mobility, including students, Erasmus coordinators, International Office and other staff, are granted access to the platform. The ErasmusLine platform must provide ways to manage all the Erasmus activity of the institution related to students' mobility. Supporting the bureaucratic process accompanying students' mobility from the application stage until the academic recognition includes several tasks, such as:

- Inter-institution process documentation exchange
- Take exams at host institution
- Issue automatic alerts for required actions
- Match learning agreement to students' requirements, with an automatic course matching facility

Additionally we want to evaluate the performance of institutions and students in operating these procedures and Erasmus dynamics in each institution. This involves some extra functionality:

- Produce performance statistics
- Provide tools to analyze these statistics.

The ErasmusLine system is composed by four core areas: *business*, *statistics*, *services* and *configuration*, as depicted in Figure 2.1.

The business core is responsible for the workflow of Erasmus exchanges, both for outgoing and incoming students. It includes four packages directly related to managing the Erasmus processes: “OUT students”, “IN students”, “Exams at host institution” and “Course Matching”.

The services core provides a set of services available throughout the ErasmusLine system. These services are deployed by the packages “Information exchange and security” and “Automatic alerts”.

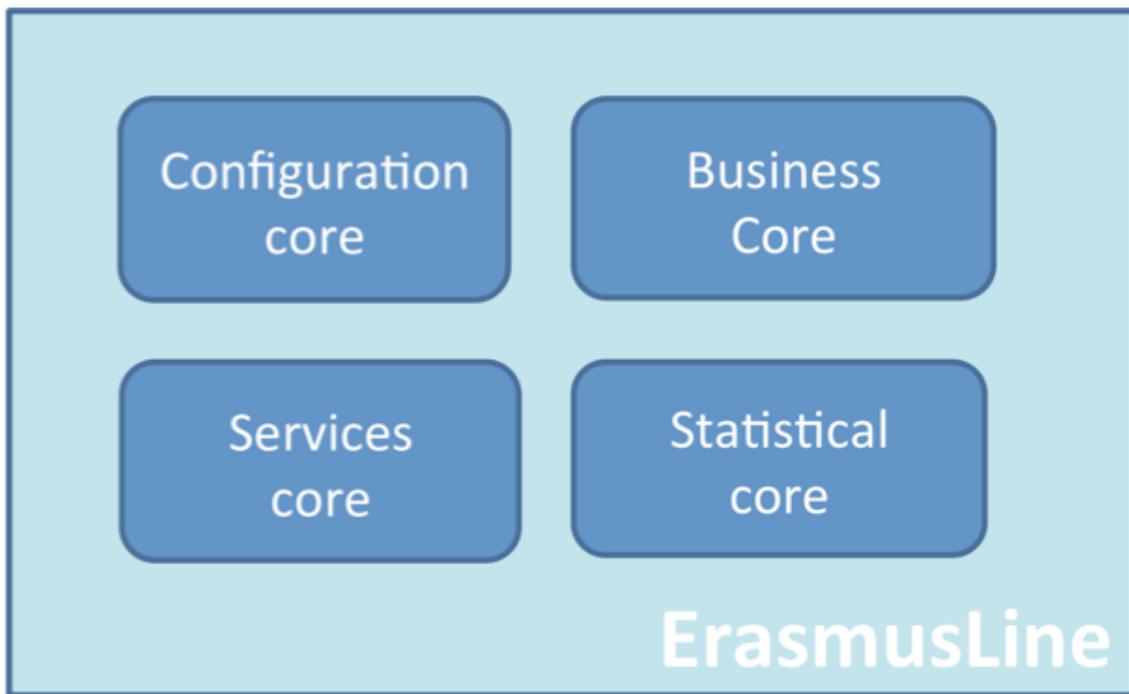


Figure 2.1: ErasmusLine Core Areas

The configuration core is responsible for assuring that all the required data is available and coherent. This core is implemented by the “Configuration” package.

The statistical core - developed by the Portuguese team - is an Executive Information System (EIS) designed to provide statistical information to analyze the performance of institutions and the interest of students regarding Erasmus mobility.

These Core Areas include 8 distinct packages, depicted in Figure 2.2:

P1-CONFIG This package is responsible for parameter and entity management. All other packages will rely on this one to get validated, coherent data required to operate the system. User accounts and user profiles are also managed by this package.

P2-INFOX This package allows exchanging documents and students' processes between instances of the ErasmusLine application.

P3-ALERT This package generates automatic alerts for pending tasks. These alerts are triggered by timeouts associated to requests that are not answered in due time.

P4-OUT This package assists **outgoing** students, home coordinators and staff in the management of the exchange process from pre-candidacy to the conversion of the ECTS credit to a local scale.

P5-IN This package assists **incoming** students, host coordinators and staff in the management of the exchange process from application submission to the issuing the transcript of records.

P6-EXAM Whenever Erasmus students have mandatory courses, for which there are no interchange options in the host institution, they can request to take the exam on that course at the host institution.

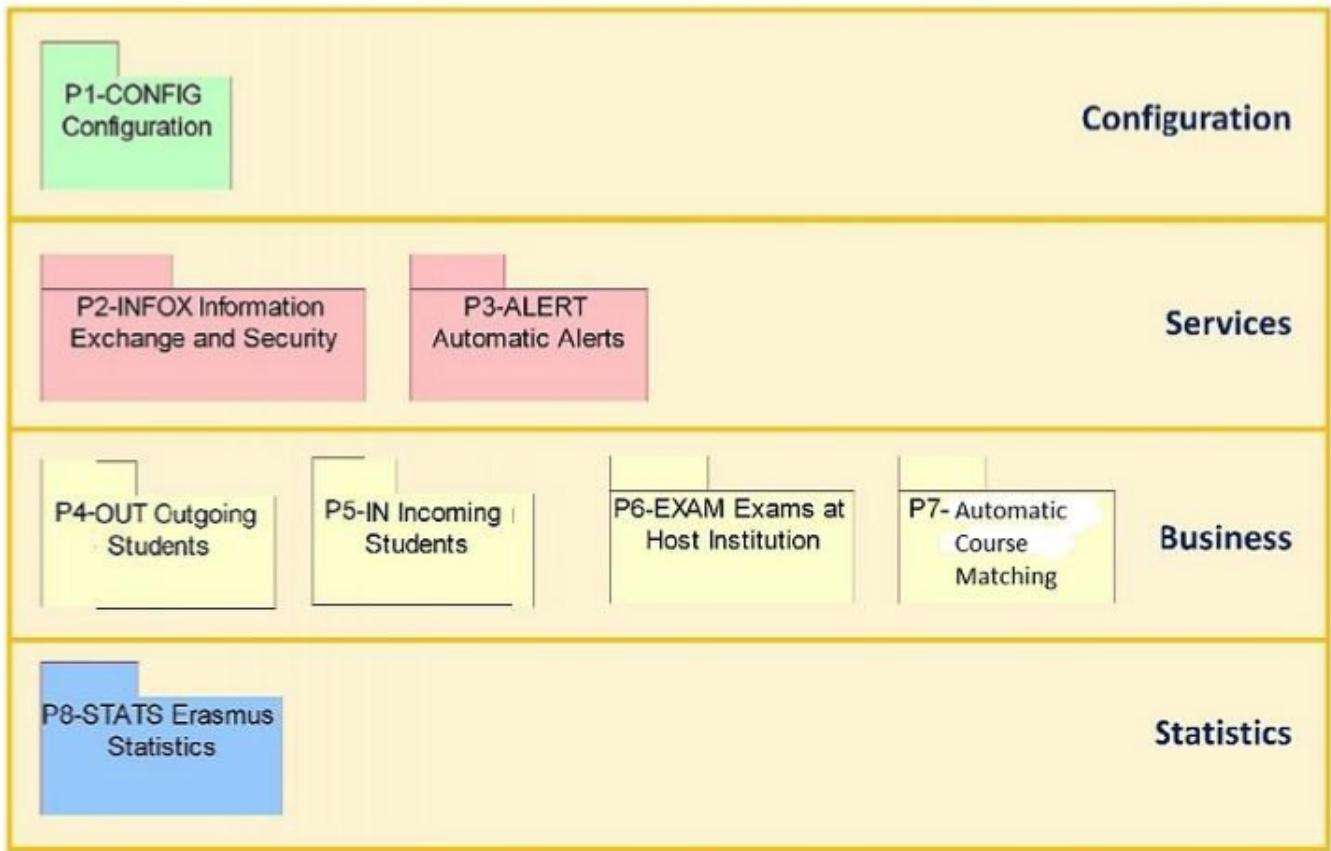


Figure 2.2: ErasmusLine Package Distribution

P7-MATCH This package will perform an automatic matching of courses based on textual descriptions offered by the host institution and the student's needs.

P8-STATS This package deploys an Executive Information System that collects operational data and exposes it to users through a set of statistical indicators designed to provide ways to evaluate the performance of these processes, to identify critical tasks and to evaluate the Erasmus impact and progress in the institutions.

2.2 P8-STATS Erasmus Statistics

This statistics module – an Executive Information System (EIS) – is responsible for collecting operational data from ErasmusLine databases and, eventually, from some external sources, in order to compute performance statistics that comply with the objectives to be controlled. It should also provide an interface that exposes these indicators to users and allows them to perform analyses on this data without requiring any specific statistical knowledge and yet being able to identify potential problems and/or opportunities.

2.2.1 Objectives

The statistics package of ErasmusLine should provide information directed to the following objectives:

Erasmus efficiency: focused on the institution ability as an “Erasmus provider” or “Erasmus facilitator” to students. This objective is directed to evaluate the institution’s Erasmus profile, i.e., to what extent is the institution promoting Erasmus and supporting Erasmus students. (Is the institution doing the right things?)

Erasmus efficacy: focused on the outcomes arising from the institution efforts towards Erasmus. This objective is directed to evaluate whether the institution is improving its own Erasmus dynamics. (Is the institution doing the things right?)

These objectives should be evaluated by determining *Key Performance Indicators*, quantifiable *Measures* and defining various *Dimension* from which to analyse the information from several points of view.

2.2.2 Deployment Procedure

As a guideline to design the EIS, a simple procedure is detailed below:

1. Define objectives.
2. Define indicators for each objective, dimensions (together with their hierarchical structure) and measures. Cross indicators with dimensions and with measures.
3. Design the EIS: set the indicators and their sources of information, set facts and dimensions, set measures, collect exogenous information, identify and specify synchronization procedures (these will be highly dependent on the operational database), setup a data model (star/snowflake schema), design interface/layout, specify available functionality
4. Deploy the data model for the EIS
5. Deploy the synchronization procedures
6. Deploy the user interface

2.3 Technology Overview

Before beginning analysis and development of the project’s application, the Orange team decided from the various technologies listed in the specifications given the necessity of each task that was needed to complete this project. During this project, the team relied solely on Open Source Technologies as intended by the specifications. These technologies are not abridged by copyleft licenses like the Gnu Public License, but some remain GPL-compatible.

In the next sections the technologies used are separated by task context and specifications wise.

2.3.1 Programming languages

2.3.1.1 PHP

This programming language is a standard language for quickly writing web applications. It is a dynamically typed, interpreted language with garbage collection and supports Object Oriented Programming, providing a syntax similar to older programming languages like C and Perl.

The project is essentially be written in this programming language, given that is the most easy to setup and learn amongst academics.

2.3.1.2 Plonk

For basic application workflow, the application uses the Plonk library - a subset of the Spoon¹ library - that automates functionalities like page routing, session handling and page templating.

2.3.1.3 Python

The Python programming language is an interpreted, dynamically typed programming language with garbage collection, used in the P7-MATCH package for it's use of the Natural Language Toolkit.

2.3.1.4 NLTK

The Natural Language Toolkit is a Python suite of libraries designed for natural language processing, convenient for matching students' courses and equivalents between HEI's.

2.3.1.5 JavaScript

Javascript is an interpreted, dynamic and weakly typed programming language mostly used in client side (Web Browser) scripting. It has some Object Oriented support with garbage collection. This project uses javascript to reduce server-side load by performing tasks like form validation, generating content, Ajax3 calls to the server, etc.

2.3.1.6 jQuery

jQuery is a pluggable javascript library that speeds up client-side script development by implementing a Domain Specific Language capable of quickly processing XHTML DOM elements for various aesthetic purposes. It also provides convenient functions prepared for Ajax communication or pre-programmed plugins like calendars, color picker windows, etc.

2.3.2 Other Languages

2.3.2.1 XHTML

This is a markup language used to design websites in similar fashion to regular HTML but with stricter rules, and similar functionalities to XML, for example, the use of namespaces.

This project uses XHTML version 1.0 of it's Transitional guidelines. Given it's more strict nature a common Web Browser will waste less time processing web page content.

Making a website that will be used by thousands of students brings the concern of usability and accessibility. The ErasmusLine project's Website will be developed under the guidelines of the Web Content Accessibility Guidelines (version 2) and strive for a minimum first level of acceptance.

2.3.2.2 CSS

This stylesheet language changes the presentation aesthetic of websites in a non intrusive way, this way being able to switch style configuration rapidly without touching the markup language files.

¹<http://www.spoon-library.com/>

2.3.3 Databases

2.3.3.1 MySQL

A relational database system designed for speed and rapidly building content-oriented websites. This technology serves as the persistent data layer in the application for various tasks such as the workflow of the Erasmus Process, the users and students management, to the Data Warehousing used in the P8-STATS package.

2.3.4 Development Platforms

2.3.4.1 SourceForge

A project hosting website and development platform, SourceForge² provides infrastructures for the developers to quickly setup a project and use a varied number of features like source code management systems, mailing list systems, forums, project management applications, Wiki applications, etc.

2.3.5 Development Tools

2.3.5.1 Git

A distributed source code management system used to keep track and monitor source code versions, allowing the developer to determine release versions, track code errors and share application code between other developers distributed around the world.

This system saves the code in containers called repositories. Each time a developer wishes to save a change made to the code, he commits file changes to the local repository. A record of differences is then saved in the repository along with a short description of the author. When the user is ready to share their code changes with the rest of the team, he pushes those changes to the central repository on the SourceForge site, so that other team members can pull those changes into their local repositories.

Git was available to the project via SourceForge, which also provided an online interface to check out repository activity and provided a RSS feed so that users can be notified of recent changes to the code.

During the development of this project the team used the Git repository to keep a record of the project planning, meetings reports, user manuals, the project presentation and this project report, along with the applications code.

A usage example would consist of the following scenario (using a terminal console):

1. In a fresh installation, the developer would start by creating a copy of the SourceForge repository and subsequent directory structure and files, using the following command:

```
1 git clone git://mutworange.git.sourceforge.net/gitroot/mutworange/
    mutworange
```

2. After making changes to the code, the developer would issue a commit:

```
1 git commit -a -m "fixed a bug in the X package"
```

Those changes would be saved locally.

²<http://sourceforge.net/>

3. After making sure the code changes worked, the developer can share the changes with the team:

```
1 git push origin master
```

Those changes would be merged with the central repository

4. When new code changes are pushed to the central repository, the user can fetch them using the command:

```
1 git pull
```

This fetches the latest changes to the code and merges them with your current local work.

Git also provides code branching functionality, which consists in creating an alternate version or path in the application development. Branches are good for creating new features on pre-existing code, but these features cannot be merged yet with the “master” branch.

Another feature offered by Git is code tagging, enabling to checkout various application versions of a branch in a certain context, for example a tag called *milestone-1* or *release-1.2* would correspond to a point where code development stopped and is ready to be deployed to the servers.

Source code management systems ensure that a team of developers keeps track of their work in an effective and efficient way.

2.3.5.2 Eclipse / NetBeans

Integrated Development Environments like NetBeans and Eclipse provide an interface for code editing for various programming languages and has a set of plugins to integrate other features in the interface, such as integrated Git repository management without resorting to terminal commands.

2.3.6 Other Tools

2.3.6.1 Total Validator

A cross-platform application designed to validate Web Sites against established W3C standards. This application not only validates code for XHTML but also validates Web Site guidelines, according to the WCAG 2.0 specifications. Has a bare minimum, the Erasmusline application was validated against 2.0 level A, but the application also validates on levels AA and AAA where applied.

2.3.6.2 Delivery

This application tries to make Javascript files smaller by removing comments, spaces and new lines to provide faster downloads by the Web Browsers.

2.3.6.3 Google Docs

During the course of this project some team members used Google Docs to write technical reports that would later serve to compile into this final report. Google Docs allowed the team members to create and edit text documents concurrently and in real time with no fear of corrupting the documents. Google Docs also supported versioning, which enabled us to see, for example, which team member edited which part of the document.

2.3.6.4 Cacoo

An online, realtime collaborative drawing tool which various team members can use to produce UML diagrams, draw software deployment plans, etc. and was used in several points of this project.

2.3.6.5 MySQL Workbench

This tool helps the user design and project databases in a visual way by creating Entity Relation models of the tables, specifying relational constraints, create and edit indices, creating user roles and permissions, default values for tables, etc. and later export those properties to a SQL file to be immediately imported to a MySQL server.

2.3.7 Conventions

For the sake of usability this projects web-site and database content will be using the UTF-8 character set encoding. This was a major concern since some Erasmus partners use different alphabets – for example Greek and Turkish - and the team had to use a universal character set that accepted the various alphabets existent in the European Continent.

Other conventions were merely determined for development comprehension of the team. While editing code the team member would have to follow a series of guidelines to ensure that everyone could understand his code when reading it. Some of these conventions were:

- using UpperCamelCase on object class names
- using lowerCamelCase on class methods
- documenting classes and methods using PHPDoc
- keep the code lines to a 80 character minimum, the excess code would be put in the following lines
- opening brackets in the first line of the code statement
- everything else must have the default behavior enforced by the IDE, text editor, etc.

These conventions ensured the whole team understood each other and understood what was being developed. While developing the Application Interface it was very important when designing the stylesheets not to interfere with the default behavior of the XHTML interface elements. It was agreed that default behavior would be left intact and set additional behavior by conventionally extending these said behaviors. This way it was ensured that when the team members developed in isolation, no necessary code rewrite would be needed.

Chapter 3

Technical Description

Chapter 4

Conclusions

4.1 Project Outcome

After three months of work the Orange Team crossed the finish line of the 2011 MUTW Project. In the last 103 days the team achieved several goals of this project and had a productive time working together in a multinational european team.

The goal of this project was to develop a web-application which covers all necessary needs for applying for the Erasmus Exchange Process. In more than 30 meetings the team held to discuss the development of the application, fixed problems and coordinated further work. Beside the specified weekly monday meetings, several special meetings were held to discuss and fix problems between the affected teams.

After this hard work, the ErasmusLine application developed by the Orange Team will certainly fulfill the expectations and is a strong symbol for multinational european teamwork.

4.2 Acomplished Goals

The following lists discriminate the acomplished goals that each each package team has set in the planning of this project.

P1-CONFIG (Germany)

- Database design
- Home page and main menu
- Website layout design
- Data management
- User management
- Access permissions

P2-INFOX (Germany)

- Information exchange with JSON and cURL
- File exchange with cURL

- Encryption

P3-ALERT (Bulgaria)

- Sending emails according to deadlines

P4-OUT (Belgium)

- Outgoing workflow design
- Form design
- Pre-candidate phase
- Setup phase
- Prepare stay phase
- Stay phase
- Tear down phase

P5-IN (Greece)

- Form Design
- Plonk integration
- Validation in Javascript, PHP, jQuery
- Store – pull data from database using MySQL
- Email forms to coordinators/institutions

P6-EXAM (Bulgaria)

- Students request to take exams at host university
- Home/host coordinator accepts students request

P7-MATCH (Iceland)

- Searching the website of an institution for course information
- Matching corresponding courses
- Listing all matched courses

P8-STATS (Portugal)

- Business Rules
- Performance Indicators, Measures and Dimensions
- Data Warehouse database design and integration
- ETL and Data Refreshment design and implementation
- EIS web-interface design and integration

4.3 Other Contributions

Given the project schedule and deadlines, the several package teams decided to help other teams with development and documentation. These phases of inter-package help resulted in the following functionalities:

Developed by the **P8-STATS** team:

- Institutions Partnership
- Institution Management
- Education / Courses Management
- Residence / Owner Management
- Synchronization of Institution, Educations, Courses, Residence and Owners data between Application instances
- **P2-INFOX** draft message protocol and message encryption code

Developed by the **P8-STATS** and **P4-OUT** teams:

- **P2-INFOX** integration for various modules
- **P5-IN** package integration and workflow testing
- Overall testing and validation

4.4 Final Thoughts

“It was an unique experience, for which I am grateful to be a part of, with some great benefits for my future career.” - Pedro Ferreira

“An extraordinary trip where we faced a great deal of tough decisions, but we emerged more grown up, more cooperative and we take home the fond memories of this amazing experience.”
- Daniel Lopes

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Appendix 1: Early Database Deployment Draft

Written by P8-STATS team.

Decentralized Idea:

The application is self autonomous and each institution is responsible to install and host it.
(Example: brain cells implementation?)

What does this imply?

Every Institution will have their own webpage (that at the beginning it's the one designed by us but we could give the incentive to each one make their own interface) and Database.

This way the login problems of the accounts not being centralized are nullified.

How it will work:

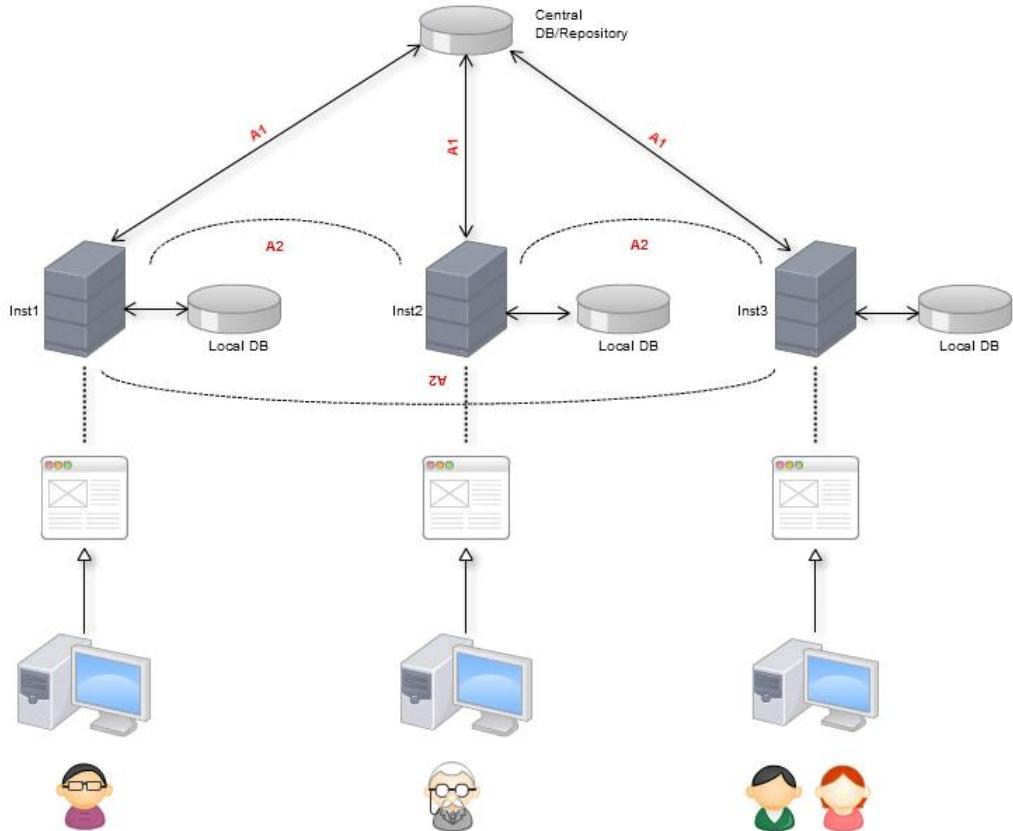


Figure 1: Application Deployment throughout Institutions

A - Given this implementation, information between Institutions has to be shared and we

have to decide how we will accomplish this.

A1 -

- a) We can use a repository that controls and keeps track of all Institutions and the new ones, therefore the application when installed accesses this repository to ‘register itself’ and get the list of all the running ones, after that, an alert is generated to all the actives ones so they can update themselves with the “new born”.
- b) Taking into consideration that Institution will need to become partners first before exchanging students, if there’s no other reason for a central repository we can avoid it and say that they have to agree on partnership first by their own communications and if accepted they add each other on the application.

A2 - Database mirroring is completely out of question given the huge amount of Databases that can exist so the information will be separated, therefore we will have to create some kind of communication protocol between Institutions for when they need to get info that’s stored on the other side and so on.

Pros:

- Account management and ‘power attribution’ simplified since every Institution is responsible for them self -Law problems with info also probably solved
- Pre-candidate forms being different can also be solved by this (everyone is responsible for their own)

Cons:

- Information about the host coordinator, the student that comes from far away, stuff like that, needs to be accessed
- Database design might be altered because some extra info from receiving students might be stored and stuff like that depending on the implementation, infox will have to support all the communications about this info
- Harder to update/patch

Problems:

- The info that isn’t stored and needs to be exchanged, how to work around that? Are there any law implications on how they are shared? Can they be temporarily stored or they can just be accessed to ‘read only’?
- Some kind of central control will be required if the central repository is to be implemented (extra staff/administrators needed).

Possible Solutions:

- After a process is accepted, a ticket is created between the receiving and giving Institution, so when they need info about each other they can use that ticket that will block their view only to what’s allowed and as soon the out process passes, the ticket expires.
- Going with A1 b avoids that, probably the best way to go but still with some implications.

Appendix 2: Early Email Example to Belgium

Written by P8-STATS team.

Heya,

We have a site with all or almost all the info for ERASMUS apparently but it's all in portuguese (<http://www.ipp.pt/index.php?a=25&id=104&sub=250>).

We can translate the forms if you like, but the idea of reaching an uniformization seems unlikely(up to your investigation). In that case we suggest looking into this idea/concept:

-Creating each and every form and storing them in file format(ala pdf, etc)

How?

-Given their location, presenting the correct form in lets say pdf and they have to print, fill, sign, scan it and upload it back(ie just one example, web forms seem impractical because you have to sign)

Why?

-The idea is to keep this expandable, we produce a product that, let's say, is ready to support 5 universities but the design makes it able to expand even while already deployed they just need to add the new pdf to the page

giving us the responsibility of making the core encapsulated and well documented in order for further improvements that really should be their problem(ala adding the respective universities forms).

I would also like to ask and therefore suggest if your making this planning with the Greeks since i believe you should both use the same methods etc.

As a last reminder don't forget communication, ask ask ask ask ask and ask any doubts or suggestions (ala the meetings post has 0 comments!!).

Any further doubt feel free to mail or add me in google talk -
ped.j.ferreira@gmail.com

Regards,

Pedro Ferreira
ISEP, Portugal

Appendix 3: ErasmusLine User Manual

The document in the next page is the available documentation of the Erasmusline Application User Manual, written by the **P4-OUT** team.

MUTW

ERASMUSLINE

USER MANUAL

MUTW – TEAM ORANGE

31-5-2011

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1. INTRODUCTION

This document acts as a guide to install the ErasmusLine web application at your own university.

In the dvd included in this document you will find all the necessary files to install the application at your university's webserver and database server.

2. INSTALL APPLICATION

To install the application at your university, the first step is the copy the whole MUTW-folder included on the dvd to your webserver. This folder contains all the functionality needed to run the application.

3. INSTALL DATABASE

On the dvd, in the folder database, you will find an mysql-dump called erasmusline.sql which can be easily imported on your local database server.

4. ADAPT CONFIG.PHP

4.1 Summary

In order for the web application to work flawlessly together with your database, you may have to adapt a few settings in the config.php file. This file can be found in the folder mutw/core/includes.

4.2 Database name

Standard this name is set to "ErasmusLine" but if you are using a different name for the database just set the right name here.

4.3 Database user

With the variables DB_USER en DB_PASS you can chance the username and password for the database.

4.4 Name of the University

For this parameter it is necessary to fill in the correct name of your university as it is written in the database!

4.5 Mail-Information

Since some information for the application is sent by mail, you will have to adapt some settings to work at your university. The SMTP-server is the most important parameter to change!

5. ADD PARTNERS

5.1 Start Database

In the database included on the dvd are all the partners which are for the moment a part of ErasmusLine included. Also all the educations and courses of these institutes are included.

5.2 New Partners

If a new partner starts using ErasmusLine, for the moment each institute will have to add this new partner to its own database. Also each education and course of this new partner will have to be added to the database by the administrator. We are still looking for a way to make this update go automatically.

6. CHANCE RIGHTS

For the application to be able to save some important pdf's and pictures of the users, you have to ensure that the application has the right to create subfolders and save files in the FILES-folder!

Appendix 4: EIS Installation and User Manual

The document in the next page is the available documentation of the Erasmusline EIS Installation and User Manual, written by the **P8-STATS** team.



ErasmusLine **The Orange Team**

EIS Installation and User Manual

P8-STATS Package Team
June 2011

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Introduction

This manual contains basic instructions on how the Systems Administrator can install the Erasmusline P8-STATS package application on a Linux system and to setup the Executive Information System.

This manual will also demonstrate how a regular user can consult the Executive Information System by using it's online User Interface.

Installation

The Erasmusline application may be distributed as an archive download or the System's Administrator can simply clone the SourceForge Git repository, as explained in the Erasmusline Project Report.

Here are the instructions to make an installation in a Linux system using the Git repository – for this example we will use the Ubuntu Linux distribution.

1. First it is necessary to have a basic LAMP stack installed – Linux, Apache, MySQL and PHP. Enter the following command in an opened terminal window:

```
sudo apt-get install lamp-server^
```

This command will install all the servers needed for the Erasmusline application to run.

2. If you don't have Git, curl or php related libraries installed in the system use the following command:

```
sudo apt-get install git curl php-pear php5-mcrypt phpunit
```

3. Next clone the SourceForge Git repository to your machine with this command:

```
git clone git://mutworange.git.sourceforge.net/gitroot/mutworange/mutworange
```

You will notice a newly created directory called **mutworange/**. This directory contains all the documentation and the Erasmusline application itself.

The example form now on will be executed from the user's home directory.

If there is a particular release version to use, you can issue the following commands:

```
cd $HOME/mutworange/  
git tag -l      # lists all tags  
git checkout release-1.0          # example release version
```

Before executing the automatic install script, the Administrator needs to setup the database user. This can be done by executing the following command:

```
cd $HOME/mutworange/erasmusline/scripts/  
mysql -uroot -p***** < create_user.sql # creates the default db user for the #  
application. Needs root user permissions.
```

After this step the Administrator can use the automated installation to create databases and run the ErasmusLine P8-STATS master and slave servers:

```
cd $HOME/mutworange/erasmusline/bin/  
../install.sh
```

Now the administrator need to run the application on the Apache Server. The Administrator create a symbolic link to the default Apache Server *www documents* directory:

```
cd /var/www  
sudo ln -s $HOME/mutworange/erasmusline/WEBSITE/ erasmusline
```

The ErasmusLine application can now be accessed through the url:

```
http://localhost/erasmusline
```

After logging in as Administrator you can access the EIS through the interface or directly through this url:

```
http://localhost/erasmusline/index.php?module=stats
```

Setting up communication with the Master Server

If the machine's installation is not meant for the Master server, the administrator will need to remove the master daemon installation and configure the slave server to communicate with a remote master server.

1. Let's start by removing the master server in the machine by typing these commands in the terminal window:

```
rm -rf $HOME/mutworange/erasmusline/stats/daemons/statsd_master
```

2. To configure the slave daemon to communicate with the remote master, the Administrator needs to edit the slave configuration file:

```
cd $HOME/mutworange/erasmusline/stats/daemons/statsd_slave  
cp config.json config.inc.json      # do not alter the main config file for backup  
                                      # purposes  
vim config.inc.json                # use vim, nano or emacs to edit the file
```

The relevant part of the configuration file will look like the following:

```
"master_serverconfig" : {  
    "sockType" : "unix",  
    "sockFile" : "/tmp/erasmusline/statsd_master/statsd_master.sock",  
    "serverIP" : "0.0.0.0",  
    "serverPort" : "8118"  
},
```

Alter the socket type and server ip to look like the following example:

```
"master_serverconfig" : {  
    "sockType" : "tcp",  
    "serverIP" : "95.136.101.157",  
    "serverPort" : "8118"  
},
```

Save the file and restart the slave daemon:

```
cd $HOME/mutworange/erasmusline/bin
```

```
./restart_stats_daemons
```

If the server address is correct, the local EIS installation will communicate with the proper Master Server.

Daemons Monitoring

Application Logs

The Master and Slave server logs are organized in the /tmp directory can be changed to another directory by editing each daemon's configuration files (see previous example).

To consult the logs, the Administrator can use the following commands in the terminal window:

```
tail -f /tmp/erasmusline/statsd_master/statsd_master.log  
tail -f /tmp/erasmusline/statsd_slave/statsd_slave.log
```

To alter the verbosity of the logs, the Administrator can edit each daemon's configuration file and for example, reduce the log verbosity level:

```
"daemonconfig" : {  
    "appName" : "statsd_slave",  
    "logVerbosity" : 7  
},
```

Crash control

To assure the daemons are constantly running, the Administrator can install and configure a *process supervision tool* like Monit¹:

```
sudo apt-get install monit  
sudo vim /etc/monit/monitrc
```

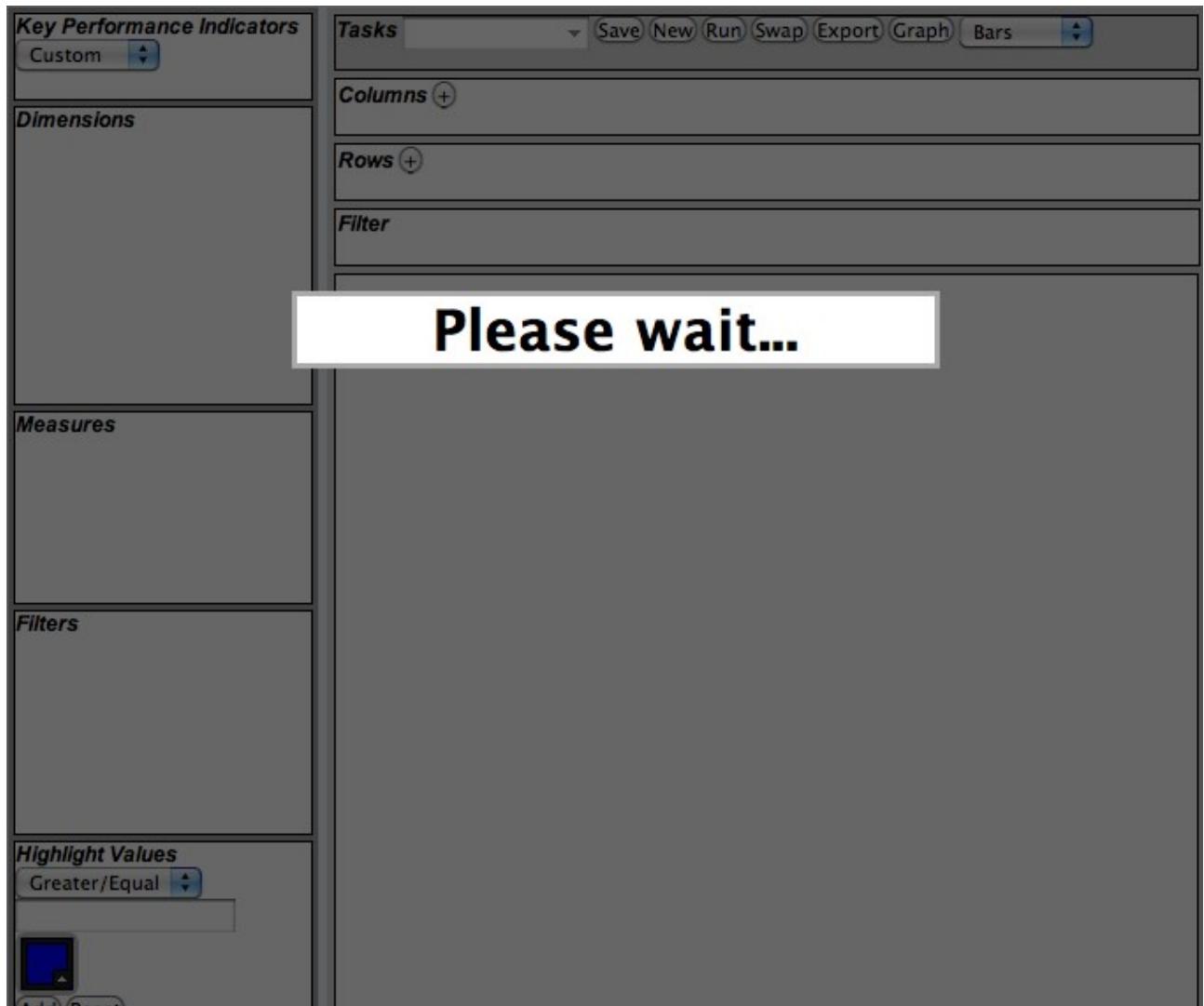
¹ <http://mmonit.com/monit/>

User Manual

After the installing and setting up the Erasmusline application, the users need to login by registering a new user or logging in as an Administrator for example. After logging in, select the EIS tab in the Erasmusline Interface.



The EIS interface will start by loading the application's libraries, taking a few seconds to be ready.



When the loading is completed, the users have access to the EIS interface and can begin creating new analysis scenarios right away.

The screenshot displays the EIS interface with the following configuration:

- Key Performance Indicators:** Efficacy
- Dimensions:**
 - Gender
 - Lodging
 - Mobility
 - Academic Date
 - Institution
 - All
 - Country
 - Institution
 - Host Institution:** All
 - Host Country
- Measures:**
 - Applications
 - Applications (Homologous)
 - Applications (Relative)
 - Avg. Applications
 - Max. Applications
 - Min. Applications
 - Avg. ECTS
- Filters:**
 - Host Institution:** Equals Kiel Uni., Gent Uni., ISEP Uni., Glasgow Uni.
- Highlight Values:** Greater/Equal

Tasks: query1

Columns: Residence Type, Institution

Rows: Gender, Host Institution

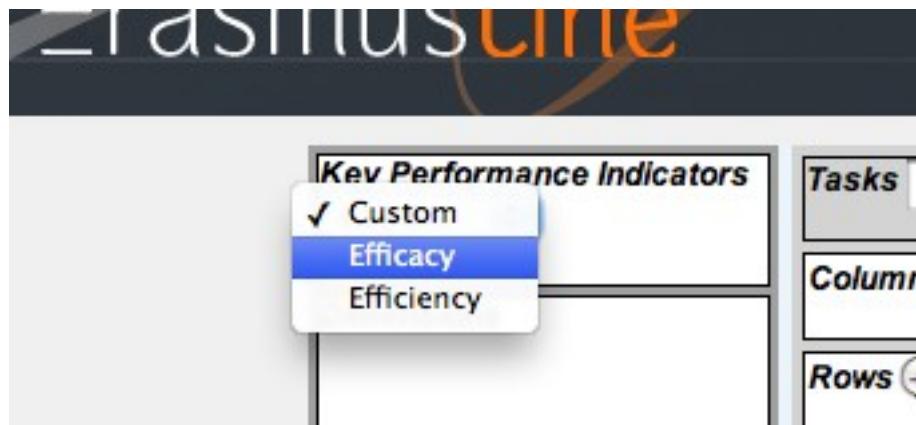
Filter: Host Institution, Institution

Gender	Host Institution	campus fkl Applications	house fkl Applications
M	Isep	655	601
F	Isep	372	478

The EIS interface in action

The Sidebar

The sidebar on the left of the screen enables the users to select which **Key Performance Indicators** to measure and analyze. To begin, select the KPI to load the available Dimensions and Measures.



A screenshot of the sidebar showing three main sections: "Key Performance Indicators", "Dimensions", and "Measures".
The "Key Performance Indicators" section contains a dropdown menu with "Efficacy" selected.
The "Dimensions" section lists: Gender, Lodging, Mobility, All, Mobility Type, Academic Date, Institution, Host Institution, and Study.
The "Measures" section lists: Applications, Applications (Homologous), Applications (Relative), Avg. Applications, Max. Applications, Min. Applications, and Avg. FCTS.

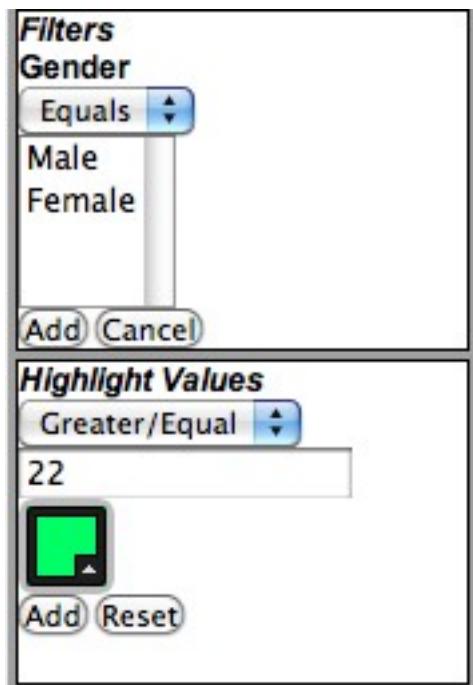
Sidebar displaying KPI's, Dimensions and Measures

To generate an output Pivot Table², the users must select the **Dimensions** and **Measures** they wish to add to the **Columns** and **Rows** in the middle Toolbar. If a Measure is not selected, the default is always the first item in the Measure list.

The screenshot shows the middle toolbar with two sections: 'Columns' and 'Rows'. Under 'Columns', 'Residence Type' is selected. Under 'Rows', 'Gender' is selected. Below the toolbar is a 'Filter' sidebar. The 'Gender' button in the sidebar is highlighted with a mouse cursor. A tooltip above the sidebar says 'Remove filter Gender -> Equals([Male])'. The filter sidebar contains a dropdown menu for 'Gender' set to 'Equals', with options 'Male' and 'Female'. Below the dropdown are 'Add' and 'Cancel' buttons. The second section of the sidebar is titled 'Highlight Values' with a dropdown set to 'Greater/Equal' and the value '22'. Below this is a color swatch set to green, and 'Add' and 'Reset' buttons.

The middle Toolbar, displaying Columns and Rows with the selected attributes

If the **Dimensions** have an available filter option, press the 'F' button to display the filter options in the left sidebar:



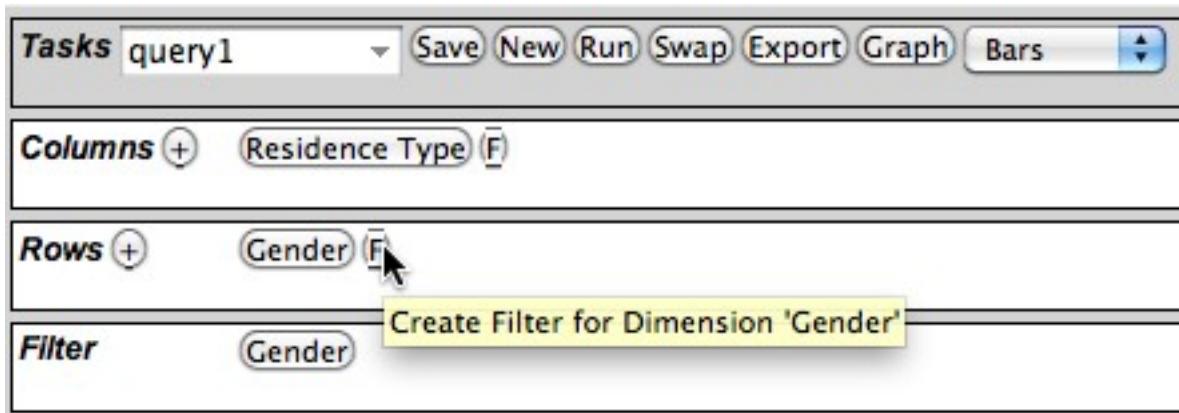
The filter options for the Gender Dimension

Another option in the sidebar is the possibility to **highlight values** from the result Pivot Table. The users select the numeric values, the color and the condition in which to paint

² http://en.wikipedia.org/wiki/Pivot_tables

the table cells' background. This allows the users a better comprehension of large Pivot Tables.

The Toolbar



The middle Toolbar running a previously saved Scenario called 'query1'

The toolbar consists of four functional elements: the Tasks bar, the Columns bar, the Rows and Filter bar.

In the previous example, the users select Dimensions and Measures and distributes them between Columns and Rows. Pressing the '**Run**' button in the Tasks bar generates a Pivot Table bellow the main Toolbar. The user can swap Column elements by Rows using the '**Swap**' button, a new table is then generated.

The user can alter the table's Columns and Rows by pressing the selected Dimension and Row buttons, thus removing them from the toolbars – “Drill-down and Roll-up” operations - or create a new filter as previously shown in the previous section.

To load this Scenario next time the users' login, the users can enter a description on the select box in the Tasks bar and press the '**Save**' button. The scenario will be available to be loaded – the Columns, the Rows, the Filters and the Highlighted values – by choosing it from the select box.

Gender	Host Institution	campus fkl Applications	house fkl Applications
M	isep	655	601
F	isep	372	478

Pivot Table with Highlighted values superior to 500

Other Outputs

In the Tasks bar, the users can press the '**Export**' button to generate a downloadable version of the pivot table in CSV³ file format. In this format the users can open these files in any modern spreadsheet application available in every Office software suite.

	A	B	C	D
1	Gender	Host Institution	campus fkl Applications	house fkl Applications
2	M	isep	655	601
3	F	isep	372	478

CSV file displayed in a spreadsheet tool

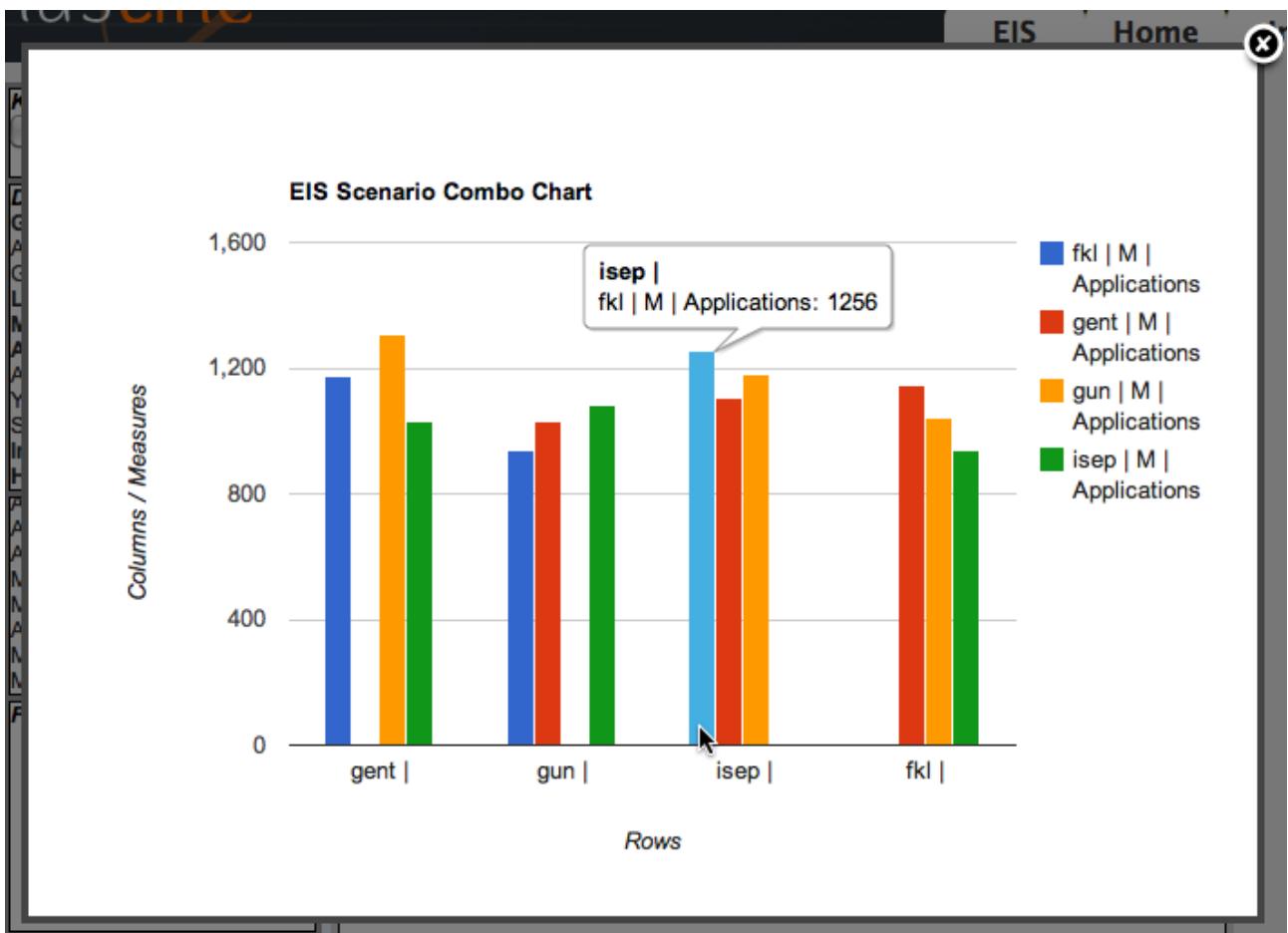
Charts

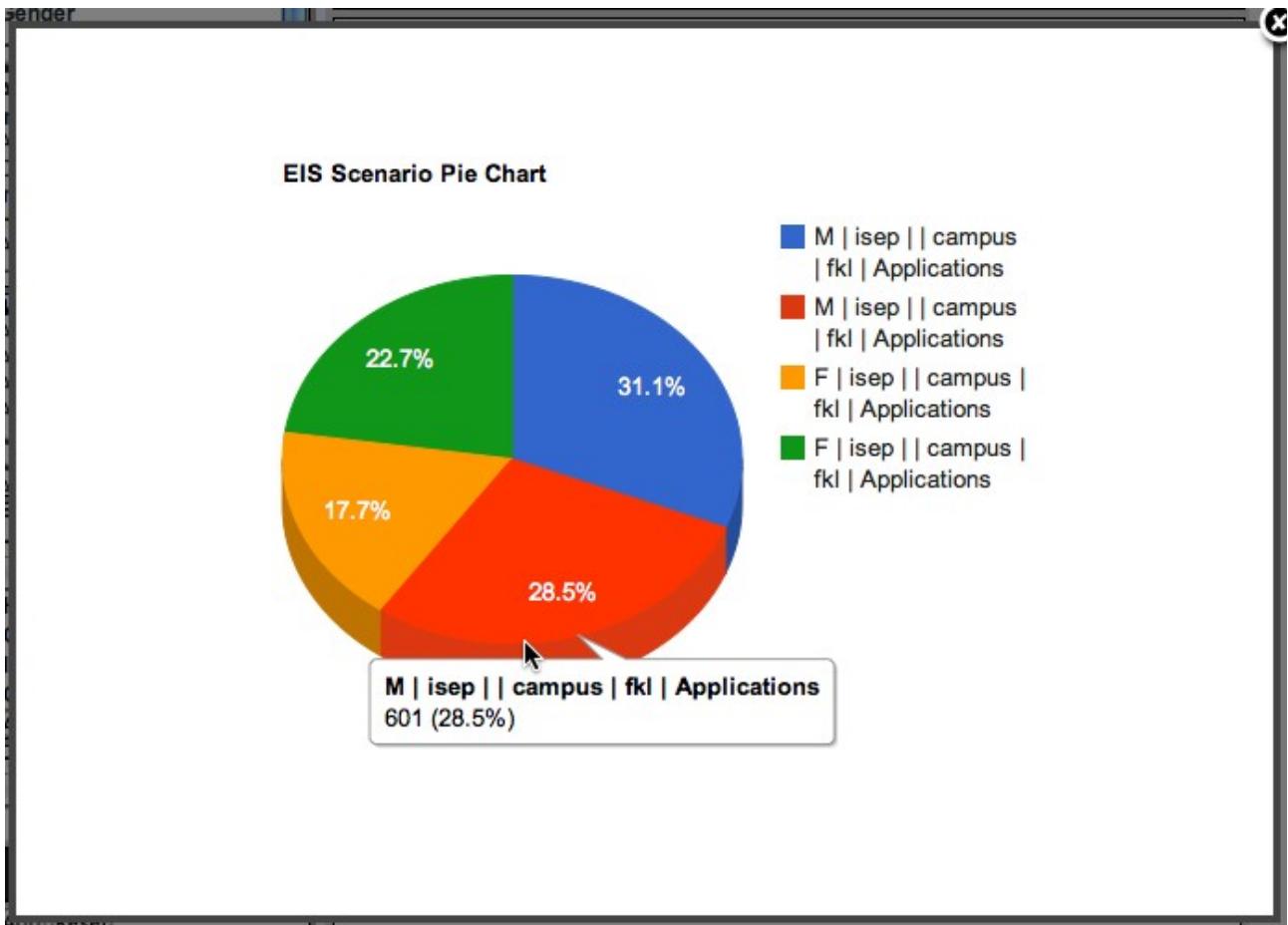
The Google Chart Tools API⁴ provides a series of tools to generate various types of Charts and Graphs suited for the EIS interface.

The EIS interface can generate **Bars**, **Lines** and **Pie Charts** based on the loaded scenario settings and can extend to other types of Chart using the Chart Tools API. Users can choose the preferred graph from the select box on the Tasks bar and press the '**Graph**' button to display a screen with the generated.

3 http://en.wikipedia.org/wiki/Comma-separated_values

4 <http://code.google.com/apis/chart/>

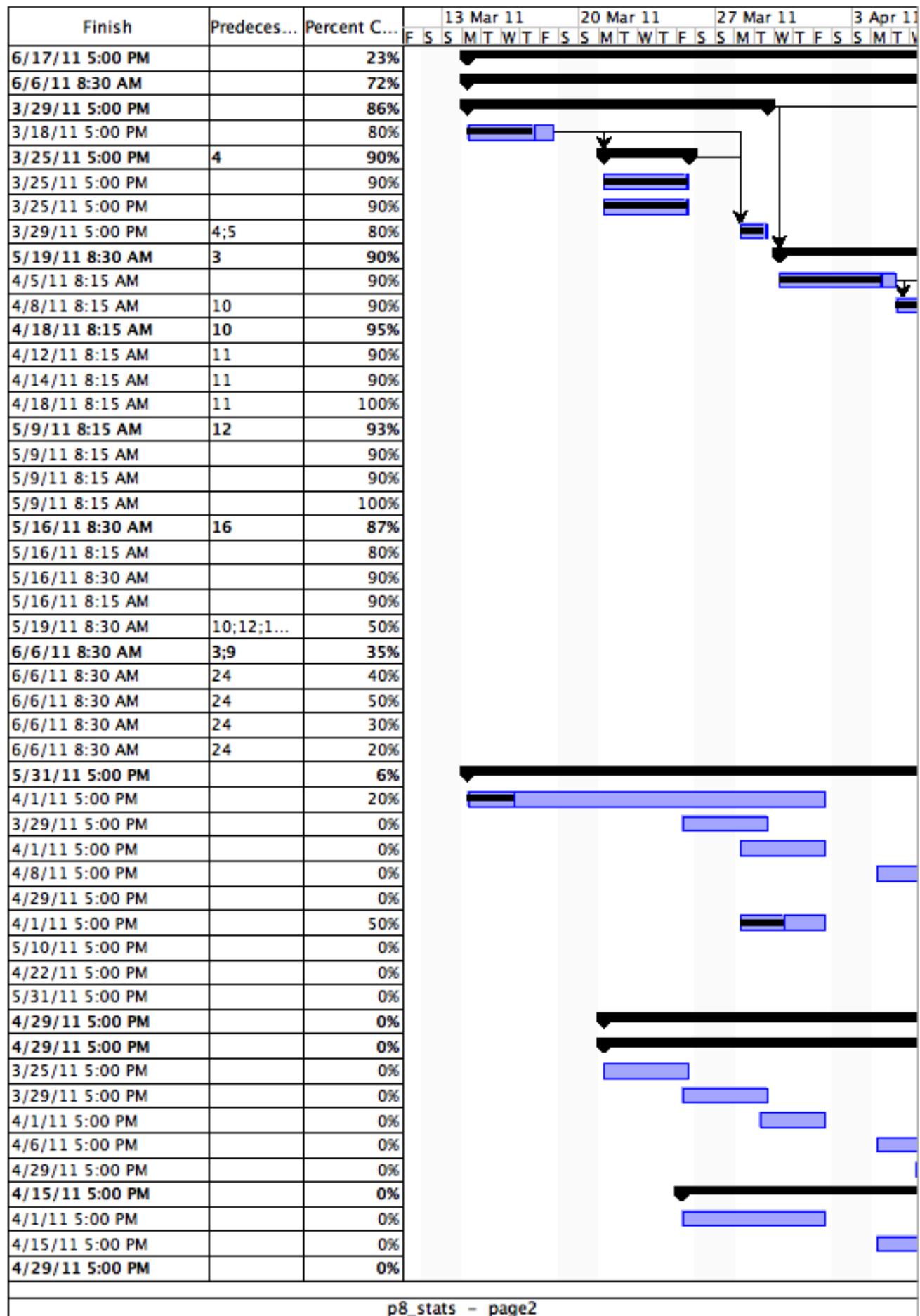




Appendix 5: Gantt Chart

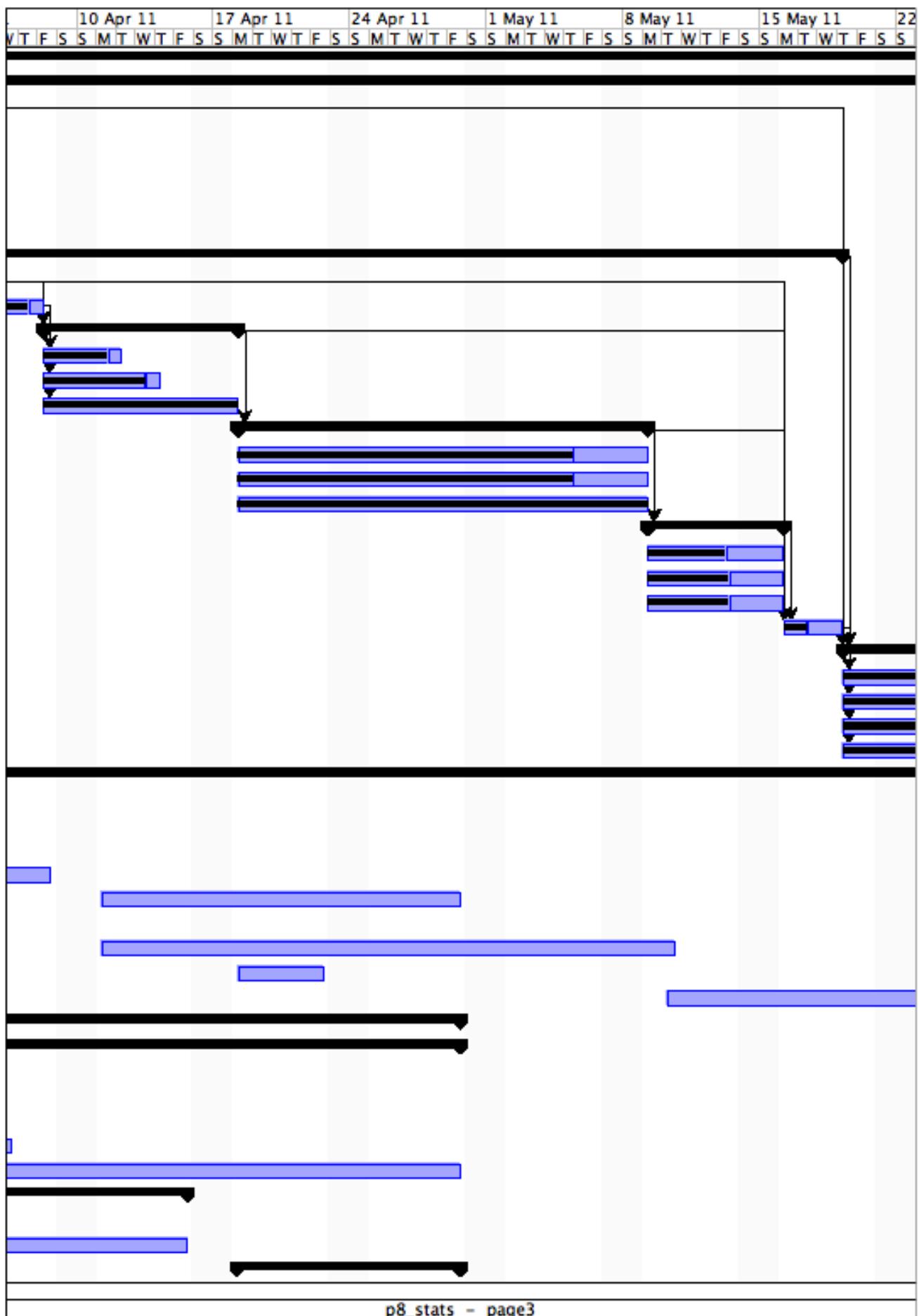
		Name	Duration	Start
1		ErasmusLine	70 days?	3/14/11 8:00 AM
2		EP8-STATS	60.062 d...	3/14/11 8:00 AM
3	█	Analysis and Requirements gathering	12 days	3/14/11 8:00 AM
4		Business Rules	5 days	3/14/11 8:00 AM
5		Performance Indicators	5 days	3/21/11 8:00 AM
6		Measures	5 days	3/21/11 8:00 AM
7		Dimensions	5 days	3/21/11 8:00 AM
8		Report	2 days	3/28/11 8:00 AM
9		Data Warehouse	36.062 d...	3/30/11 8:00 AM
10		Database schema	4.031 days	3/30/11 8:00 AM
11		Define data source(s)	3 days	4/5/11 8:15 AM
12		Architecture	6 days	4/8/11 8:15 AM
13		DW refreshment	2 days	4/8/11 8:15 AM
14		ODS	4 days	4/8/11 8:15 AM
15	✓	Indexing Solutions	6 days	4/8/11 8:15 AM
16		Implementation	15 days	4/18/11 8:15 AM
17		DW refreshment	15 days	4/18/11 8:15 AM
18		ODS	15 days	4/18/11 8:15 AM
19	✓	Indexing	15 days	4/18/11 8:15 AM
20		Deployment	5.031 days	5/9/11 8:15 AM
21		DW refreshment	5 days	5/9/11 8:15 AM
22		ODS	5.031 days	5/9/11 8:15 AM
23		Data Marts	5 days	5/9/11 8:15 AM
24		Report	3 days	5/16/11 8:30 AM
25		EIS	12 days	5/19/11 8:30 AM
26		Architecture	12 days	5/19/11 8:30 AM
27		Implementation	12 days	5/19/11 8:30 AM
28		Deployment	12 days	5/19/11 8:30 AM
29		Report	12 days	5/19/11 8:30 AM
30		EP4-OUT	57 days?	3/14/11 8:00 AM
31		Collect Different forms	15 days?	3/14/11 8:00 AM
32	█	Setting up chart with the form flow	3 days?	3/25/11 8:00 AM
33	█	Agree with P-IN on layout forms	5 days?	3/28/11 7:00 AM
34	█	Determ which forms can be common	5 days?	4/4/11 7:00 AM
35	█	Implement non/common forms	15 days	4/11/11 7:00 AM
36	█	Creating ECTS forms	5 days?	3/28/11 8:00 AM
37	█	Implement flow of forms	22 days?	4/11/11 7:00 AM
38	█	Integrate information exchange module	5 days?	4/18/11 7:00 AM
39	█	Intensive testing of flow	16 days?	5/10/11 7:00 AM
40		EP1-Config	30 days?	3/21/11 8:00 AM
41		Database	30 days?	3/21/11 8:00 AM
42	█	Design	5 days?	3/21/11 8:00 AM
43	█	SQL-Script	3 days?	3/25/11 8:00 AM
44	█	Corrections	4 days?	3/29/11 7:00 AM
45	█	Final_Database	3 days?	4/4/11 7:00 AM
46	█	Installation-Script	18 days?	4/6/11 7:00 AM
47		Design	16 days?	3/25/11 8:00 AM
48	█	3_Templates	6 days?	3/25/11 8:00 AM
49	█	including_into_plonk	10 days?	4/4/11 7:00 AM
50		User_Account	10 days?	4/18/11 7:00 AM

APPENDIX . APPENDIX 5: GANTT CHART

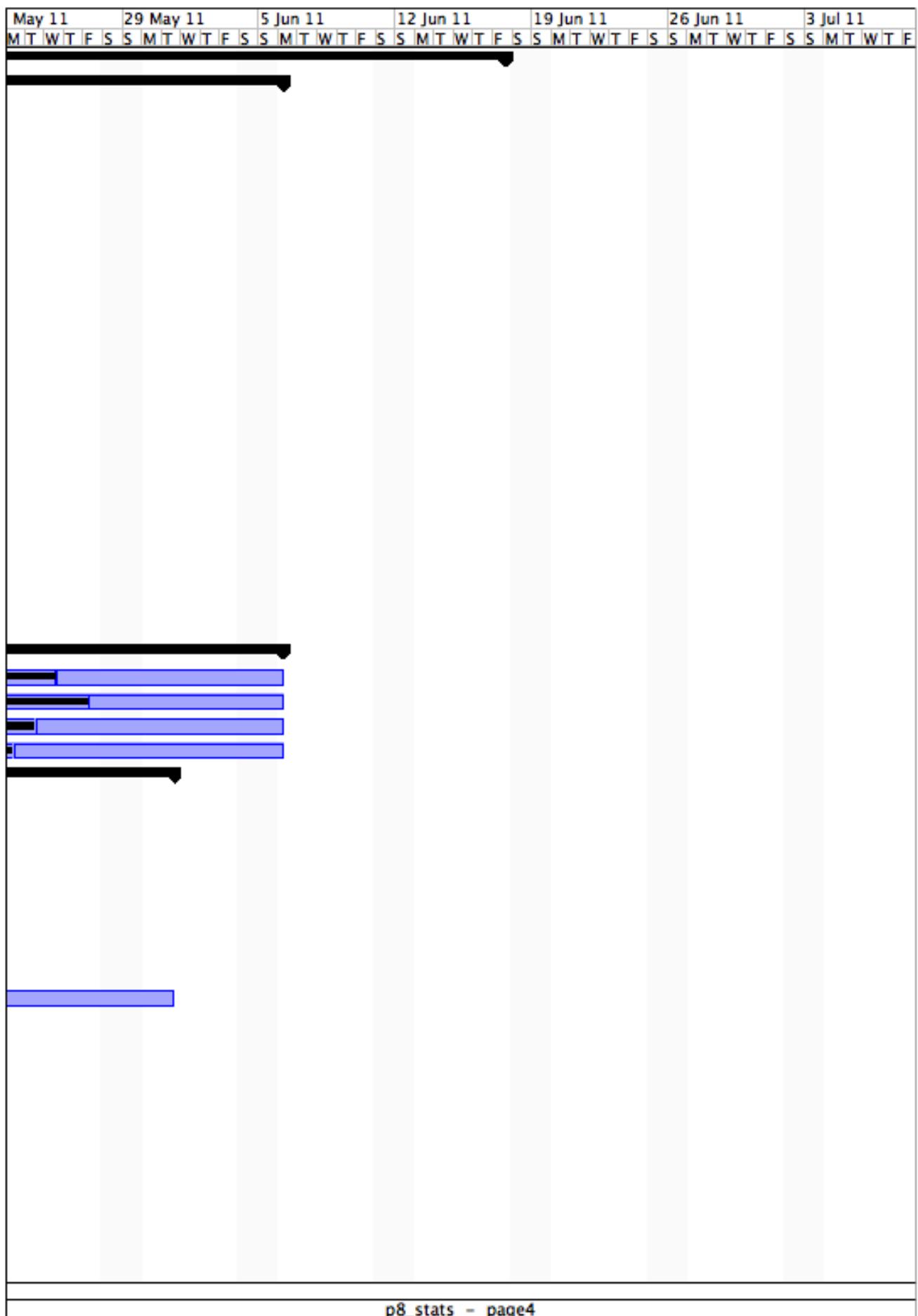


p8_stats - page2

APPENDIX . APPENDIX 5: GANTT CHART



APPENDIX . APPENDIX 5: GANTT CHART



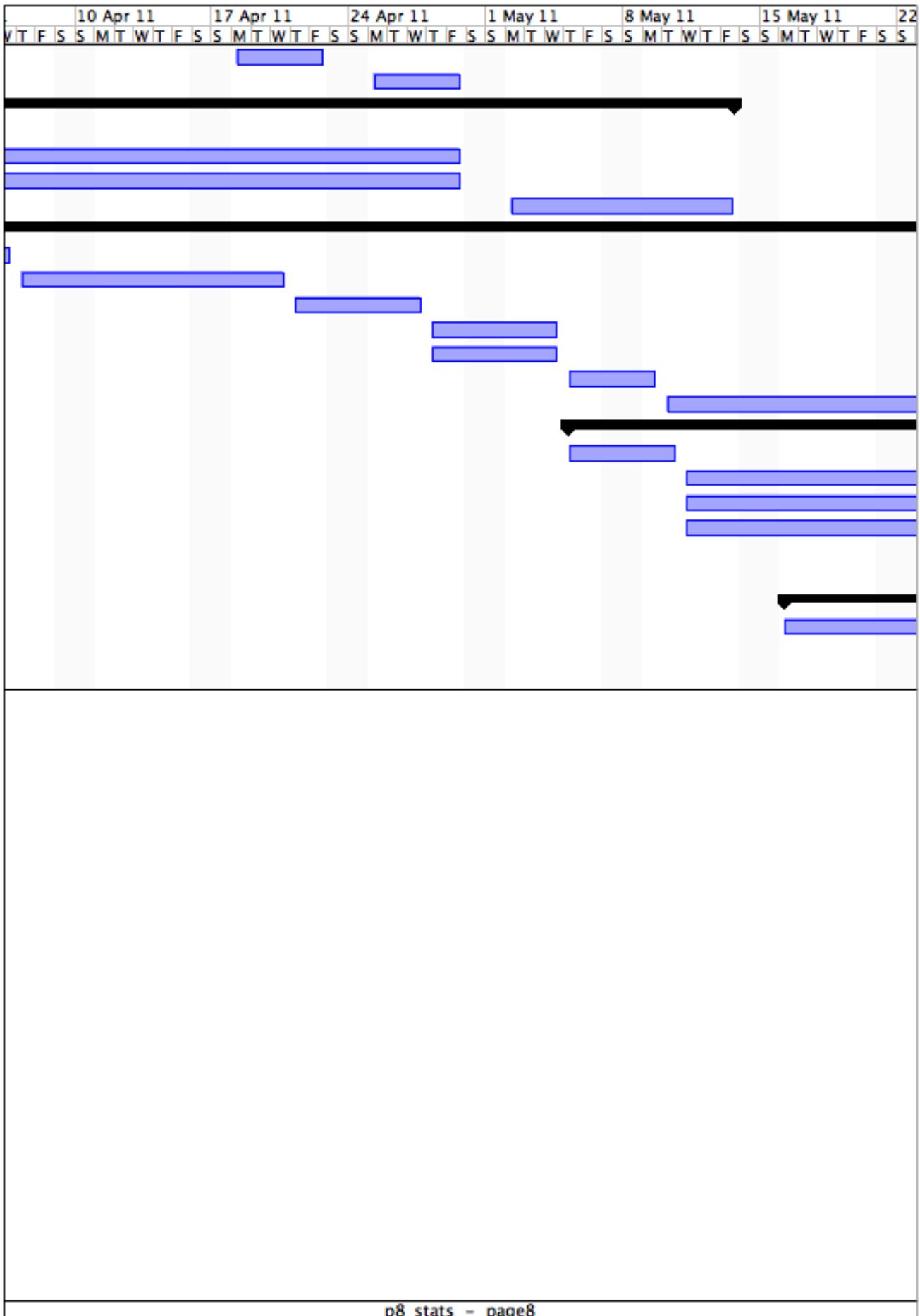
APPENDIX . APPENDIX 5: GANTT CHART

		Name	Duration	Start
51		Login_Functionality	5 days?	4/18/11 7:00 AM
52		Account-Page	5 days?	4/25/11 7:00 AM
53		P2-INFOX	35 days?	3/28/11 7:00 AM
54		Discussion_about_Protocol	5 days?	3/28/11 7:00 AM
55		Programming_outgoing_Data	20 days?	4/4/11 7:00 AM
56		Programming_incoming_Data	20 days?	4/4/11 7:00 AM
57		Installing_security_system	10 days?	5/2/11 7:00 AM
58		P3-Alerts	45 days?	3/22/11 8:00 AM
59		Research	12 days?	3/22/11 8:00 AM
60		Making the daemon	10 days?	4/7/11 7:00 AM
61		Synchronization with the others part of the p...	5 days?	4/21/11 7:00 AM
62		Email sending system	5 days?	4/28/11 7:00 AM
63		Pop-ups	5 days?	4/28/11 7:00 AM
64		GUI	3 days?	5/5/11 7:00 AM
65		Testing	10 days?	5/10/11 7:00 AM
66		P6-Exams	27 days?	5/5/11 7:00 AM
67		Research	4 days?	5/5/11 7:00 AM
68		Making the student module	10 days?	5/11/11 7:00 AM
69		Making the home coordinator module	10 days?	5/11/11 7:00 AM
70		Making the host coordinator module	10 days?	5/11/11 7:00 AM
71		Synchronization with the others part of the p...	5 days?	5/25/11 7:00 AM
72		Testing	8 days?	6/1/11 7:00 AM
73		Project	25 days?	5/16/11 8:00 AM
74		Integration	12 days?	5/16/11 8:00 AM
75		Final Report	13 days?	6/1/11 8:00 AM
76		Presentation	8 days?	6/8/11 8:00 AM
p8_stats - page6				

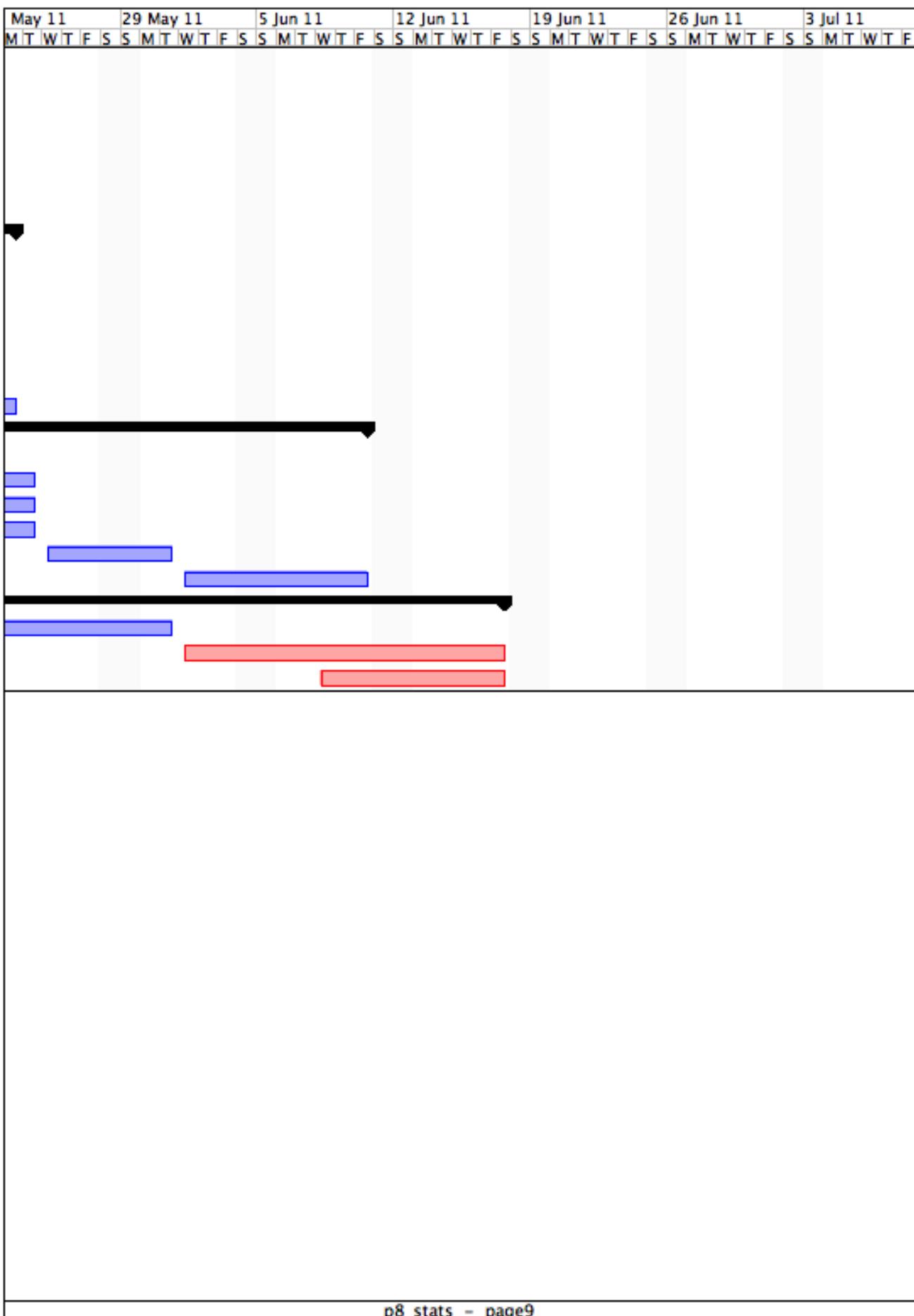
APPENDIX . APPENDIX 5: GANTT CHART

Finish	Predeces...	Percent C...	13 Mar 11	20 Mar 11	27 Mar 11	3 Apr 11
			F S S	M T W T F	S S M T W T F	S S M T W T F S S M T W T F S S M T W T F
4/22/11 5:00 PM		0%				
4/29/11 5:00 PM		0%				
5/13/11 5:00 PM		0%				
4/1/11 5:00 PM		0%				
4/29/11 5:00 PM		0%				
4/29/11 5:00 PM		0%				
5/13/11 5:00 PM		0%				
5/23/11 5:00 PM		0%				
4/6/11 5:00 PM		0%				
4/20/11 5:00 PM		0%				
4/27/11 5:00 PM		0%				
5/4/11 5:00 PM		0%				
5/4/11 5:00 PM		0%				
5/9/11 5:00 PM		0%				
5/23/11 5:00 PM		0%				
6/10/11 5:00 PM		0%				
5/10/11 5:00 PM		0%				
5/24/11 5:00 PM		0%				
5/24/11 5:00 PM		0%				
5/31/11 5:00 PM		0%				
6/10/11 5:00 PM		0%				
6/17/11 5:00 PM		0%				
5/31/11 5:00 PM		0%				
6/17/11 5:00 PM		0%				
6/17/11 5:00 PM		0%				

APPENDIX . APPENDIX 5: GANTT CHART



APPENDIX . APPENDIX 5: GANTT CHART



Appendix 6: Course Matching

The document in the next page is the available documentation about the course matching mechanism developed by the **P7-MATCH** team.

Statistical model - Course matching

Guðmundur F Hallgrímsson

24. maí 2011

The module has two main interfaces. The first is for matching existing courses to target institutions, in which case the python script receives the corresponding course and institution ids. The other interface accepts an implicitly specified course to be matched to a target institution. In this case the script receives a description of the original course, as well as its name and ects workload. The python script then connects to MySQL and digs up all the relevant information (ids, descriptions, ects credits) both for the course to be matched (if it is passed an id) and for a list of all courses in the target institution. Currently there are two factors governing the similarities between courses: difference in ECTS and text similarities. The program uses the text similarity as a base and penalises that score if the ECTS workloads are different. This is done according to a globally defined constant, `ectsPenalty`.

Everything text-related here is evaluated using the Python NLTK. The Python NLTK is an open source toolkit for python that has extensive capabilities for natural language processing. In this project it is mainly used for processing a block of text into tokens, where each token stands for a single word in the text. The toolkit also has a built in method for calculating TF-IDF, which is used for estimating the text similarities. More info on this toolkit can be viewed on their website: <http://www.nltk.org>

The text similarity is calculated using TF-IDF (Text Frequency - Inverse Document Frequency). This means that the texts are compared using the relative frequency of the words in the original course, which is given more importance if it is more rare in the descriptions from the target institution. This number is calculated thus:

$$\text{tf}_{i,j} = \frac{n_{i,j}}{\sum_k n_{k,j}}$$

$$\text{idf}_i = \log \frac{|D|}{|\{j : t_i \in d_j\}|}$$

$$\text{tf-idf}_{i,j} = \text{tf}_{i,j} \times \text{idf}_i$$

Where we have $|D|$ = the number of texts in the corpus, $|\{j : t_i \in d_j\}|$ = the number of texts where the current word appears (t_i = text i in the corpus, $n_{i,j}$ = word j in t_i). We calculate the tf-idf for every word in the original description against each of the courses in the target institution. The similarity between the

texts is then calculated using a cosine-similarity, where each text is given an array of its tf-idf values. The similarity is then given as:

$$s_t = \frac{(\text{tf-idf})_i^T \cdot (\text{tf-idf})_o^T}{\|(\text{tf-idf})_i^T\| \|(\text{tf-idf})_o^T\|}.$$

The ECTS similarity is calculated using a simple formula:

$$s_e = |\text{ECTS}_t - \text{ECTS}_o|.$$

Finally, the total similarity is then calculated and the top 10 results are returned:

$$S = s_t - s_e \cdot \text{ectsPenalty}.$$

Appendix 7: The Erasmus Programme - A Statistical Overview

The document in the next page is the statistical report used to analyse the amount and scale of real world data and served as guideline in the development of the P8STATS package.



EUROPEAN COMMISSION
Directorate-General for Education and
Culture
Lifelong Learning Higher Education and
International Affairs
Higher education; "Erasmus"



Lifelong Learning Programme

Lifelong Learning Programme

THE ERASMUS PROGRAMME

2008/2009

A Statistical Overview



December 2010

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ACRONYMS USED IN THIS REPORT

Terminology

ECTS – European Credit Transfer and Accumulation System
EILC – Erasmus Intensive Language Courses
EUR31 – the 31 participating countries in Erasmus
EUC – Erasmus University Charter
HEI – Higher education institution/s
LLP – Lifelong Learning Programme
LWUTL – Less widely used and taught languages
OM grant – Organisation of mobility grant
SMS – Student mobility for studies
SMP – Student mobility for placements
STA – Staff mobility for teaching assignment
STT – Staff mobility for staff training
IP – Intensive Programmes
PV – Preparatory Visits

Country acronyms

Iso Code	Country Name
AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
TR	Turkey

ERASMUS KEY FIGURES FOR THE ACADEMIC YEAR 2008/2009

198 523 Erasmus students of which

168 193 students studying abroad

30 330 students doing traineeships (placements) abroad

36 389 Erasmus staff mobilities of which

28 615 teaching assignments abroad

7 774 staff training periods abroad

2 747 Higher Education Institutions sent students and staff on Erasmus mobility

319 Erasmus Intensive Programmes for 10 061 students

326 Erasmus Intensive Language Courses for 5208 Erasmus students

Disclaimer

The source of the data used in this report are the statistical reports of the National Agencies of the 31 countries participating in the Erasmus programme and data provided by Education Audiovisual and Culture Executive Agency. The national agency reports contain the statistical results of the Erasmus decentralised activities in the academic year 2008/09. The European Commission cannot guarantee the correctness of the data despite its best efforts to ensure its accuracy.

More information on the Erasmus programme and extracts from this report and its annexes can be found at <http://ec.europa.eu/education/erasmus>

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Executive summary

This report provides a statistical overview of the implementation of the Erasmus programme in the 31 participating European countries in the academic year 2008/09. Erasmus is a sub-programme of EU's Lifelong Learning Programme. The report analyses the overall performance of all the different types of actions within the Erasmus programme (student and staff mobility, Intensive Programmes, Erasmus Intensive Language Courses, and Erasmus centralised actions) in the academic year 2008/09 and compares this year's results with the results in the previous years. Furthermore, the report provides an overview of the total budget allocation and actual spending in the same academic year.

Erasmus student mobility (for studies and placements) in 2008/09

- Ø The total number of Erasmus student mobility for studies and placements combined in the 2008/09 academic year was 198 523, an annual increase of 8.7%.
- Ø France sent the highest number of students on Erasmus student mobility, or 28 283 (14.2% share), followed by Germany with 27 894 students (14.1%) and then Spain with 27 405 students (13.8%). All the participating countries, except Iceland and Liechtenstein, experienced growth in outgoing student mobility and the annual growth rate was highest in Malta (29.1%), followed by Bulgaria and Latvia.
- Ø Spain (33 172), followed by France (24 614), and then Germany (21 932) received the highest numbers of Erasmus students.
- Ø There was a rise in the number of incoming students in all of the 31 participating countries.
- Ø The imbalance between incoming and outgoing students is significant in many countries. The levels of incoming and outgoing students are most balanced in Austria, Liechtenstein and Greece.
- Ø About 0.91 % of the total higher education student population in the 31 participating countries in the 2008/09 academic year participated in an Erasmus student mobility. Taking into account the average study duration of approximately 4-5 years, it can be estimated that around 4 % of all European students participate in the Erasmus programme at some stage during their studies.
- Ø The countries sending the highest number of students on Erasmus mobility as a share of their student population were Luxembourg and Liechtenstein followed by Austria, Malta and Spain.
- Ø The average duration of Erasmus student mobility was 6.1 months.
- Ø The average monthly EU grant increased substantially, to 272€ per month, both types of student mobility taken together, from 255€ in the previous year.
- Ø 213 students with special needs (severe disability) participated in the Erasmus programme, which is about 0.11% of all Erasmus students.
- Ø The total number of Erasmus zero-grant student mobilities was 4502 in 2008/09. Zero-grant students constituted a 2.3% of the total number of Erasmus student mobilities.
- Ø 60.74% of Erasmus students in the 2008/09 academic year were women.

Erasmus student mobility for studies in 2008/09

- Ø The total number of Erasmus students studying abroad was 168 193, an annual increase of 3.4% compared to 3.2 % in the previous year.
- Ø Most outgoing study mobilities originated from Spain, or 24 399 (14.51% share), followed by France with 23 560 mobilities (14.01%), and then Germany with 23 407 (13.92%).
- Ø A decline in outgoing study mobility was recorded in eight countries: Austria, Denmark, Cyprus, Estonia, Iceland, Ireland, Liechtenstein and the United Kingdom. The number of students going abroad for studies stagnated in Germany and Poland.
- Ø The highest annual growth rate was in Malta, or 29.1%, followed by a 24.6% increase in Bulgaria and a 23.2% increase in Latvia. The annual growth rate in the 12 Member States which joined the EU in 2004 and 2007 respectively was 9.1%.
- Ø Spain was the most popular destination for Erasmus student mobility for studies with 28 175 incoming students (16.8%), followed by France with 20 955 students and Germany with 17 722.
- Ø The number of incoming students grew in most of the 31 participating countries except in Belgium, Germany, Greece, France, Ireland, Latvia, the UK and Iceland.
- Ø Many countries experienced a significant imbalance between incoming and outgoing students, particularly Turkey and Romania. Austria, Estonia and Belgium, however, had the best balance between incoming and outgoing students.
- Ø "Social sciences, business and law" were the most popular subject areas followed by "humanities and arts" and the "engineering, manufacturing and construction." "science, mathematics and computing", "medical sciences", "education/teacher training" and "services" were underrepresented subject areas relative to their share of the European student population.
- Ø The average duration of an Erasmus study period was 6.4 months.
- Ø Average duration of students ranged from 5.4 months for Bulgarian students to 7.1 months for Italian students.
- Ø Efforts to increase the average EU grant have taken the European average monthly study grant to 253€ an increase of 4.5% between years.
- Ø 60.6% of Erasmus student mobility for studies were undertaken by women
- Ø 203 students with special needs participated in Erasmus student mobility for studies, a year-on-year increase of 26.1%.
- Ø Students without an EU grant ('zero-grant' students) accounted for 2.46% of all Erasmus student mobility for studies.
- Ø A total of 780 students did an integrated placement period during their Erasmus study mobility. This represents about 0.46% of all Erasmus students studying abroad (down from 0.7% in the previous year).

Erasmus student mobility for placements in 2008/09

- Ø 30 330 students went on an Erasmus student placement mobility in the 2008/09 academic year, a year-on-year increase of 51.6%.
- Ø France sent the highest number of students on Erasmus placements (4723) followed by Germany (4487) and the UK (3397).
- Ø As for study mobility, Spain was the most popular destination for Erasmus placements, receiving a total of 4997 students in 2008/09, followed by the UK (4785), and Germany (4210).
- Ø A considerable imbalance between incoming and outgoing placement students remains in most countries but the best balance was achieved in Austria, Germany and Portugal.
- Ø 21 670 enterprises received Erasmus placement students in 2008/09. Around 45.1% of the enterprises were small, 36.4 % medium-sized and 18.5% were large.
- Ø The “Education” sector was the most popular sector for Erasmus student trainees, followed by the “Professional, scientific and technical” sector.
- Ø The average duration of an Erasmus placement in 2008/09 was 4.4 months but students from Liechtenstein stayed abroad the longest (7 months) and Turkish students the shortest (2.9 months).
- Ø A total of 2454 placements, or 8.1% of the total Erasmus placements in 2008/09, were shorter than three months.
- Ø Students received on average a monthly EU grant of 433€ in 2008/09, up from 409€ in the academic year 2007/08. The average monthly EU grant for placements ranged from 245€ for students from Austria and the Netherlands to 1215€ for students coming from Cyprus.
- Ø 61.4% of those who participated in an Erasmus placement mobility in 2008/09 were women.
- Ø Ten disabled students participated in Erasmus placements in 2008/09. This constitutes a 0.03% of all Erasmus placements.
- Ø Zero-grant Erasmus placements were 329 in 2008/09, or 1.08% of all placements in this academic year.
- Ø A total of 75 Erasmus placement consortia organised student placements in the academic year 2008/09. Placement consortia were organised in 14 out of the 31 participating countries.
- Ø Spain had the highest number of placement consortia in 2008/09, or 23, followed by Germany with 14, and then France with 12. French consortia managed on average the highest number of placements per consortium or 139.
- Ø Spanish consortia consisted of the highest number of active higher education institutions/organisations participating in each consortium, or 9.9 on average per consortium.

Erasmus staff mobility (teaching assignments and staff training) in 2008/09

- Ø Erasmus supported a total of 36 389 mobility periods for teaching and non-teaching staff from higher education institutions, and staff from enterprises in 2008/09. This represents an annual increase of 13.57% from the previous year.
- Ø Of the total number of staff mobilities supported, 78.6% were teaching assignments.
- Ø The countries with the highest number of outgoing staff mobilities were Poland with 4341 (11.9% share), followed by Spain with 3682, and then Germany with 3117 (8.6%).
- Ø The most popular destinations for Erasmus staff mobility were Germany with 3781 mobilities, followed by Spain with 3445 and Italy with 3222.
- Ø Out of 36 389 mobility periods, 8 staff with special needs participated in Erasmus staff exchanges.
- Ø The average EU grant for staff mobility was 699.5€ in the academic year 2008/09.
- Ø The average duration of staff mobility periods was 6 days in 2008/09.

Erasmus staff mobility for teaching assignments in 2008/09

- Ø A total of 28 615 Erasmus staff mobility for teaching assignments took place in 2008/09, a year-on-year increase of 5.37%.
- Ø 285 out of the 28 615 staff mobilities for teaching assignments were undertaken by staff from enterprises invited by a higher education institution abroad to teach there.
- Ø The highest number of outgoing teaching assignments was recorded in Poland with 3079 mobilities (10.8% share) then Spain with 2925 (10.2%), followed by Germany with 2696 (8.5%).
- Ø The most popular destination country for teaching assignments in 2008/09 was Germany with 2913 mobilities, followed by Italy with 2681 and then Spain with 2597.
- Ø Eight countries, Austria, Belgium, Denmark, Greece, Finland, Ireland, Latvia, Norway and Turkey experienced a decrease in the number outgoing teaching assignments.
- Ø The annual increase in outgoing teaching assignments was highest in Iceland, followed by Poland and Slovenia.
- Ø The most popular destination for teaching assignments was Germany (2913), followed by Italy (2681) and then Spain (2597).
- Ø Slovakia experienced the highest relative increase in incoming teacher mobility between years (35%), followed by Sweden and Turkey. Seven countries experienced a decrease in the number of incoming teaching mobilities.
- Ø Teachers were most mobile in the following subject areas: “Humanities and Arts,” “Social sciences, Business and Law,” and “Engineering, Manufacturing and Construction.”
- Ø More men than women participated in Erasmus teaching assignments in 2008/09, or 60.2% versus 39.8% respectively.
- Ø On average teachers spent 5.6 days abroad on teaching assignments.
- Ø The average EU grant for teacher mobility was 648€ The average daily grant was 116€
- Ø Four disabled teachers undertook teaching assignments abroad.

Erasmus staff mobility for staff training in 2008/09

- Ø 7774 training periods abroad were undertaken by teaching and non-teaching staff of higher education institutions in the academic year 2008/09. This represents an increase of 59% from the previous year.
- Ø Staff training constituted 21.4% of Erasmus staff mobility in 2008/09 (up from 15.2% in 2007/08).
- Ø Teaching staff made up 36.3% of the staff participating in Erasmus staff training, followed by staff from general administration (22.8%) and staff in international offices (21.1%)
- Ø The highest numbers of outgoing mobilities for staff training were from Poland (1262), Spain (757) and Finland (656).
- Ø The most popular destination for staff exchanges was the UK with 896 incoming staff training mobilities, followed by Germany (868) and Spain (848).
- Ø Women were 68% of the participants in mobility for staff training and men 32%.
- Ø Erasmus staff mobility for training lasted on average 6.5 days, the same duration as in the previous year. Icelandic staff stayed on average the longest abroad (9.3 days) while Belgian staff stayed the shortest (4.4 days).
- Ø The average EU grant for staff training was 751€ up from 734€ in the previous year. The average daily grant was 116€

Erasmus Intensive Language Courses (EILCs) in 2008/09

- Ø 326 EILC courses were organised in 2008/09, up from 303 in the previous year.
- Ø 22 countries organised an EILC in 2008/09. Malta participated in the action but did not organise any courses this year. The vast majority of the courses were offered during the summer. Winter courses were organised in a majority of the participating countries.
- Ø A total of 5208 Erasmus students participated in EILC courses, a year-on-year increase of 6.4%. Since 1999, 28 680 Erasmus students have benefited from participation in EILC.
- Ø 5.6 % of Erasmus students going to the 22 countries organising EILC actions, attended an EILC. In four countries, Slovenia, Romania, Latvia and Iceland, this share of incoming Erasmus students participating in an EILC was higher than 10%.
- Ø As in previous years, Italian EILCs were the most popular among students (1345) followed by Belgium (Flemish community) (476) and then Portugal (413). The highest annual increase in the number of participants was in Slovenia, a 68.6% increase from the previous year.
- Ø The highest numbers of EILC participants came from Germany (991), followed by Poland and Spain.
- Ø Hungarian students were the most active participants in the EILC action in 2008/09. 34% of Hungarian students going abroad on mobility participated in an EILC while Irish students participated in an EILC course in only 0.6% of cases.
- Ø Students' performance is assessed, and certification and ECTS credits issued, in the majority of the countries organising an EILC.

Erasmus Intensive Programmes (IPs) in 2008/09

- Ø 319 Erasmus Intensive Programmes were organised in 2008/09, an increase of 24.1% between years (257 IPs were funded in 2007/08).
- Ø Intensive Programmes were organised in 26 countries. The highest number of courses were organised in France (37), followed by Germany (31) and then Austria (30).
- Ø A total of 13 560 students and teachers participated in Intensive Programmes in the academic year 2008/09 (up from 11 822 in 2007/08).
- Ø A total of 10 061 students (74.2% of the total) participated in Intensive Programmes and teachers were 3499 (or 25.8% of participants)
- Ø The highest number of Intensive Programmes was organised by higher education institutions in France (37), Germany (31) and Austria (30).
- Ø The most popular subject areas for Intensive Programmes were "social sciences, business and law" (78 courses): "science, mathematics and computing" (55) and "engineering, manufacturing and construction" (52).
- Ø The average duration of an Intensive Programme was 12.2 days.
- Ø On average the Intensive Programmes awarded 5.25 ECTS credits (down from 6 ECTS in 2007/08).
- Ø The average age of Intensive Programme students was higher than that of Erasmus mobility students, or 24.9 years.

Erasmus Preparatory Visits in 2008/09

- Ø 200 Erasmus preparatory visit grants were awarded in 2008/09, an 257% increase between years (56 last year).
- Ø Bulgaria sent the highest number of people on preparatory visits (39), followed by Germany (29) and the UK (19).
- Ø Most preparatory visits were organised to Bulgaria (39), followed by Slovenia (29) and the UK (18).
- Ø 23 countries out of the 31 participating countries used preparatory visit grants in the academic year 2008/09.
- Ø The average duration of a preparatory visits in 2008/09 was 3.8 days (down from 4.4 days in 2007/08).
- Ø The average EU grant per visit was 962€ or 253€ per day.

Erasmus Centralised Actions 2007 - 2009

- Ø Centralised actions contain multilateral projects in the field of curriculum development, modernisation of higher education, cooperation between higher education institutions and enterprises, virtual campuses, Erasmus networks (academic and structural networks), and accompanying measures.
- Ø The total amount of money granted to Erasmus centralised actions in the application years 2007, 2008 and 2009 was 55 749 569 €
- Ø The total number of received applications for Erasmus centralised actions increased from 153 in 2007 to 178 in the 2009 application year.
- Ø The total number of proposals approved was relatively stable in the three year period (64 in 2007, 61 in 2008 and 62 in 2009). Therefore, the overall success rate of applications slightly declined (from 41.8 % in 2007 to 35.6% in 2008 and 34.8 % in 2009).
- Ø The highest number of applications in the period 2007-2009 were received within the curriculum development action (60).
- Ø From 2007 to 2009 the country submitting the most proposals was the UK, a total of 245 proposals. The UK also participated in highest number of proposals as partner, or 209.
- Ø The average success rate for proposals from coordinating countries for the three year period was 37%.
- Ø Overall, 10 countries out of the 31 participating countries had an above average success rate as a coordinator: Belgium, Spain, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal and Romania.
- Ø While four countries: Belgium, France, Poland and the UK showed an upwards trend towards a higher number of successful applications as coordinating country, seven countries: Austria, Spain, Greece, Hungary, Portugal, Romania and Sweden followed a downwards trend towards a lower number of successful applications.

1 Erasmus Student Mobility¹

1.1 General overview of student mobility

1.1.1 Introduction and forecast

The Erasmus programme was established in 1987. During the past 22 years until 2008/09 , over 2 million students have benefited from the programme. Since the inception of the programme, Germany has moved the highest number of students, or 317 581 (15.52 % share), followed by France with 316 996 (15.47 %), and then Spain with 288 239 mobilities (13.97 %).

The Erasmus programme has gone through several phases during its lifetime:

- I. Erasmus 1987/88 – 1989/90 (3 years) with 32 614 mobile students
- II. Erasmus 1990/91 – 1994/95 (5 years) with 251 83 mobile students
- III. Socrates I – Erasmus 1995/96 – 1999/00 (5 years) with 455 782 mobile students
- IV. Socrates II – Erasmus 2000/01 – 2006/07 (7 years) with 943 849 mobile students

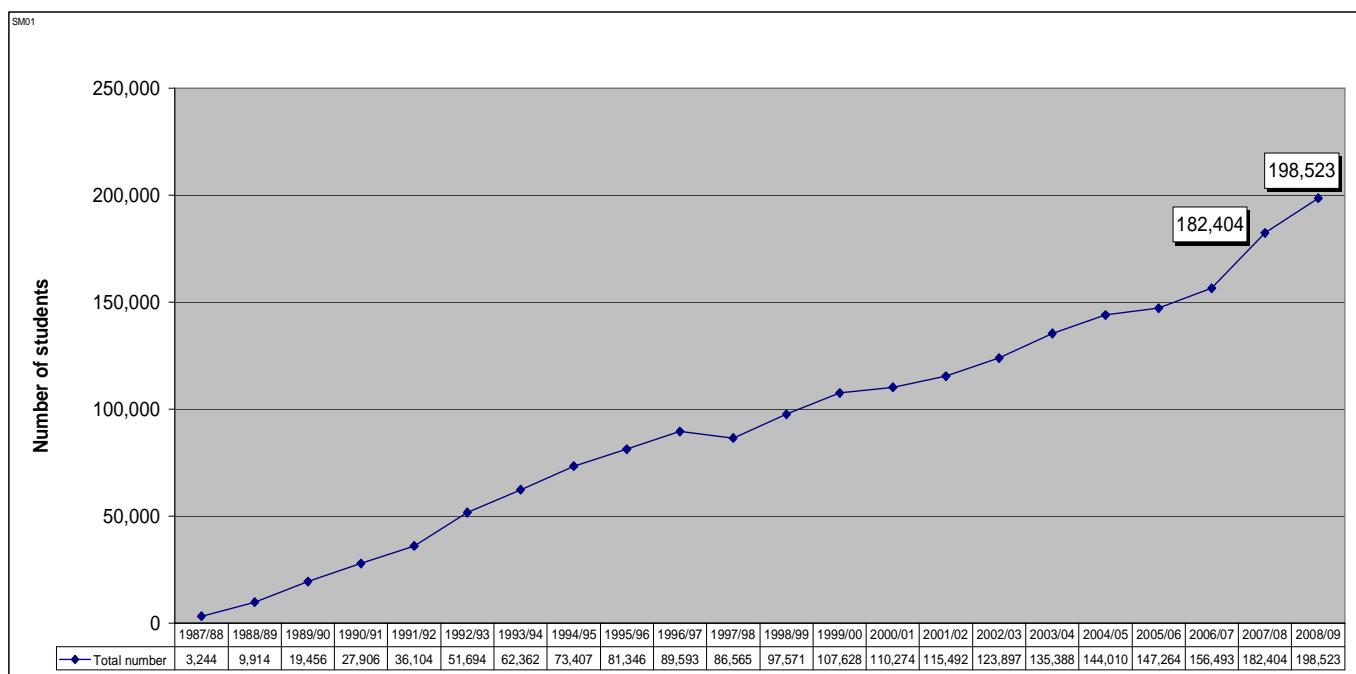
The academic year 2008/09 was the second year of Erasmus under the Lifelong Learning Programme. This year, 198 523 Erasmus students went abroad on a mobility to study or train in one of the 31 countries that participate in the Erasmus programme (EU27, Iceland, Liechtenstein, Norway and Turkey). This represents an annual increase of 8.7% compared with the previous year (182 697 in 2007/08). This year a total of 2658 higher education institutions sent students abroad on Erasmus mobility.

There has been a steady increase in the number of student mobility periods every year since the beginning of the Erasmus programme in 1987, with the exception of 1996/97² when mobilities decreased from the previous year. The growth rate within Erasmus was highest in the beginning (*see chart 1*) but the annual increase has also been high in later years. The increase in 2007/08 was for example 14.7% when comparing 2007/08 Erasmus mobility (for studies and placements) with 2006/07 Erasmus mobility numbers (only study). This remarkable increase can partly be explained by the introduction of a new Erasmus action "student mobility for placements". Yet, when the 13 153 mobilities for student placements supported under the Leonardo da Vinci programme in 2006/07 are taken into account, the annual increase was still 5.9%.

¹ Student mobility under LLP/Erasmus consists of the traditional student mobility for studies (SMS) and student mobility for placements (SMP).

² 1996/97 was a year of preparation for the Institutional Contract – the successor of the Inter-University Cooperation Programmes (ICP) which may have contributed to a decrease in mobility that year.

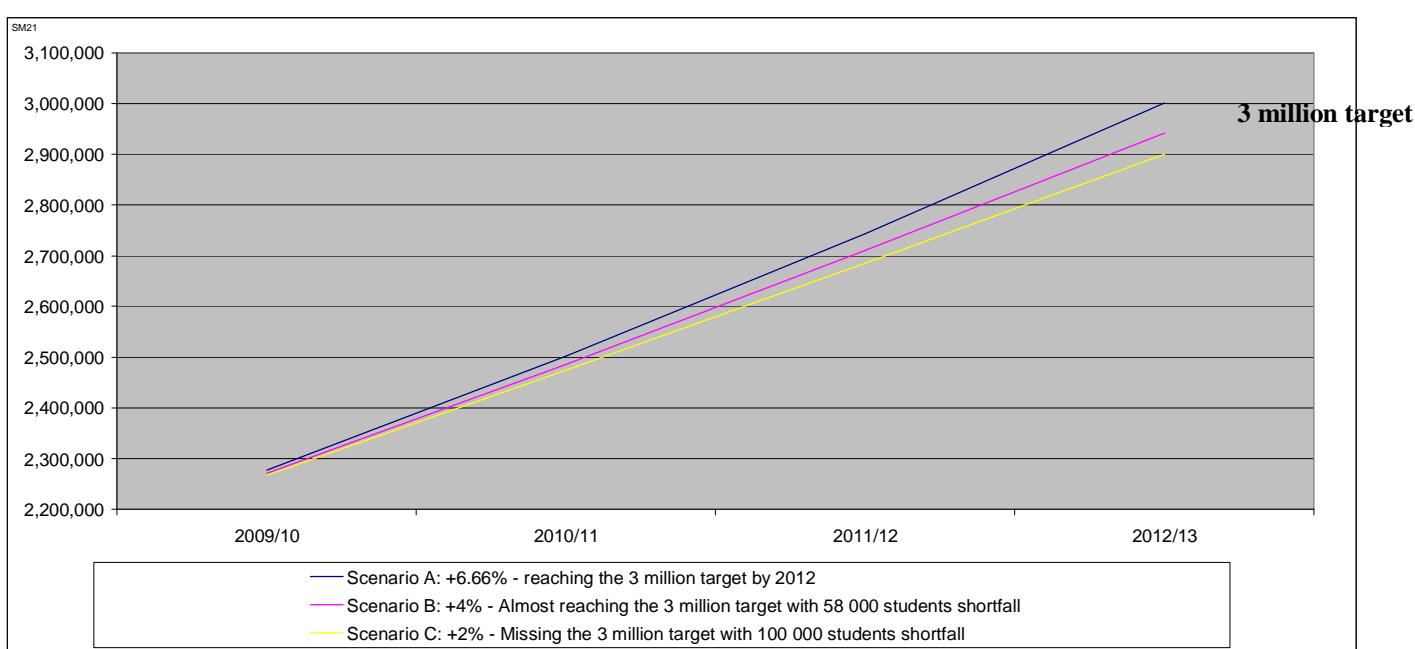
Chart 1: Erasmus student mobility 1987/88 – 2008/09



Erasmus reached the one million mobility target in 2002. The two million target was reached at the end of academic year 2008/2009. The aim set out in the Decision of the European Parliament and of the Council for the Lifelong Learning Programme is to reach at least three million student mobilities under the Erasmus programme and its predecessor programmes by 2012³.

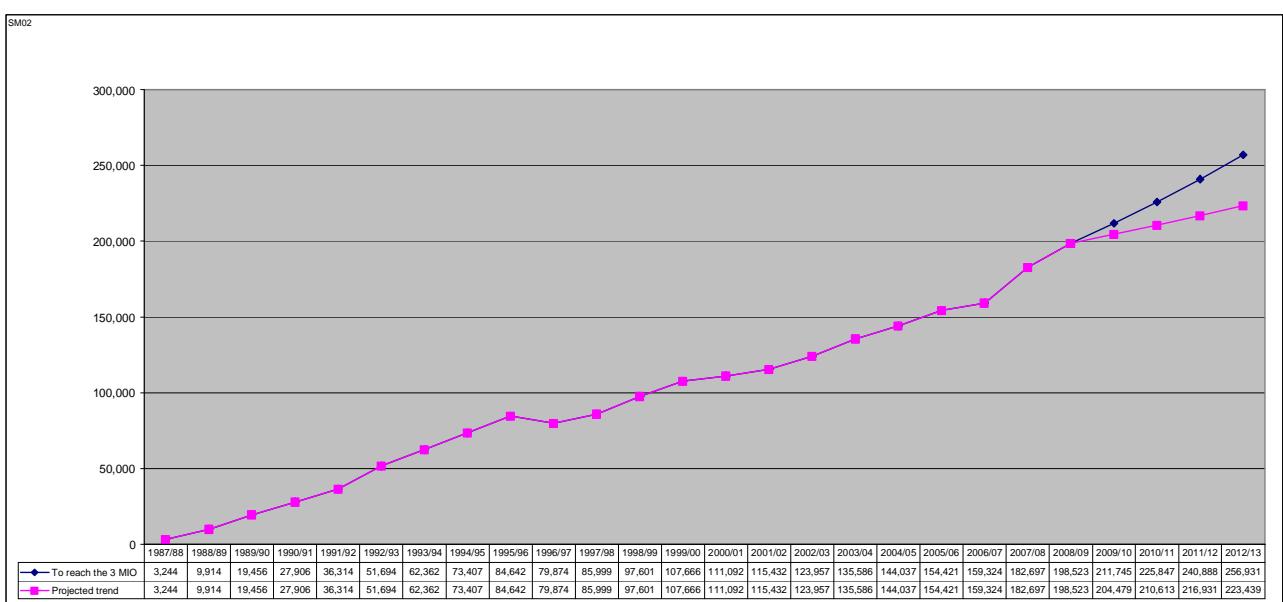
Chart 2 and 3 show a projected trend for Erasmus student mobility for the next few years. With an annual growth of 2% in terms of the number of mobile Erasmus students, there will be a shortfall of approximately 100 000 students (reaching 2.90 million at the target date and 3 million one semester later, very early in 2014). With an average annual growth rate of 4% there will, however, be a shortfall of 58 000 students (reaching 2.94 million at the target date and 3 million a trimester later at the end of 2013). In order to reach the 3 million target by 2012, an annual increase of about 6.66 % is needed. While the annual growth rate was 8.7% in 2008/09 it can be estimate that the required 6.66% average annual growth rate will not be reached in the next few years given expected slowdown Erasmus budget increases during the same period. Slower annual growth rates could, however, be countered by increased national co-funding of Erasmus student mobility by individual participating country. Without supplementary funding an annual increase between 2 and 4% is more reasonable. Given that rate of increase, the shortfall will most likely be less than 100 000 mobilities.

Chart 2: Reaching the 3 million target; three possible scenarios



³ Decision No 1720/2006/EC of the European Parliament and of the Council of 15 November 2006 establishing an action programme in the field of lifelong learning, Article 21a.

Chart 3: Erasmus student mobility projected annual trends until 2012/2013



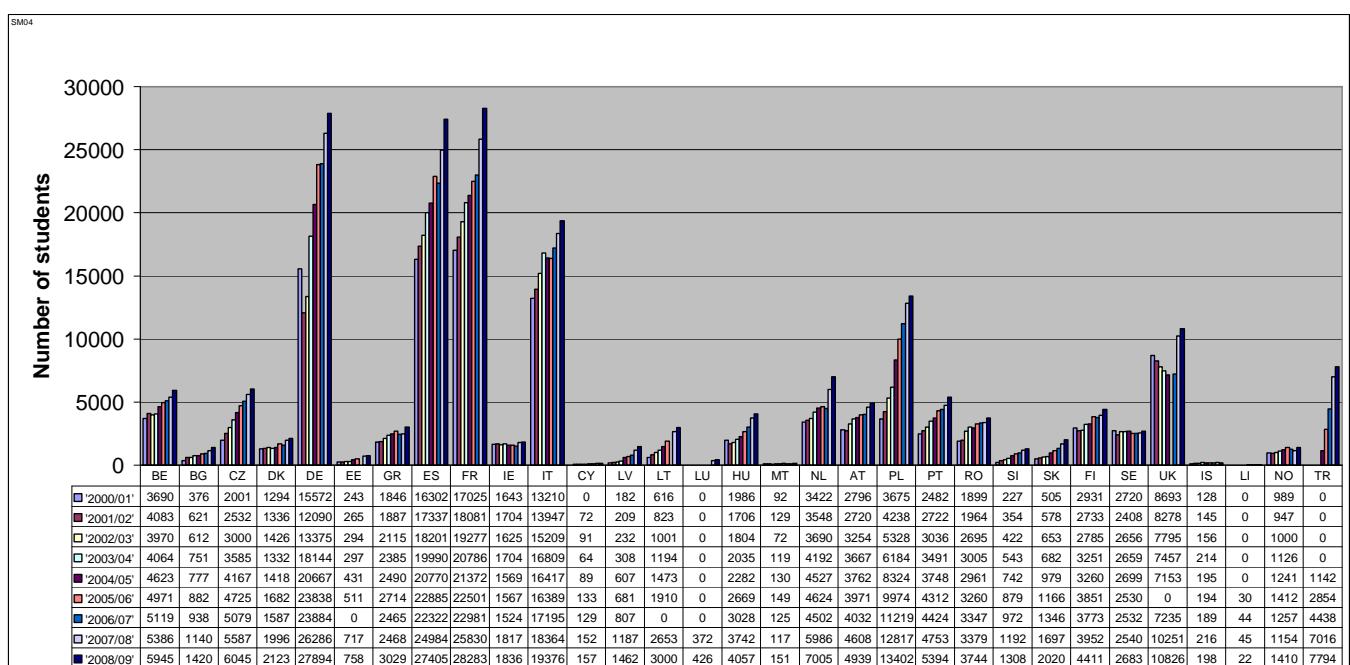
1.1.2 Outgoing student mobility

In the academic year 2008/09, 198 523, students went to another European country to study or train. The largest number of outgoing Erasmus students was from France, or 28 283, (14.1% share), followed by Germany with 27 894 outgoing students (14%), and then Spain with 27 405 (13.8%) The total flows of outgoing student mobility can be seen in Annex 1.

When comparing the Erasmus study mobility 2008/09 data (*see chart 4*) with Erasmus mobility data from 2007/08, the annual growth rate between years was highest in Malta, or 29.1%, followed by a 24.6% increase in Bulgaria and a 23.2% increase in Latvia. The annual growth rate in the 12 Member States that joined the EU in 2004 and 2007 respectively was 9.1%.

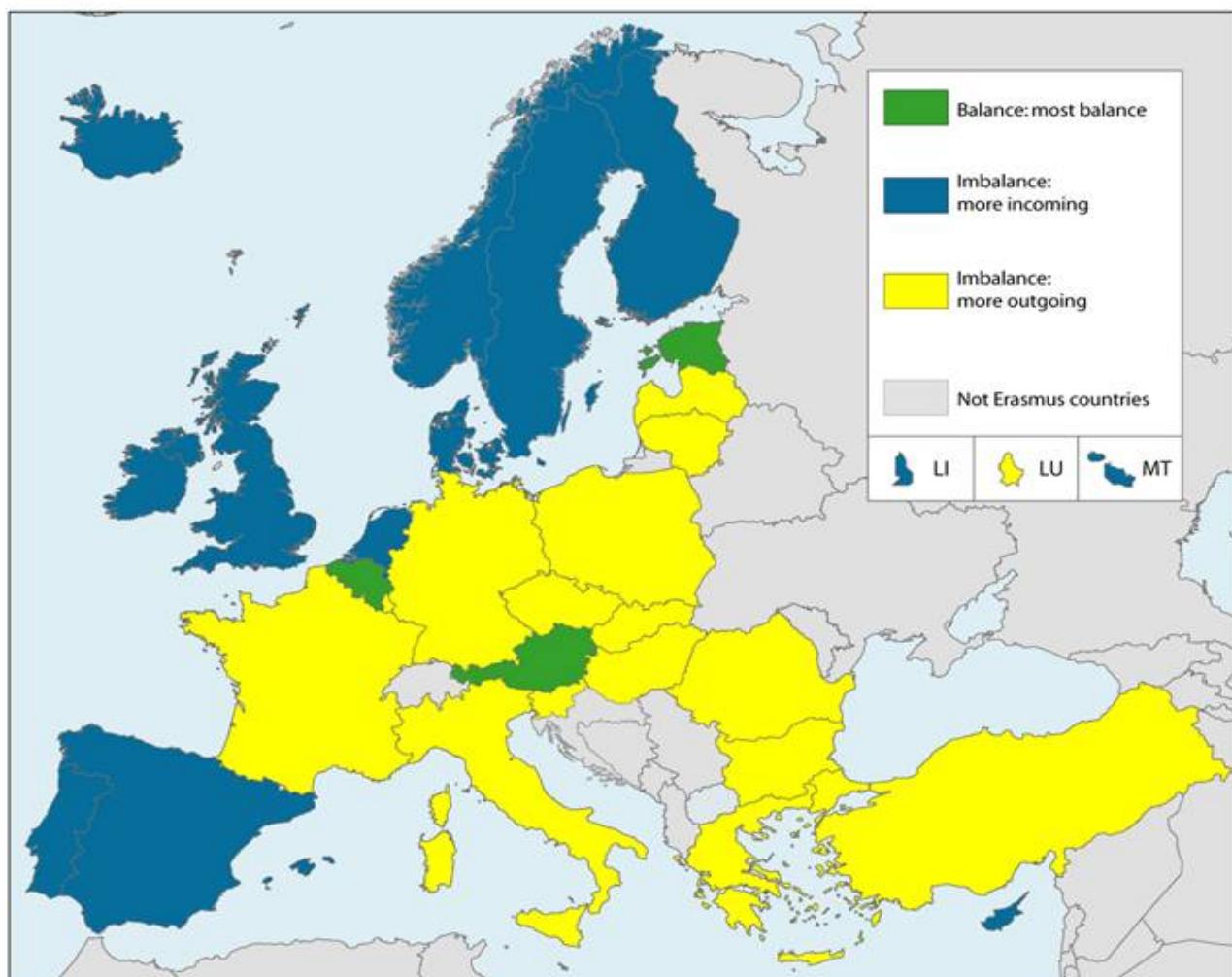
The number of outgoing students for studies and placements increased in all of the participating countries with the exception of Liechtenstein, which experienced a decrease of 51% (a huge drop from a 46.7% increase in 2007/08), and Iceland which saw a decrease of 8.3%.

Chart 4: Outgoing Erasmus students from EUR31: 2000/01-2008/09



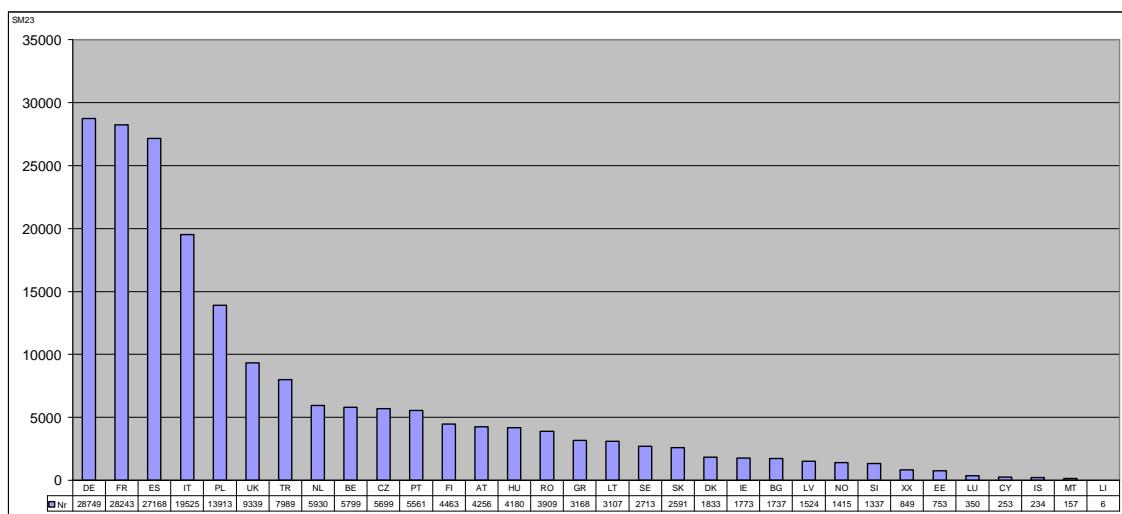
The map below shows the growth rates of Erasmus student mobility for studies per country in the academic year 2008/09. As noted above, no country experienced a decrease in outgoing Erasmus student mobility (studies and placements) this year.

Map 1: Growth rates of Erasmus student mobility (studies and placements) in 2008/09



While France sent out more Erasmus students than Germany in 2008/09, German nationals were the most mobile students in Erasmus student exchanges (28 749), ahead of the French (28 243), when nationality is considered (see chart 5). This is mainly due to the fact that a sizeable number of German nationals go on Erasmus mobility when doing their university degrees in the Netherlands and in Austria.

Chart 5: Number of Erasmus students by nationality in 2008/09



Approximately 60.74% of Erasmus students in the academic year 2008/09 were female. This percentage is somewhat higher than the proportion of female students of the total student population in the 31 participating countries in 2008 which was 53.94%⁴.

The average age of Erasmus students in 2008/09 was 23.5 years at the beginning of the year 2008, the youngest participant being 17 years and the oldest 17 years old. Chart 6 shows the age distribution of Erasmus students in the academic year 2008/09.

⁴ Eurostat 2008 data. Out of a total student population of 21 802 899 in the EUR31, women are 11 761 494 and males are 10 041 405

Chart 6: Age distribution of Erasmus students

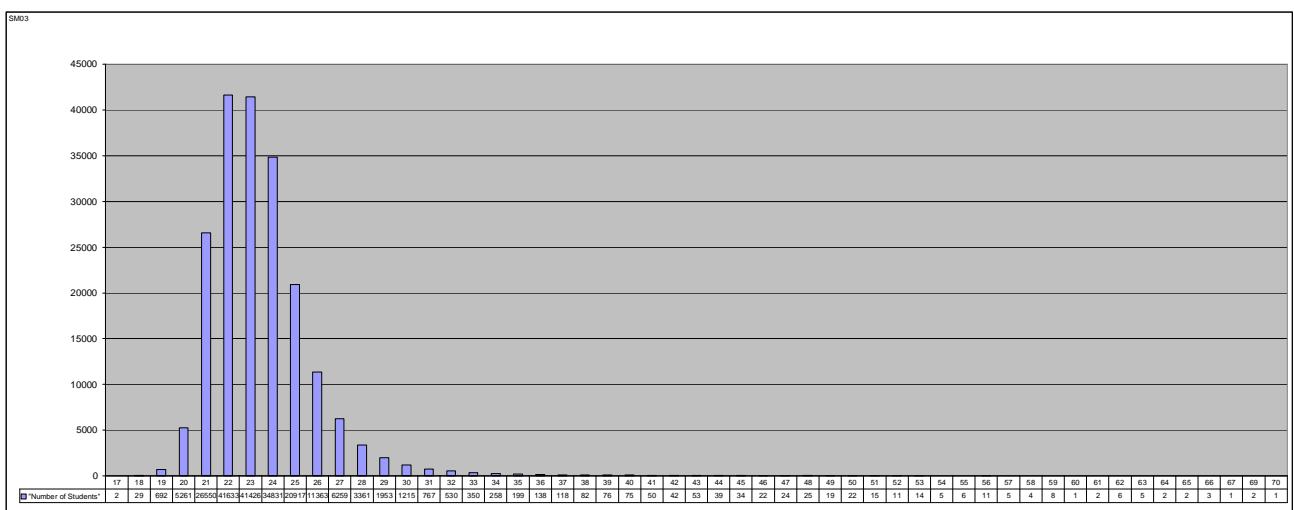


Chart 7 shows the share of Erasmus student mobility for studies versus placements per home country for all the 31 participating countries. The countries with the highest share of placement students were the UK (31.4%) followed by the Netherlands (30%) and Estonia (27.3 %) which replaced Liechtenstein in third place from the previous year. On average student mobility for placements represented 15.3% of all Erasmus student mobilities in 2008/09 (up from just over 10% in the previous year).

Chart 7: Share of Erasmus mobility for studies versus mobility for placements per home country in 2008/09

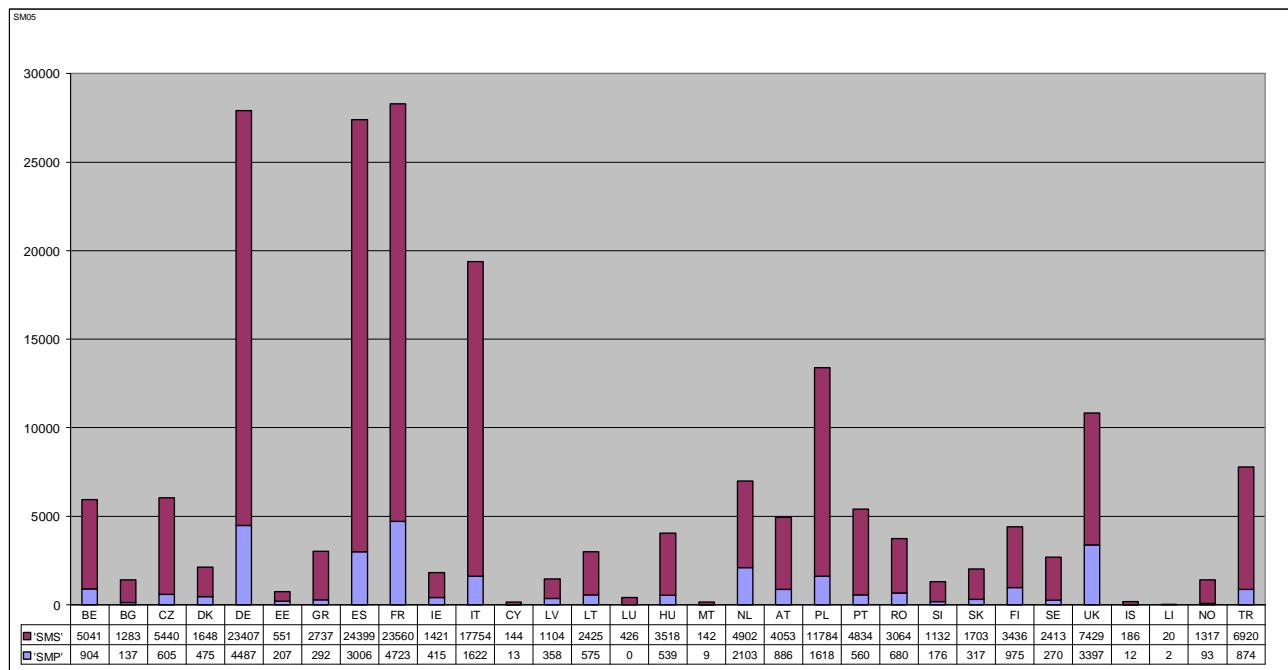


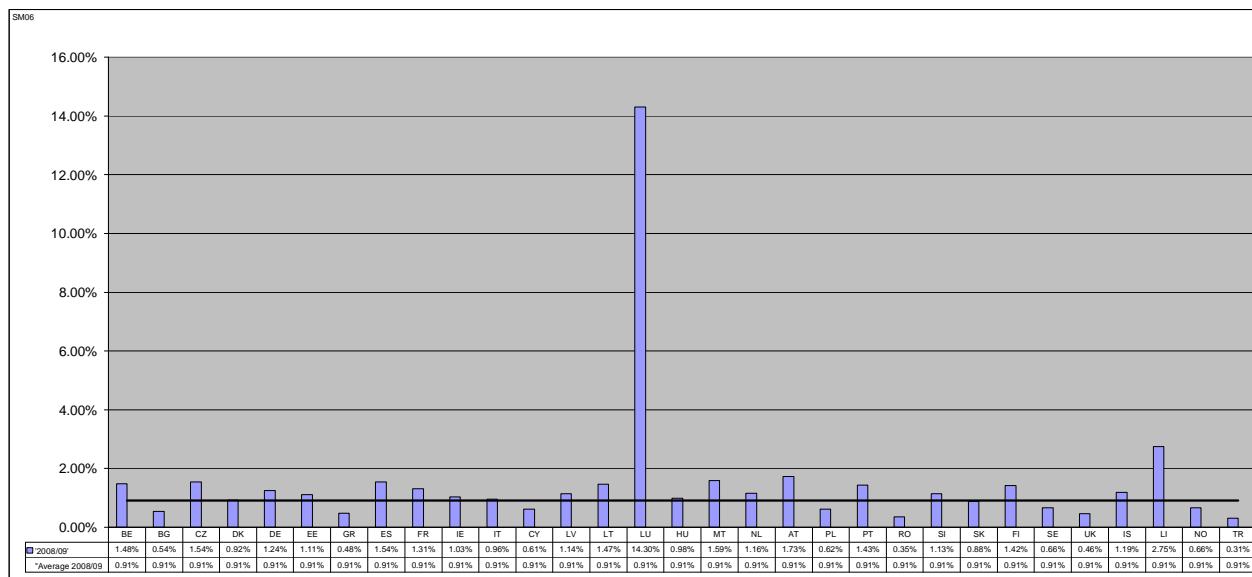
Chart 8 compares the 2008/09 Erasmus data with the latest student population data in the 31 participating countries⁵ and shows that the number of Erasmus students as a proportion of the whole student population in the participating countries in the academic year 2008/09 was on average 0.91%,⁶ up from an average of 0.85% in the previous year. Some of the very small countries, i.e. Luxembourg and Liechtenstein, have much higher mobility rates.

Taking into account the average study duration at a higher education institution of approximately 4-5 years, it can be estimated that around 4% of European students will participate in the Erasmus programme at some stage during their studies.

⁵ Eurostat 2008 data.

⁶ Here, the number of Erasmus students are divided by the total student population number in each country. The total EUR31 student population according to Eurostat 2008 data was around 21.8 million students.

Chart 8: Erasmus students as proportion of the student population in EUR31

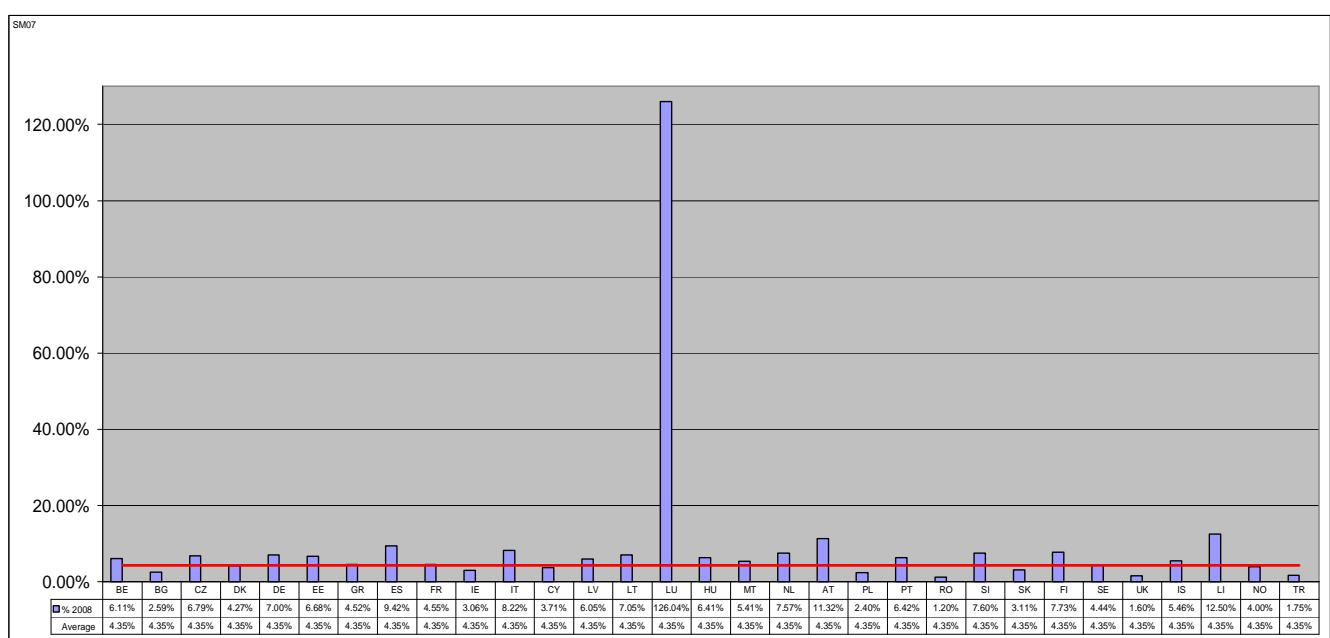


Apart from the very small countries, Luxembourg and Liechtenstein which have only one higher education institution each, Austria was the best performing country in terms of outgoing Erasmus student mobility as a proportion of the total student population (1.73%), followed by the Malta (1.59%) and then The Czech Republic and Spain (1.54 %). Out of the 31 participating countries, 21 matched or were above the average. This entails that 10 countries were below the average of 0.91%. The lowest average participation rate was in Turkey (0.31%), Romania (0.35%), and the UK (0.46%).

Another method to determine the relative position of a county would be to compare Erasmus students to the number of graduates at Bachelor and Master levels or equivalent. According to Eurostat data, higher education graduates in 2008 accounted for over 4.56 million in the 31 participating countries. If the total number of graduates is compared with the number of Erasmus students in the academic year 2008/09, then Erasmus students were about 4.44 % of all graduates, a slightly higher proportion than in the previous year (up from 4.23%).

Chart 9 shows that 21 of the 31 participating countries were above the average but the following 10 were below: Bulgaria, Denmark, Ireland, Cyprus, Poland, Romania, Slovakia, the UK, Norway and Turkey. When compared to chart 7 (Erasmus students as a proportion of the student population) some countries are performing better than when the Erasmus student participation is compared with the number of graduates in the same year.

Chart 9: Erasmus students as proportion of the graduates in EUR31



1.1.3 Incoming student mobility

As in previous years, Spain remained the most popular destination for European students during the academic year 2008/09 with 33 172 incoming students (16.7% share), followed by France with 24 614 incoming students (12.4%) and then Germany with 21 931 students (11 %).

In 2008/09, all participating countries experienced an annual growth in the number of incoming Erasmus students for studies and placements as compared to the previous year. The highest annual growth was in Malta (31.6%) followed by Cyprus (25.5%) and Greece (24.3%). Finland, the Netherlands and Germany, on the other hand, experienced the lowest growth rates between academic years.

Chart 10 shows the trends in the incoming numbers since the academic year 2000/01. Overall, incoming mobility has increased by 80% in the 31 participating countries since 2000/01. The number of incoming students has increased steadily in every participating country since 2000/01, except in the UK. There, the increase in incoming student numbers during this period is only 8.9%. This is so despite a considerable increase in the last three academic years. The Netherlands and France have also experienced slower growth in incoming students than the majority of the participating countries, or around 40%. The growth rate in incoming student mobility in the 12 Member States that joined the EU in 2004 and 2007 respectively is considerably higher than in the older Member States. In these countries the average annual growth rate was 14.6% in 2008/09. The highest annual growth rate in 2008/09 of incoming students among the newer Member States was in Malta, followed by Cyprus and then Slovenia.

Chart 10: Incoming Erasmus students from EUR31: 2000/01-2008/09

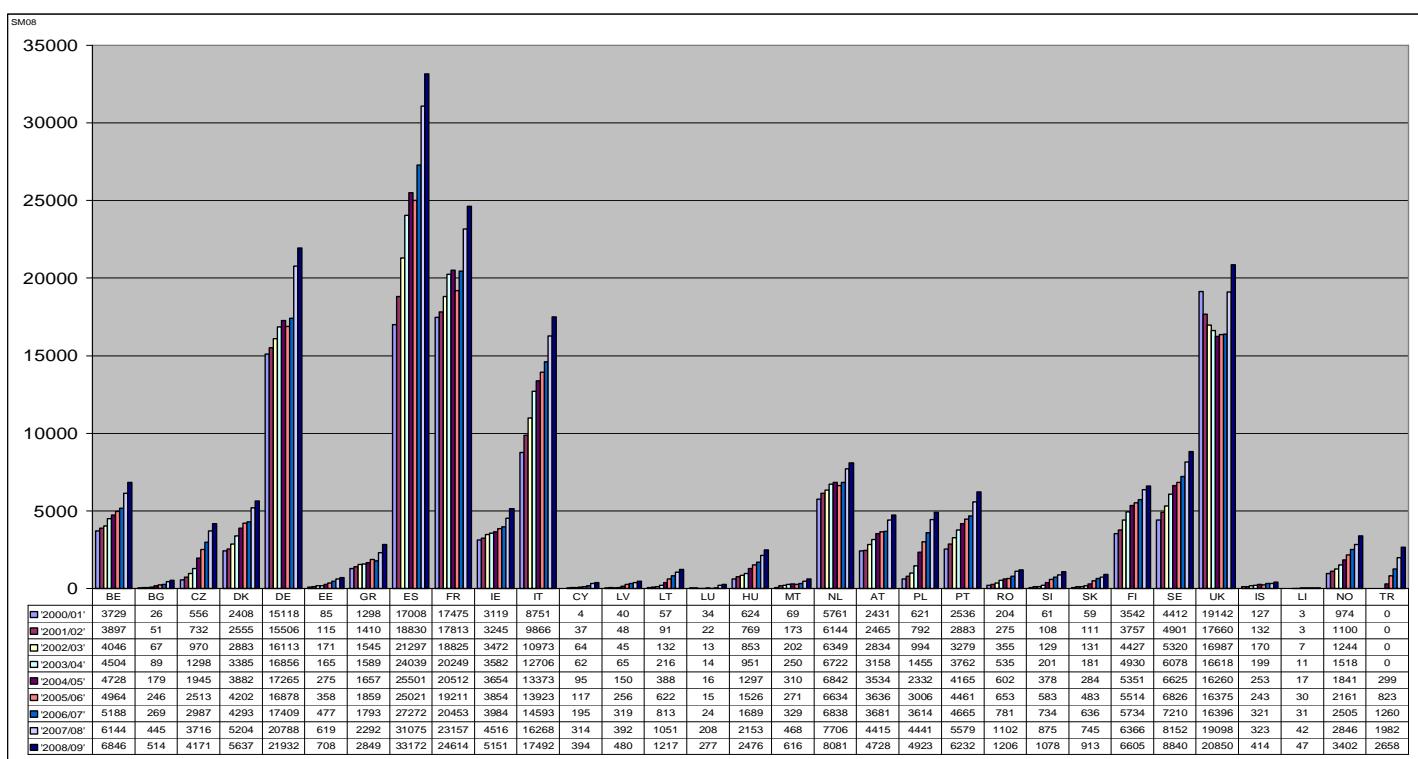
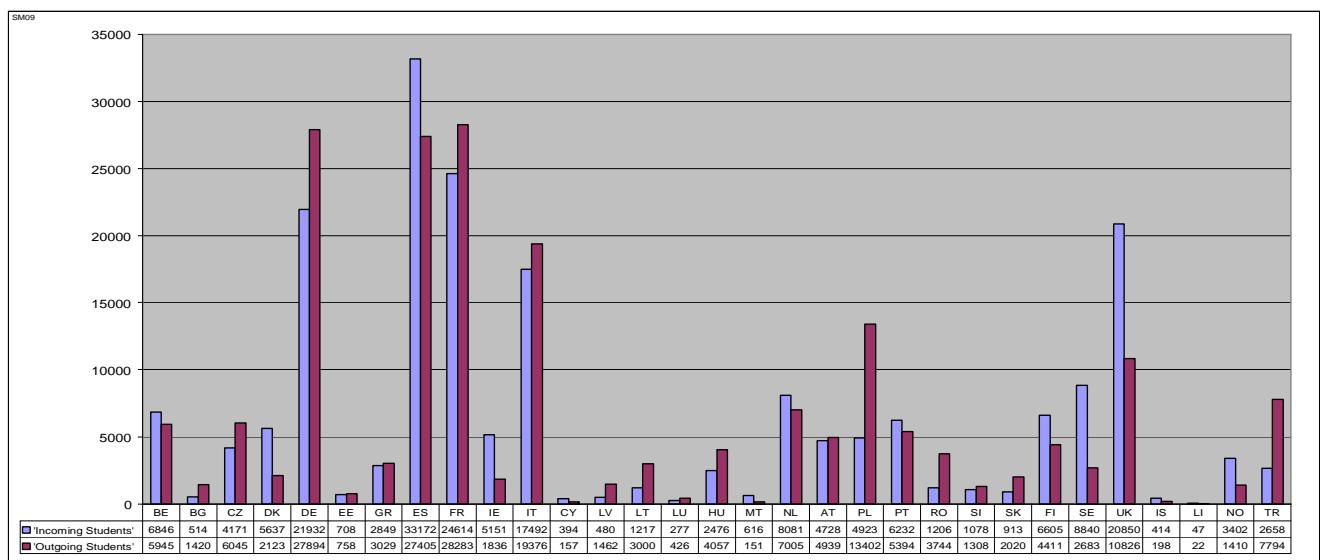


Chart 11 shows the balance in the different participating countries in terms of incoming and outgoing students. A number of countries still have a significant imbalance in terms of incoming and outgoing numbers. Malta had four incoming students for every outgoing student and Sweden three. The imbalance is also significant in Denmark, Ireland, Norway, and Iceland. Seventeen countries sent more students abroad than they received in 2008/09. This is an improvement from last year when eighteen countries sent more students than they received. Romania, Latvia and Bulgaria sent about three times more students abroad than they received. Of the 12 Member States that joined the EU in 2004 and 2007, Cyprus and Malta are the only countries that continually receive more students than they send out.

The smallest imbalance between incoming and outgoing students was, however, in Austria (4.5%), Greece (6.3%) and Estonia (7.1%).

Chart 11: The balance of outgoing – incoming Erasmus students from the 31 participating countries in 2008/09



This map on the other hands shows the imbalance in incoming versus outgoing numbers of Erasmus student mobility in 2008/09. A total flow of outgoing/incoming students can be seen in Annex 2.

Map 2: Balance/imbalance of incoming/outgoing numbers of Erasmus student mobility per country in 2008/09

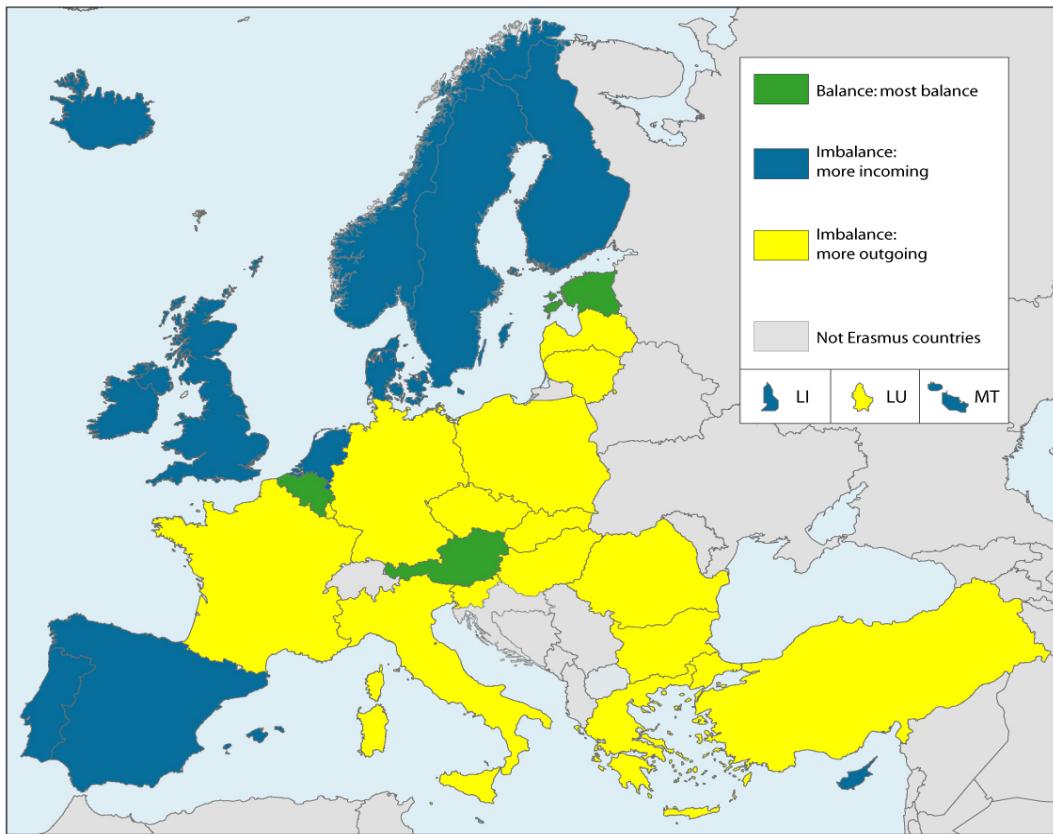


Chart 12 shows the share of incoming Erasmus students (studies and placements) in each of the 31 participating country and compares it with each country's share of higher education students. For each country, the chart presents: a) the country's student population as a percentage of the total student population in the 31 participating countries; b) each country's share of the total number of incoming Erasmus student mobility for studies and placements in the 31 participating countries.

Whereas Spain had 8.4% of the 31 participating country student population it had a 16.7% share of incoming Erasmus students in 2008/09. Similarly France received 12.4% of Erasmus students while its student population accounted for 10.2% of the total student population in the 31 participating countries. The chart further indicates the potential in several countries for accommodating more Erasmus students. Note, for example, the low percentage of incoming students in Turkey and Poland compared to their percentage of the student population in the 31 participating countries. Bulgaria, Romania and Greece are in similar situation. If current annual growth rates of incoming students will continue for some years in the new Member States or the candidate countries, the current gap between outgoing and incoming students will substantially narrow down. About half of the participating countries had a higher percentage of incoming students than their share of the student population in the 31 countries.

Chart 12: Share of incoming Erasmus students 2008/09 and share of EUR31 student population 2008, by country

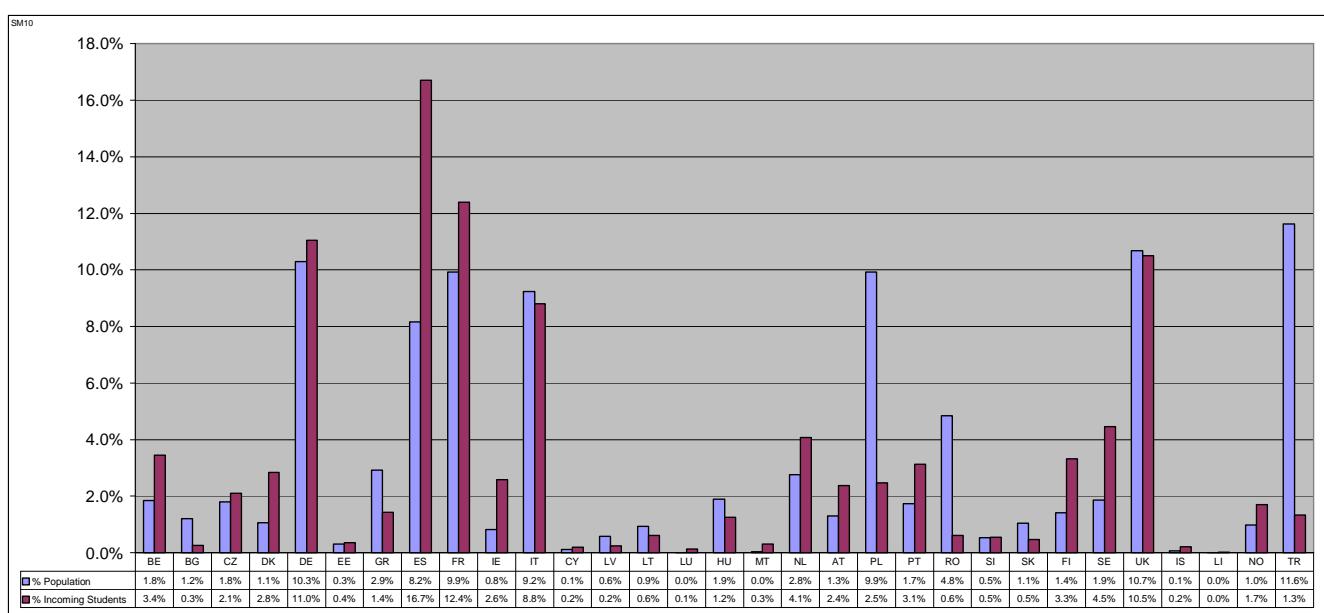
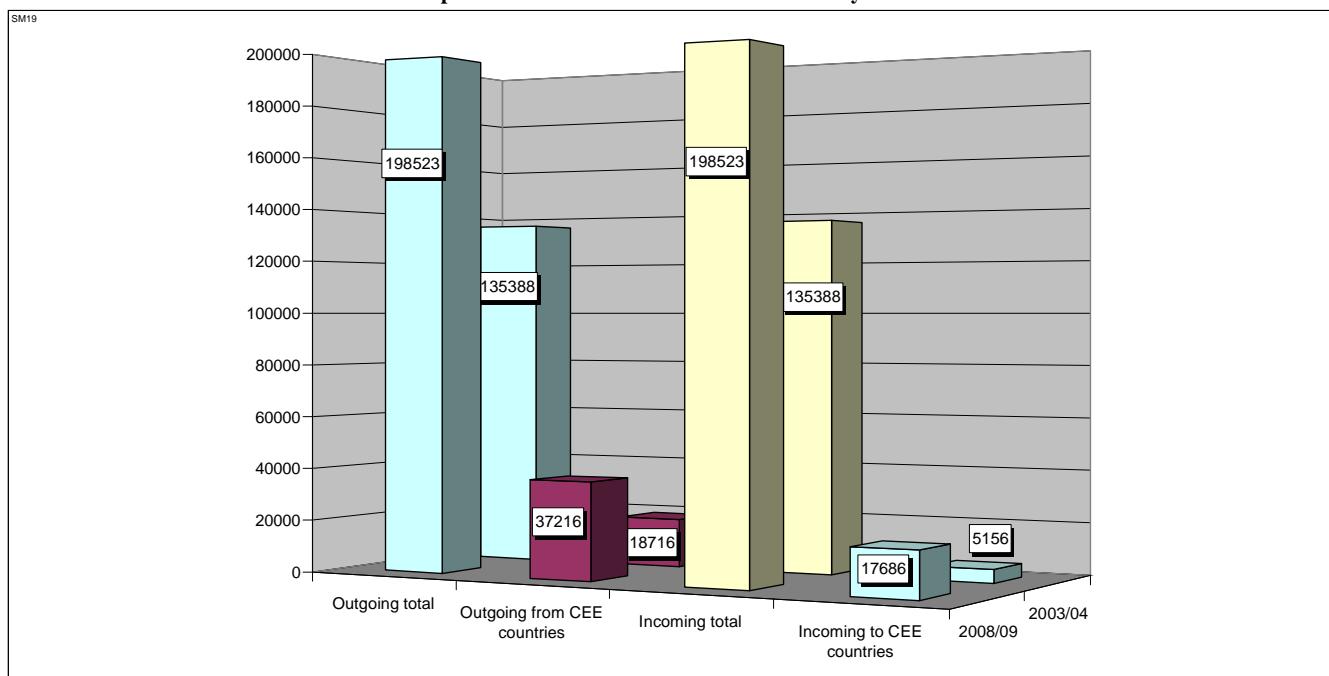


Chart 13 shows the share of the ten Central and Eastern European countries (CEE) in Erasmus student mobility between the 2003/04 academic year until 2008/09. As the chart shows clearly, the gap between the numbers of incoming and outgoing students in these countries has narrowed in this five year period. Whereas both numbers of outgoing and incoming students in these countries has increased during this period, the percentage growth in incoming numbers was much higher than the growth in outgoing numbers.

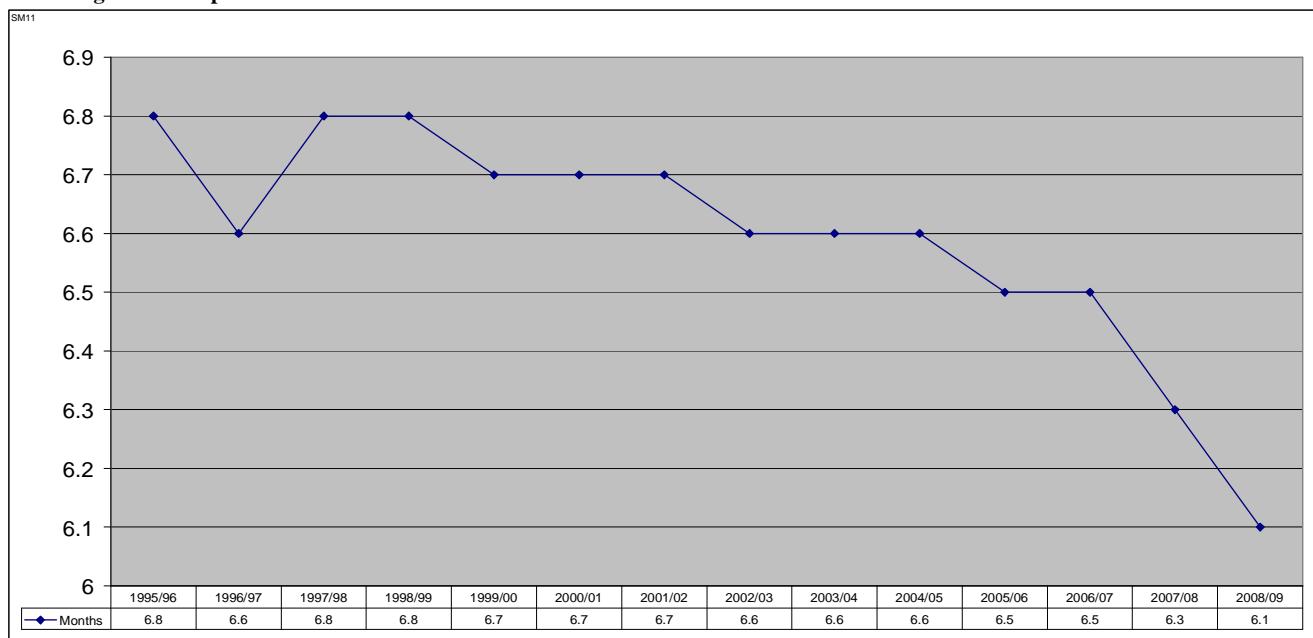
Chart 13: Share of Central and Eastern European countries in Erasmus student mobility 2003/04 – 2008/09



1.1.4 Duration

The European average duration of Erasmus student mobility has changed very little since the 1994/95 academic year. The average duration of Erasmus student mobility was 6.1 month in the academic year 2008/09 (down from 6.2 months in 2007/08). (See Annex 3).

Chart 14: Average duration per student 1994/95 – 2008/09



As can be seen in Chart 15 below, there was considerable variation between countries in the average duration of student mobility, ranging from 4 months for Maltese students to 7.5 months for Spanish students.

Chart 15: Average duration in months per home country 2008/09

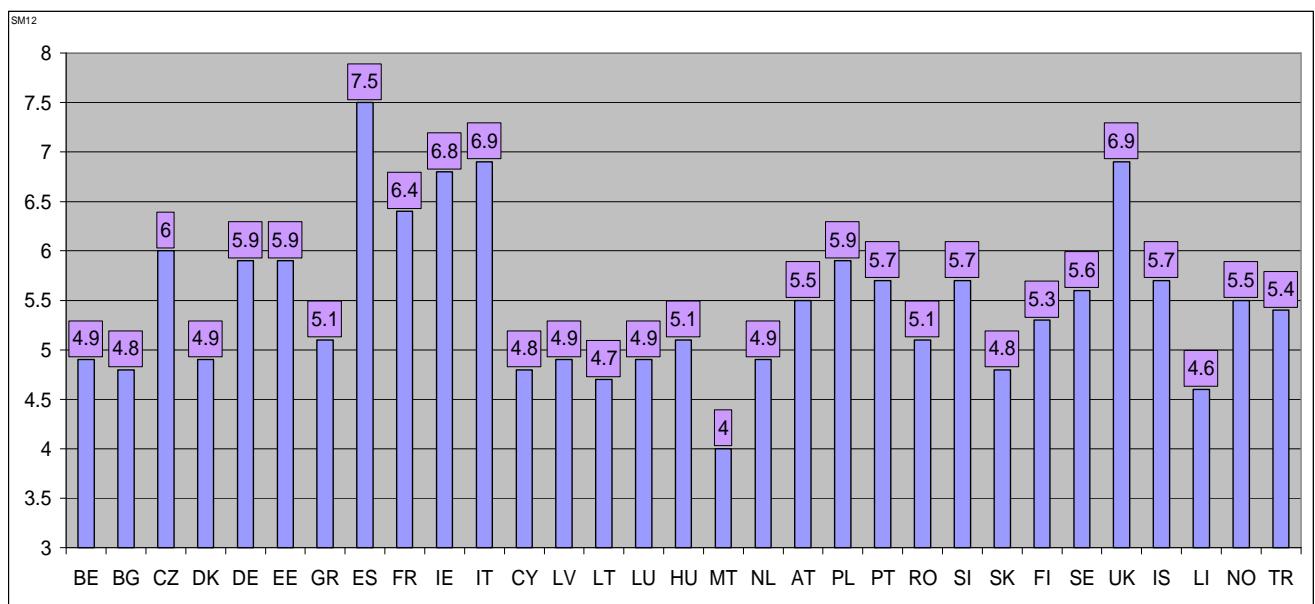
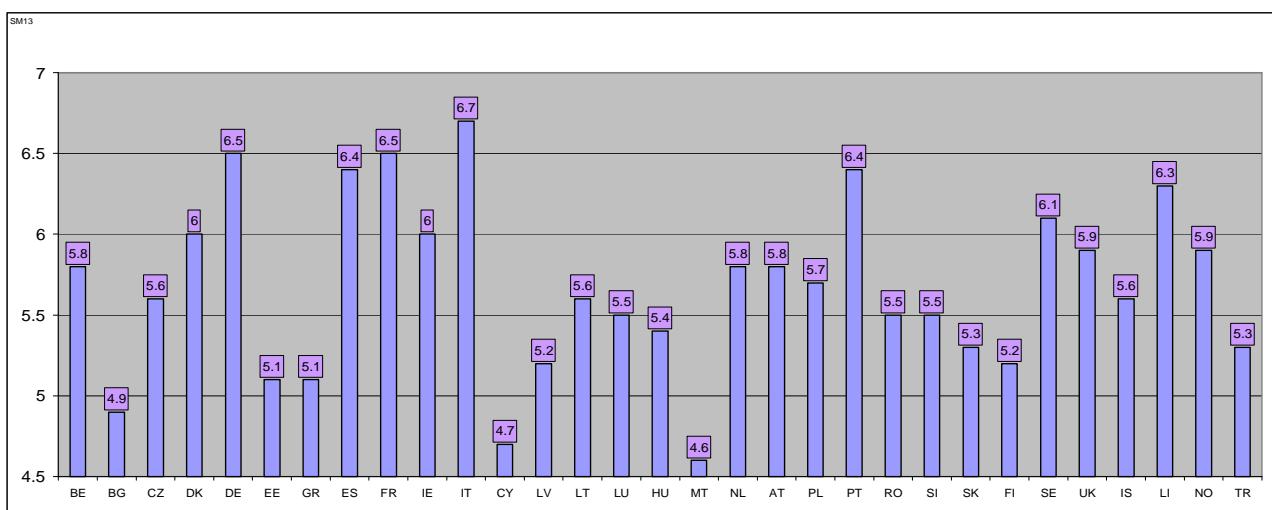


Chart 16 on the other hand shows the duration of stays in individual host countries. Erasmus students stayed in 2008/09 on average the longest in Italy (6.7 months) and the shortest in Malta (4.6 months).

Chart 16: Average duration in months per host country in 2008/09



1.1.5 Grants

In 2008/09 the average EU monthly grant for Erasmus student mobility (studies and placements) was 272€ This is a 6.7% increase from the previous year when the EU monthly grant was 255€ (See Annex 4).

The total grants students receive depend very much on their home country. The Erasmus budget is allocated to countries using a transparent methodology with criteria such as the size of the student population in the country, cost of living, travel distance, past performance etc, Each National Agency can also have different student grant allocation policies. The average EU monthly student mobility grant in 2008/09 ranged from 185€in Austria to 973€in Cyprus. Austria is the only country out of the 31 participating ones that still awards average EU monthly grants under 200€ Austria is, however, somewhat exceptional as all Austrian Erasmus students receive an additional grant from national sources which explains at least partly the low grant amount (see section 1.9). Grant amounts for Spanish students, who received the lowest grant amounts in the previous year, went up from 177€to 202€in 2008/09. It should be noted that Spanish students also receive complementary grants from national sources. One of the aims of the Lifelong Learning Programme (2007-2013) is to maintain an average EU grant of 200€per month throughout the programme. Taking the exceptional circumstances in Austria into consideration it can be said that this aim has already been achieve.

Chart 17: Average EU grant per Erasmus student per month 2000/01-2008/09

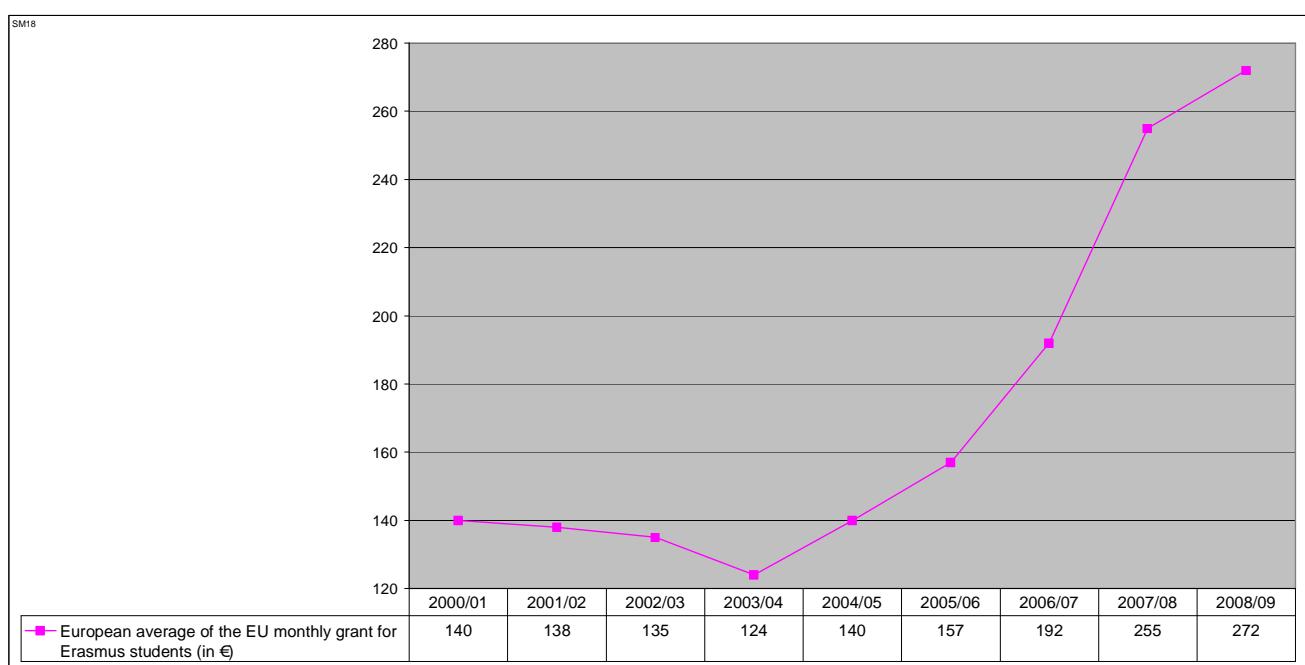
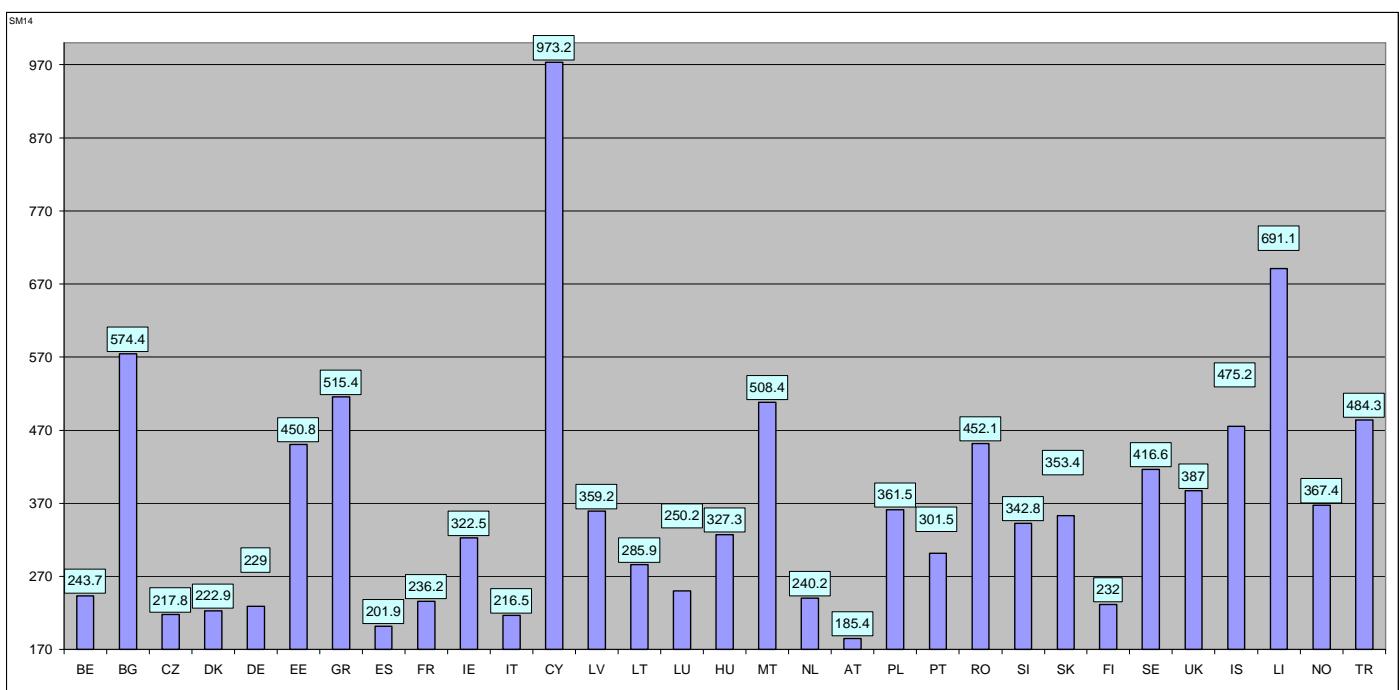


Chart 18 shows the average EU monthly grant per home country. As can be seen in the chart the grant levels per month vary greatly between countries.

Chart 18: Average EU monthly grant per home country for student mobility in 2008/09



1.1.6 Complementary funding for student mobility⁷

In the majority of the 31 participating countries the Erasmus student grant is complemented by national, regional, local or institutional grants. In the table below the principal source of complementary public/institutional funding is listed per country. Note that countries can have more than one type of complementary funding.

Table 1: Types of complementary funding existing within the different countries

Type of complementary funding	Country
Public student loan/grant systems	Denmark, France, Ireland, Cyprus, Malta*, Luxembourg, the Netherlands, Austria, Romania, Slovenia, Finland, Sweden, the UK, Iceland and Norway.
Special national funds	Austria, the Czech Republic, Germany, Estonia, Spain, France, Sweden, Finland, Italy, Cyprus, Latvia, Lithuania, the Netherlands, Poland, Portugal, Slovak Republic, the UK, Liechtenstein and Turkey.
Regional/local funds	Belgium (FR), (NL) and (DE), Germany, Austria, Spain, France, Poland, Finland, the UK and Italy.
Funding from higher education institutions	Spain, France, Poland, Greece, Italy, Hungary, the Netherlands, Austria, Iceland, Finland, Bulgaria, Romania, Norway, the UK** and Turkey.
Private funds	Belgium (DE), Germany, Spain, France, Italy, the UK, Norway
Other funds	Romania, Bulgaria***

* Only for undergraduate students

** The fee is waived at the home HEI for students who undertake an Erasmus study-period abroad

***EEA financial mechanism (mobility to HEI in Norway, Iceland and Liechtenstein)

It should be noted that the table above is based on information provided to us by the National Agencies and is not fully comprehensive. The table, moreover, tells us very little about the total grant amounts available to students which varies considerably between countries.

⁷ Information from the 2008 annual LLP work programmes and 2009 Yearly Reports of the National Agencies

1.1.7 Students with special needs

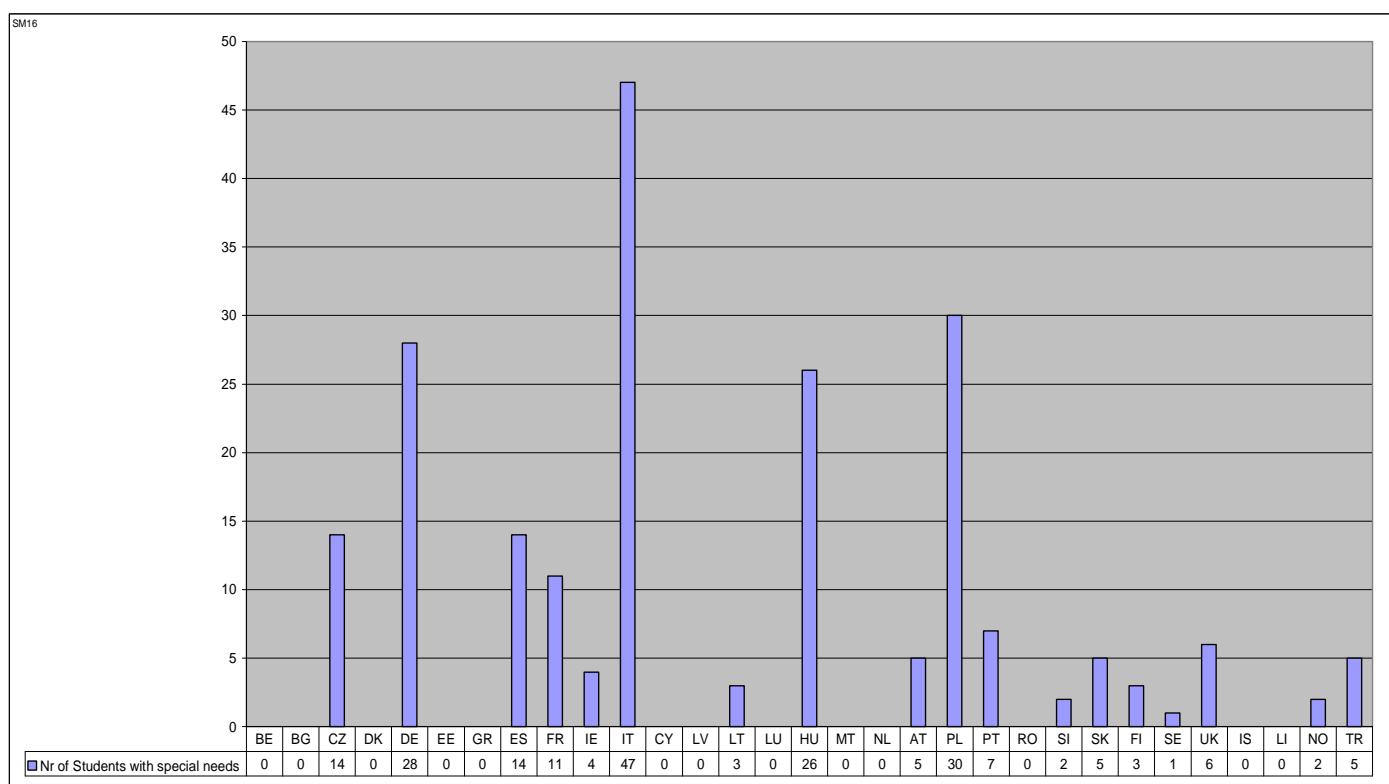
During the academic year 2008/09, 213 students with special needs or severe disabilities participated in Erasmus mobility, compared to 165 students in 2007/08. Despite the increase in numbers between years, these students represent only 0.11% of the total number of Erasmus student mobilities in the academic year 2008/09. The average duration of their stay abroad was 6.6 months and the average EU supplementary grant per student was 3,445€ or around 522€ per month, up from 492€ last year. As in the previous year Italy had the highest number of students with special needs participating in student mobility or 47 (22% share), followed by Poland with 30 (14%) and then Germany with 28 (13%). Of the smaller countries, Hungary had the highest participation rate of students with special needs or 26 (12.2%).

Spain received the highest number of student with special needs or 46 (34%) followed by Germany with 29 (13.6 %) and France with 24 (11.3%). Only one country, Liechtenstein, received no Erasmus students with special needs.

The share of students with special needs in Erasmus mobility continues to be very low and decreased between years as noted above.⁸ Thirteen countries did not send out Erasmus students with special needs in 2008/09. These are: Belgium, Bulgaria, Denmark, Estonia, Greece, Cyprus, Latvia, Luxemburg, Malta, the Netherlands, Romania, Iceland and Liechtenstein.

⁸ Eurostat data on the share of students with special needs in higher education in the EUR31 is not available

Chart 19: Number of students with special needs by home country



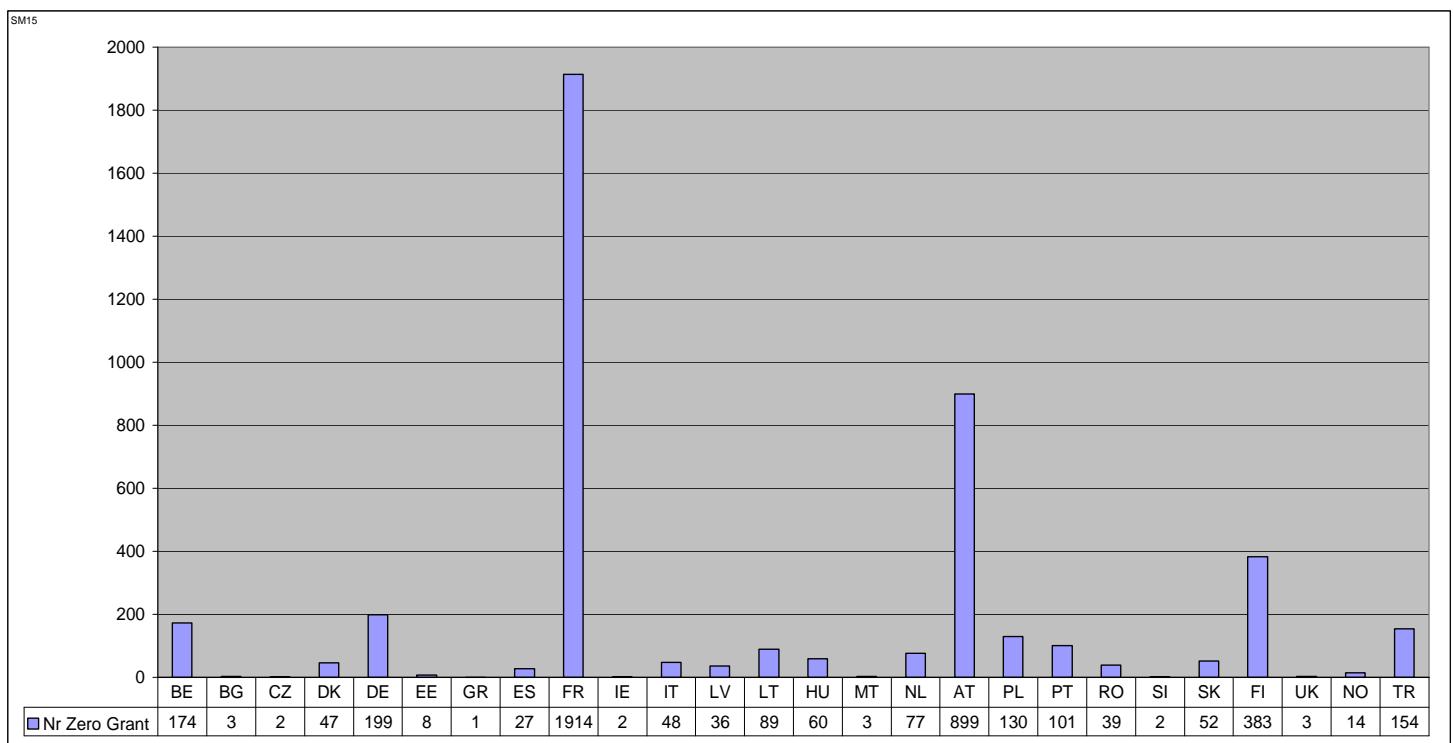
1.1.8 Zero-grant students

Every year, a number of students take part in Erasmus mobility without receiving an EU grant. These students are called "zero-grant" students which entails that they have the status of an Erasmus student without receiving an EU grant⁹. The majority of countries send out "zero-grant students" but the proportion of zero-grant students is gradually declining. In 1997/98 students without an EU grant made up 8.8 % of all Erasmus students while in 2008/09 they were 2.3% (down from 3.3% in the previous year). In 2008/09 the total number of zero-grant students was 4502. These were mainly students from France, or 1914 (42.6% share) and Austria with 899 (20.2%). The biggest decrease in the number of zero-grant students between the years was in the UK where the number dropped from 1257 in 2007/08 to just 3 in the academic year 2008/09 (see Annex 5).

The majority of zero-grant students went to Spain, or 1197 (19.89% share), about 17% went to France, and 14% went to Germany.

⁹ In some countries, for instance in Austria, Erasmus students that are national grant holders get a national Erasmus grant instead of the EU grant at least at the same level and they are reported as zero-grant students.

Chart 20: Number of zero -grant students per home country



1.1.9 Participating higher education institutions

A total of 2658 higher education institutions holding an Erasmus University Charter (EUC) sent students on Erasmus mobility in the academic year 2008/09. This represents 74.2% of all EUC holders in the academic year 2008/09.¹⁰ Our data indicates that although many higher education institutions are very active in the Erasmus programme a large number of institutions have a recurrent low participation rate every year.

1.1.10 Recognition of student mobility (ECTS)

One of the fundamental principles of the Erasmus programme is full recognition of credits received for activities completed in a satisfactory manner. This is stipulated in the compulsory Learning and Training Agreement which is signed by the student beneficiary and the home and host institutions/organisations.

The National Agencies' statistical reports only include information on expected ECTS credits for each individual student participating in the programme but not credits recognised. The data received is not very reliable as many higher education institutions do not report the expected ECTS credits systematically. The data is therefore only an indication of the credits a student might receive when returning to his/her home institution after a study or placement period abroad.

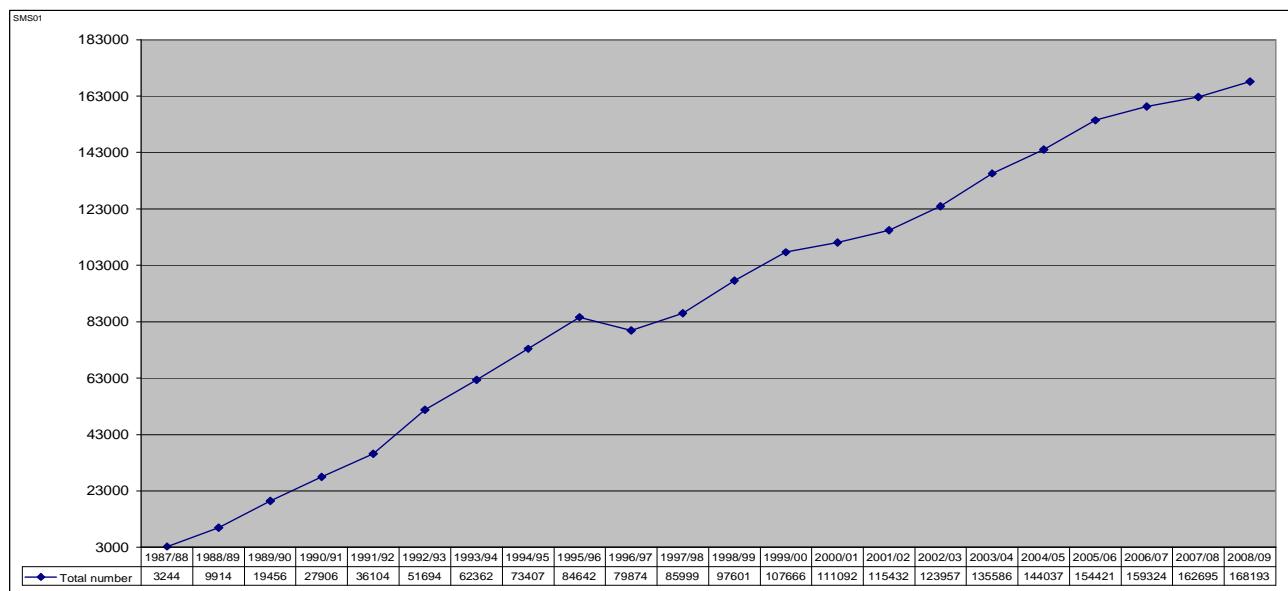
¹⁰ The number of EUC holders in 2008/09 were 3579.

1.2 Erasmus Student Mobility for Studies

1.2.1 Student mobility for studies since 1987

The Erasmus programme was founded in 1987. The programme enables students studying at higher education institutions to spend a period of study between 3 and 12 months in another participating country in Europe. During the 22 year period of activity over 2.013 million European students have benefited from the programme studying in another country.

Chart 21: Erasmus student mobility for studies 1987/88 - 2008/09



Since the beginning of the Erasmus programme in 1987 the number of students going on study mobility has increased every year, with the exception of 1996/97¹¹. The growth rate was, however, highest in the beginning (*see chart 21 above*). In 2008/09 there was an increase of 3.4% in the student mobility for studies action, compared to an increase of 2.1% increase in the previous year

¹¹ 1996/97 was the year of preparation for the Institutional Contract – the successor of the Inter-University Cooperation Programmes (ICP) which may have contributed to a decrease in mobility for studies that year.

1.2.2 Outgoing student mobility for studies

In the academic year 2008/09, 168 193 students studied in another European country as Erasmus students. As noted, this represents a growth rate of 3.4% compared to 2.1% in the previous year. Most outgoing students originated from Spain, or 24 399 (14.51% share), followed by France with 23 560 students (14.01%), and then Germany with 23 407 (13.92%).

The annual growth rate was highest in Malta or 32.7%, followed by Norway (19.4%) and Bulgaria (19%). The annual growth rate of outgoing number of students was above 10% in nine countries. The countries experiencing above 10% growth were: Bulgaria, Greece, Latvia, Luxembourg, Malta Slovakia, Slovenia, Norway, and Turkey. Countries experiencing 5-10% growth were: Belgium, Spain, Hungary, Finland and Portugal. Other countries experienced more moderate growths.

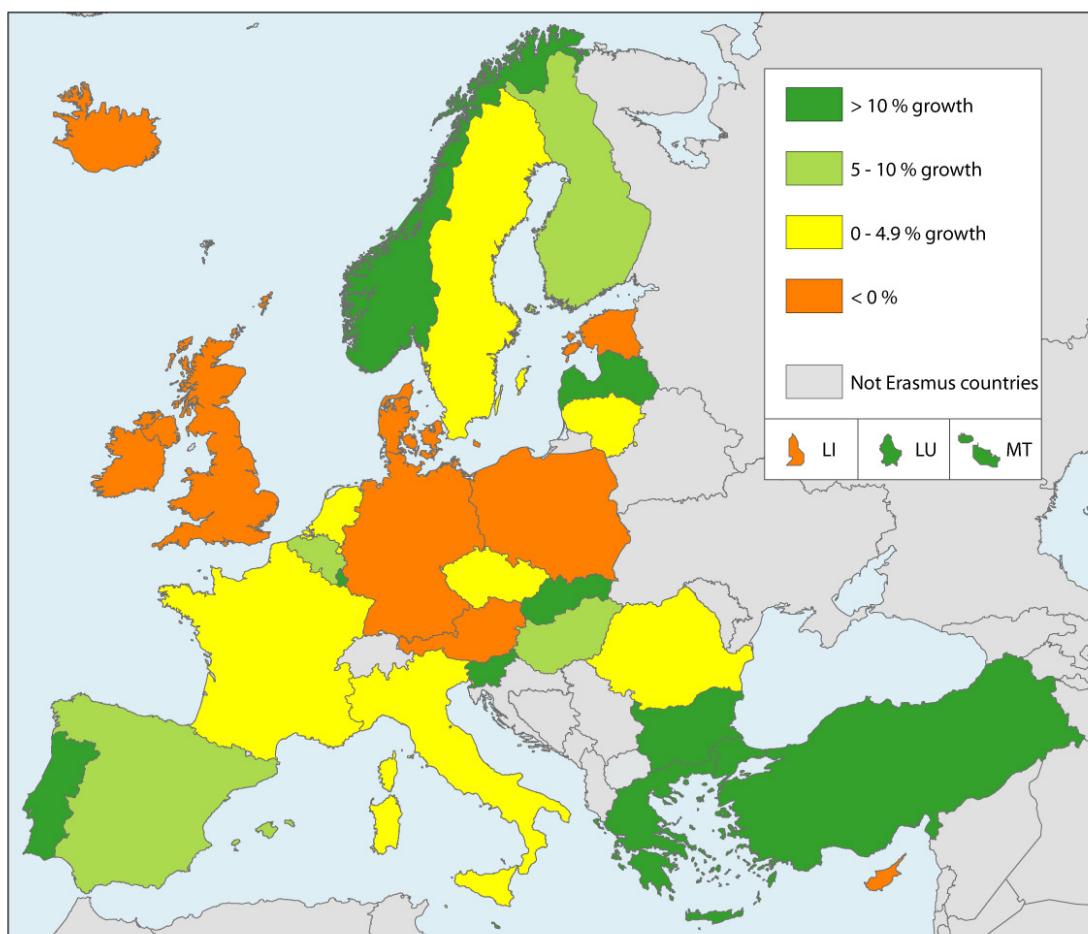
Out of the 31 participating countries, ten had a decrease in outgoing student numbers. The biggest decline was in Liechtenstein (-33.3%), Iceland (-11.4%) and in Estonia (-7.4%). Four countries, Germany, Italy, Poland and the UK experienced, however, stagnation in outgoing student numbers (less than 1% growth or declining by up to 1%). Overall the decline in outgoing numbers was lower than in previous years and many of the countries experiencing a decline in 2007/08, such as Malta, saw a considerable increase in outgoing student numbers in 2008/09.

66.2% of Erasmus students going on mobility for studies in 2008/09 were undergraduate students (up from 56.3% in 2007/08), graduates were 32.1% of the total number (down from 42%), 1.1% doctoral students, and 0.6% were registered in higher vocational education institution offering short-cycle courses.

60.6% of Erasmus students doing studies abroad in 2008/09 were women. The average age of Erasmus students studying abroad was 23.5 years (up from 22.5 years in the previous year), and students ranged from 17 to 70 years in age.

Map 3 below shows the growth rates of outgoing Erasmus student mobility for studies in 2008/09.

Map 3: Growth rates of outgoing Erasmus student mobility for studies in 2008/09



Green (more than 10% growth) = (BG, GR, LV, LU, MT, SI, SK, NO, TR)

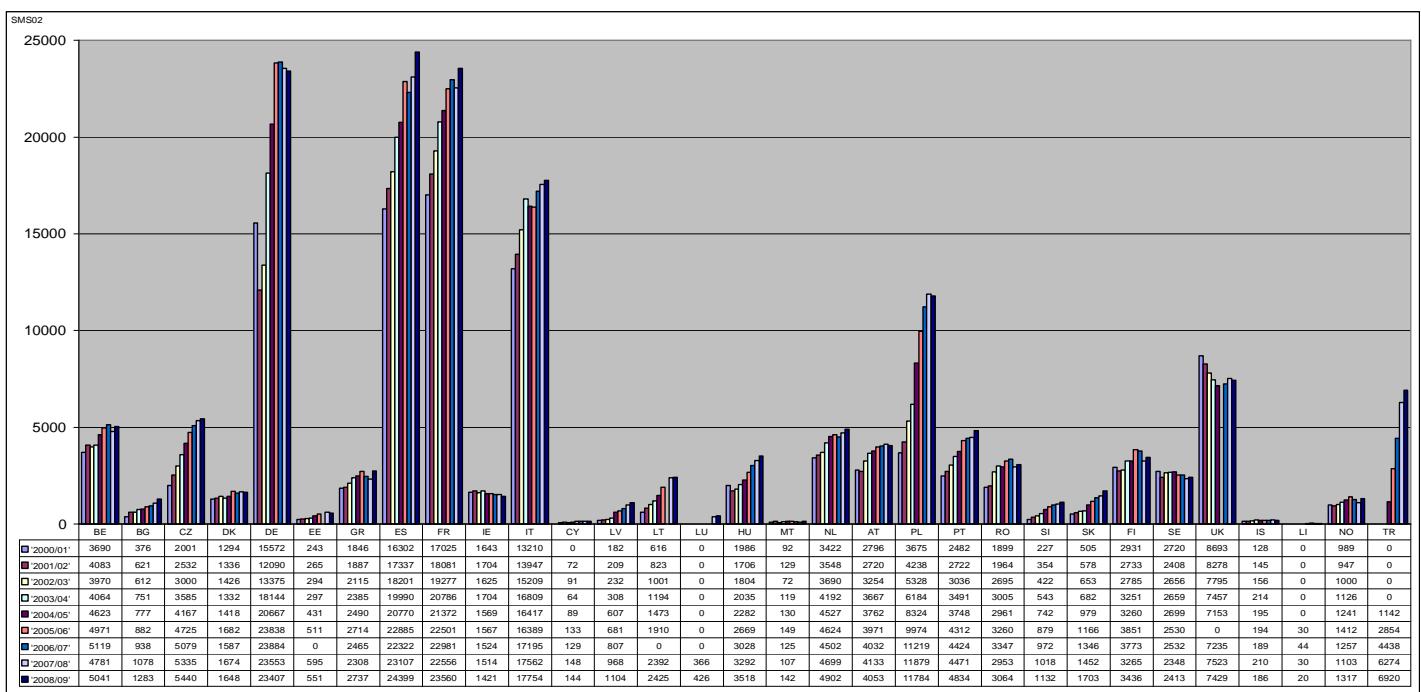
Light Green (5-10% growth) = (BE, ES, HU, FI, PT)

Yellow (0 – 4.9% growth) = (CZ, FR, IT, LT, NL, RO, SE)

Orange (decrease) = (AT, DK, DE, EE, IE, CY, IS, LI, PL, UK)

Chart 22 below is a timeseries of outgoing Erasmus student mobility for studies. Annex 6 shows outgoing flows for mobility for studies since 1994/95.

Chart 22: Outgoing Erasmus student mobility for studies (SMS) from EUR31: 2000/01- 2008/09



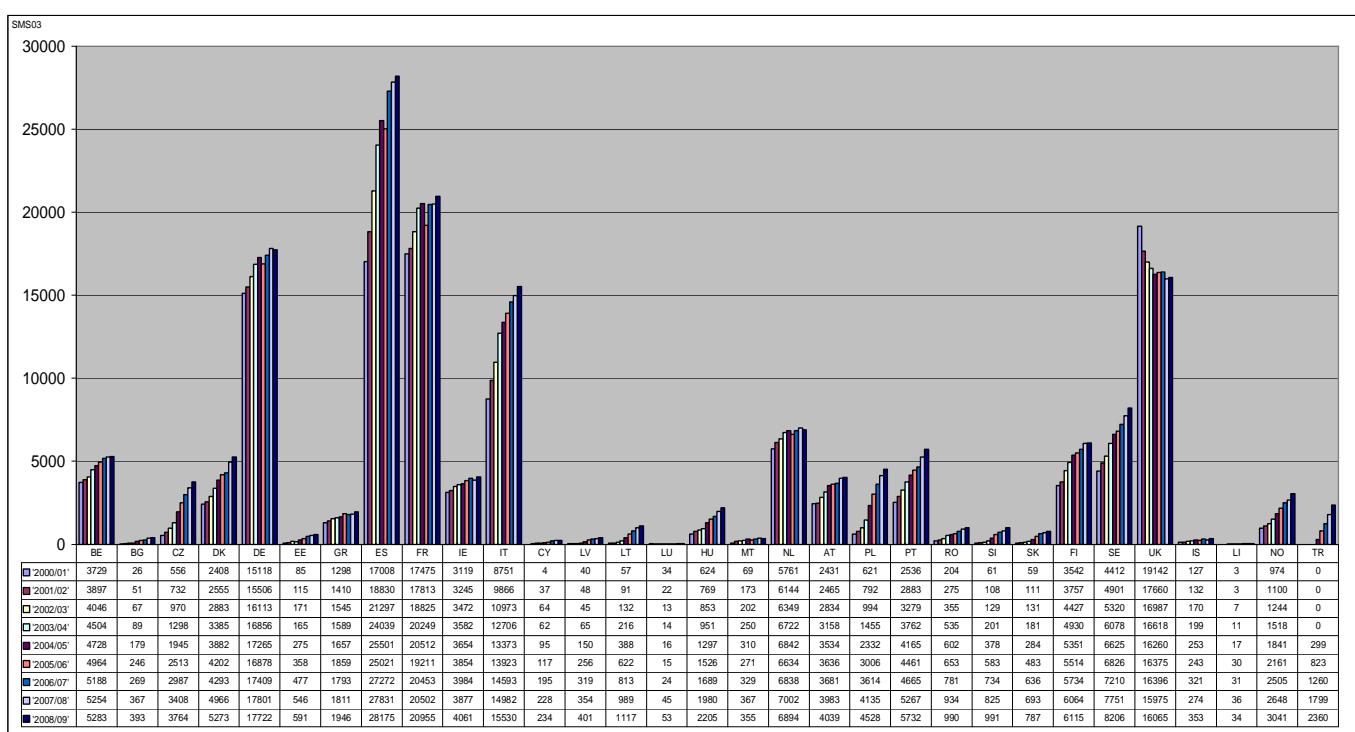
1.2.3 Incoming student mobility for studies

Spain remained the most popular destination for Erasmus student mobility for studies in 2008/09 with 28 175 incoming students, a 16.8% share of the total number of incoming students this year. The second most popular destination was France with 20 955 students (12.5 %) and Germany with 17 722 (10.5 %). Turkey saw an increase of 31.2% in incoming mobility numbers and Iceland received 28.8% more Erasmus students for studies than in the academic year 2007/08.

Most of the participating countries, or 27, saw an increase in the number of incoming Erasmus students for studies. The highest growth rate was in Turkey (31.2%), followed by Iceland (28.4%) and then Slovenia (20.1%). Several countries saw a minimal increase and three countries, Belgium, Finland and the UK, experienced a stagnation in incoming Erasmus students for studies (less than 1% increase). Only four countries, however, saw a decrease in the number of incoming Erasmus students for studies. These were Germany (-0.4%), Malta (-3.3%), the Netherlands (-1.5%) and Liechtenstein (-5.6%).

Chart 23 shows the trends in the incoming numbers since the 2000/01 academic year. The average growth in mobility for studies during this period was 51.8% in the 31 participating countries, or up from 110 274 students in 2000/01 to 168 193 in 2008/09. All countries except one had an increase in incoming students during this period. The UK had a decrease of 16.1% in incoming student mobility numbers during this period. The Member States that joined the EU in 2004 and 2007 respectively are without a doubt attracting more incoming students in relative terms than the older Member States having an average annual growth of 10.3% in 2008/09 versus an annual growth of 3.4% in the 31 participating countries.

Chart 23: Incoming Erasmus student mobility for studies in EUR31 from 2000/01 to 2008/09

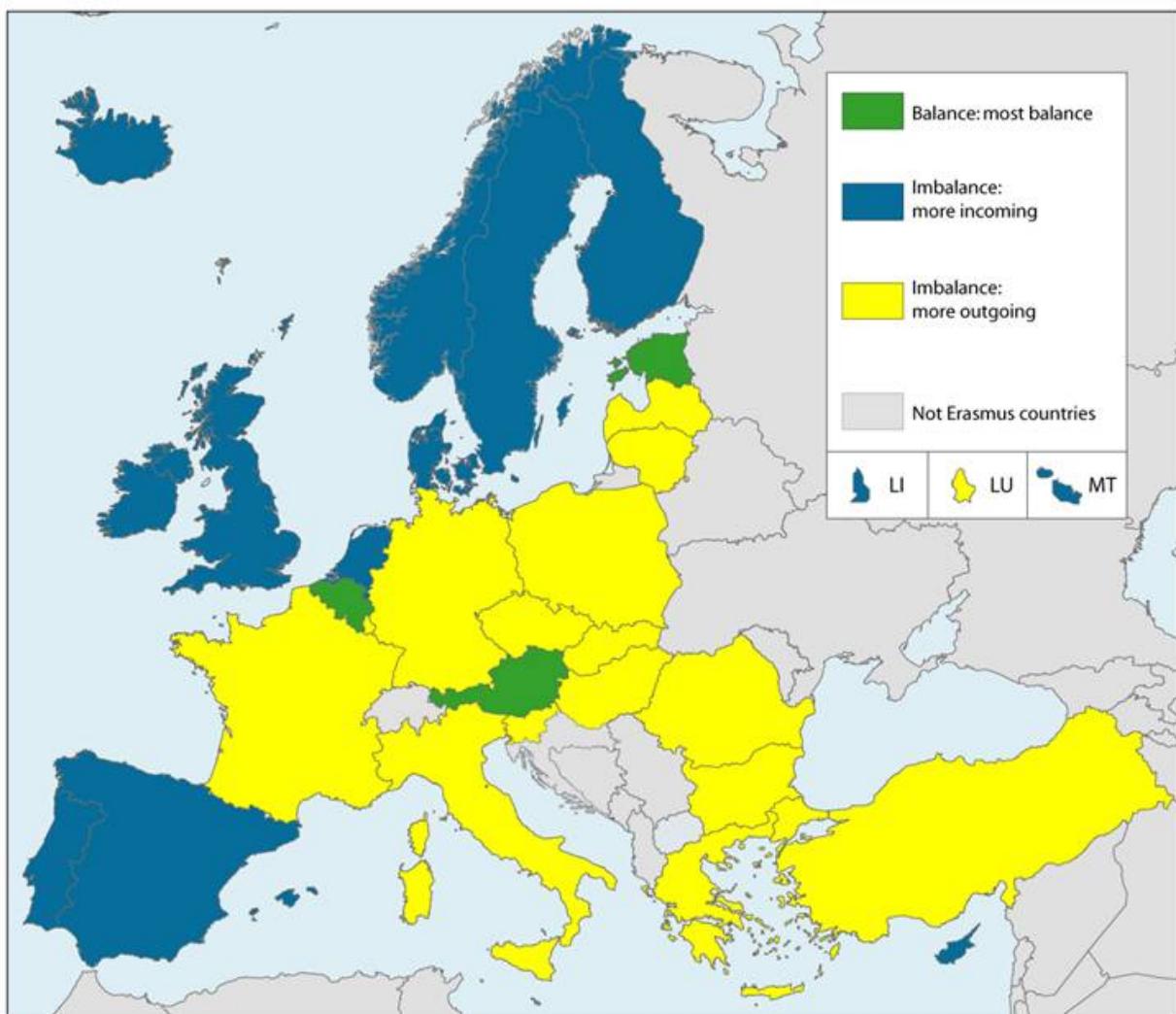


Map 4 and Chart 24 show the imbalance in terms of incoming and outgoing Erasmus students for studies in individual countries. A number of participating countries had a substantial imbalance in terms of incoming and outgoing Erasmus student numbers for studies. The greatest imbalance in the academic year 2008/09 was found in Sweden, Denmark and Ireland where there were about three incoming students for every one outgoing. The imbalance was also high in Malta, Norway and the UK. A total of 15 countries had higher numbers of incoming students than outgoing. Of the 12 Member States that joined the EU in 2004 and 2007 respectively, Cyprus and Malta received more incoming students than they sent out.

Sixteen countries had higher numbers of outgoing Erasmus students for studies than incoming. The greatest imbalance was found in Luxembourg. In the 2008/09 academic year, Luxembourg received 52 students but sent out 426, an imbalance of over one to eight (up from 1:6 in the previous year). A very high imbalance was also found in almost all of the newer Member States. In Bulgaria, Poland and Romania the ratio was for example three outgoing students for every incoming. The exception was Slovenia which received almost as many Erasmus students as it sent out. If the size of the student population in individual countries is compared with the number of incoming students the imbalance was greatest in Poland which in 2008/09 sent out 11 784 students but received only 4528.

The level of incoming and outgoing Erasmus student mobility for studies was best balanced in Austria. In 2008/09, Austrian students going on study mobility were 4043 while incoming Erasmus students were 4039. Belgium and Estonia also had a high level of balance (see Annex 7).

Map 4: Balance of incoming/outgoing Erasmus students for studies in 2008/09



Green (balance) = (BE, EE, AT)

Blue (more incoming than outgoing)= (DK, ES, IE, CY, MT, NL, PT, FI, SE, UK, IS, LI, NO)

Yellow (more outgoing than incoming) = (BG, CZ, DE, GR, FR, IT, LT, LV, LU, HU, PL, RO, SI, SK, TR)

Chart 24: Outgoing - incoming Erasmus student mobility for studies per home country in 2008/09

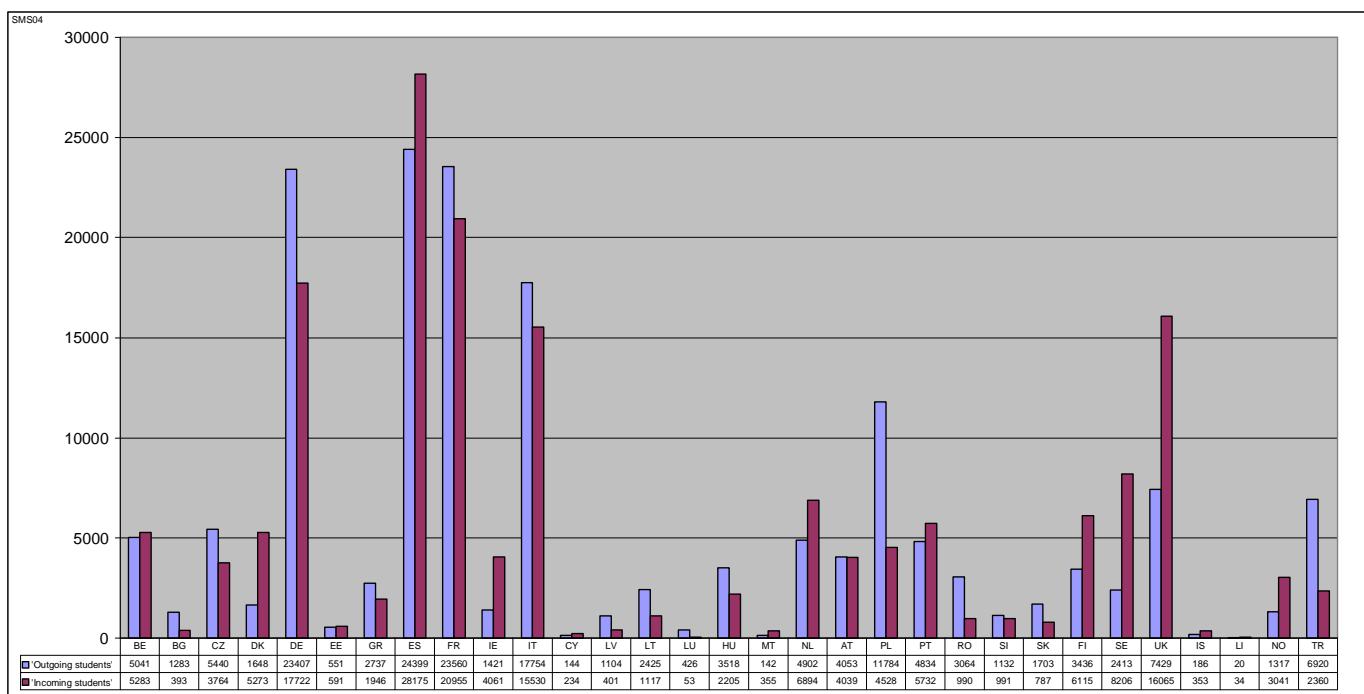
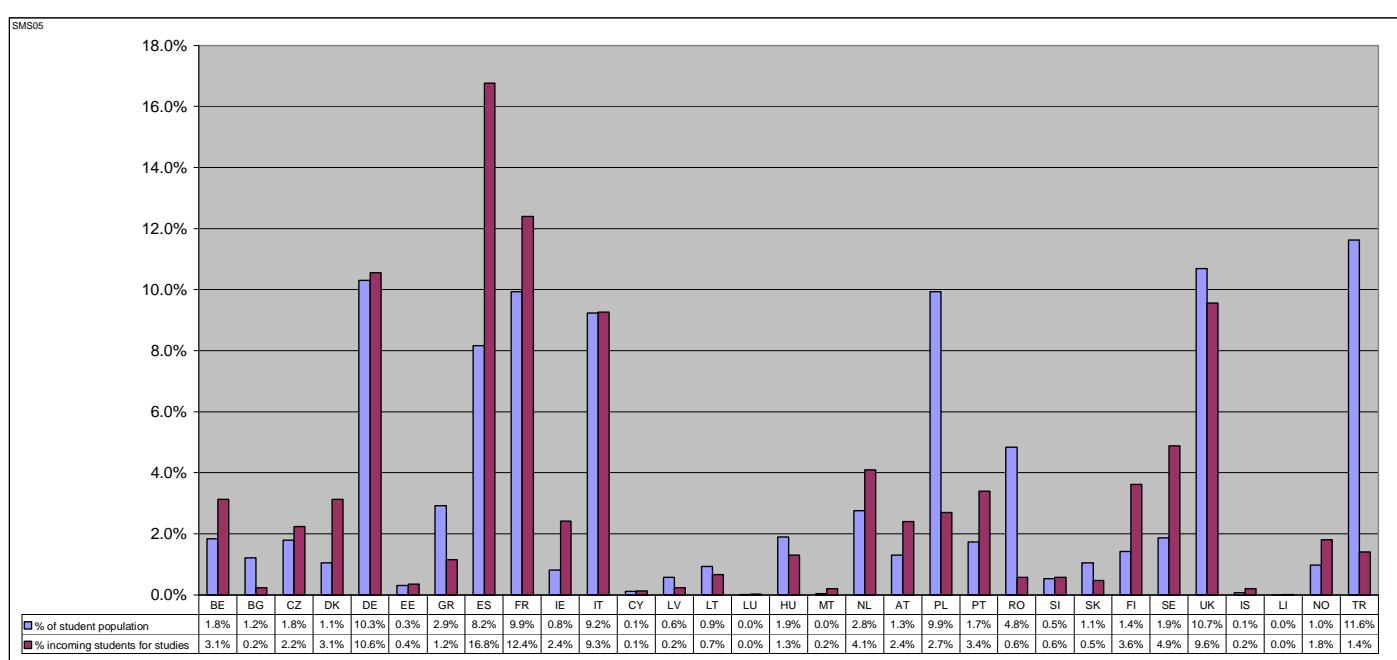


Chart 25 shows the share of incoming Erasmus students for study in each of participating country and compares it with each country's share of the higher education student population in the 31 participating countries. For each country, the chart presents: a) the country's student population as a percentage of the total student population in the 31 participating countries; b) the country's incoming Erasmus students studying abroad as a percentage of Erasmus students studying abroad.

The chart shows that the share of incoming Erasmus students to Turkey in 2008/09 was very low, or 1.4%, in comparison with the total student population in Turkey which accounts for 11.6% of the total student population in the 31 participating countries. Similar situations can be seen in Romania, Bulgaria and Poland. This said, around half of the participating countries had a higher percentage share of incoming students than their share of the student population. The biggest contrasts were in Spain and Sweden followed by Denmark and Finland.

Chart 25: Share of incoming Erasmus student mobility for studies in 2008/09 and share of total student population in 2008 by country



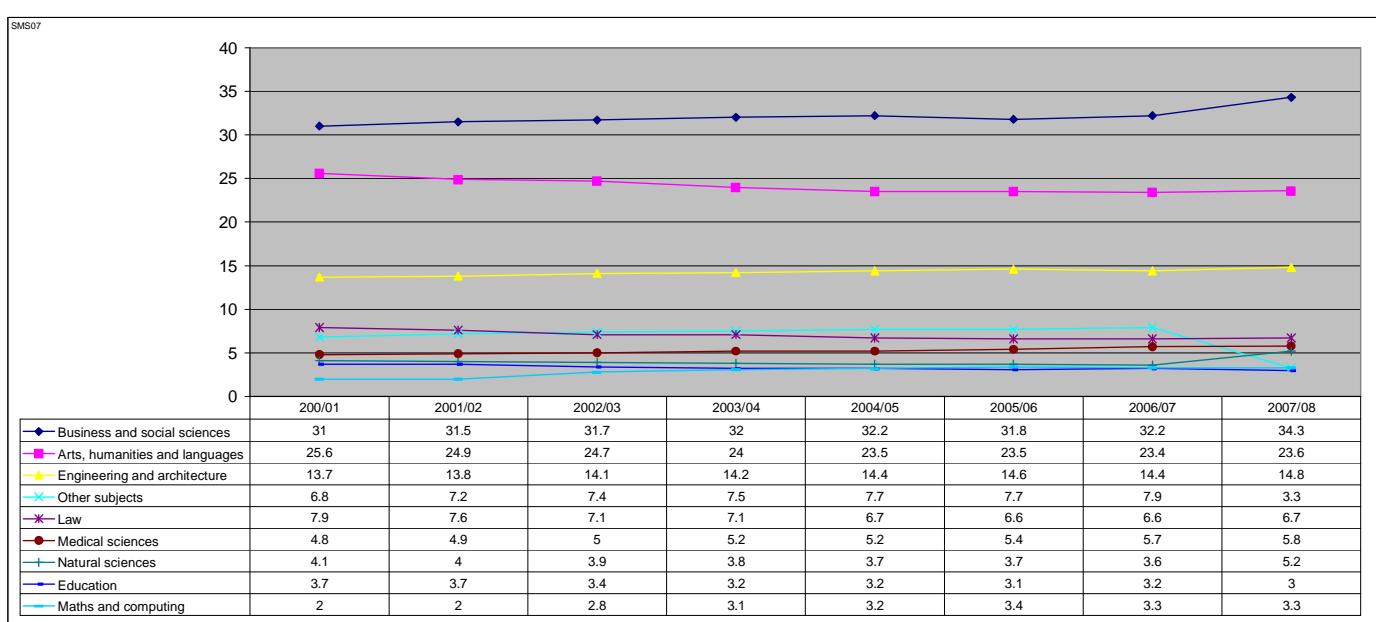
1.2.4 Subject areas

Studying with Erasmus in the academic year 2008/09 was most popular among students in the “social sciences, business and law” areas (a 41.6% share), followed by “humanities and arts” (23.3%) and then “engineering, manufacturing and construction”(14.3%). “services”, “agricultural and veterinary sciences” and “education” were the subject areas from which students participated the least in Erasmus.

Subject areas seem very stable when it comes to student mobility for studies. Chart 26 illustrates how little has changed in recent years in terms of how “mobile” subject areas are. During the period 2000/01 to 2007/08 there was an increase in number of Erasmus students studying “social sciences, business and law” but a decrease in those studying within “humanities and arts”¹².

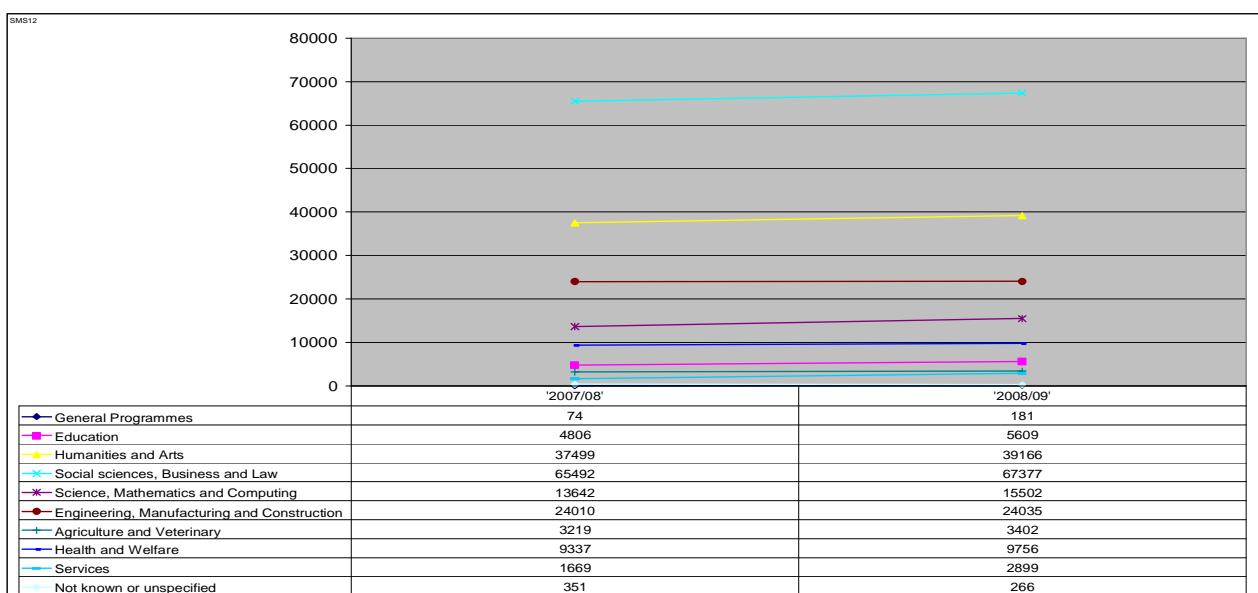
¹² Other subjects comprise "General programmes", "Agricultural sciences", "Personal services" and unspecified areas of study.

Chart 26: Subject areas of Erasmus mobility for study: increase/decrease from 2000/01 to 2007/08



Data on subject areas is not comparable for the academic year 2008/09 as the category for subjects was changed in the Erasmus Data Dictionary starting that academic year. Chart 27 shows the increase and decrease in the number of Erasmus students in different subject areas between the academic years 2007/08 and 2008/09. Particular attention should be drawn to the decrease between years in the number of Erasmus students for whom this question was not answered or listed that they study in a "Not known or unspecified subject area," from 846 in 2007/08 to 408 in 2008/09, a difference of 51.8%. The number of students studying in a "general programme" increased, however, by 190% between years and the year-on-year increase in the number of students studying in "service" programmes was 138%. There was also considerable increase in mobility of students studying "education," or 24.1% between years.

Chart 27: Subject Areas of Erasmus student mobility for studies: Increase/decrease between 2007/08 and 2008/09



1.2.5 Study duration

The average duration of Erasmus student mobility for studies has changed little since the academic year 1994/95. A student on Erasmus student mobility for studies studied on average for 6.4 months abroad in 2008/09. The average duration ranged from 5.4 months for Erasmus students from Bulgaria (up from 4.9 months in the previous year) to 7.1 months for Italian students.

Chart 28: Average duration of Erasmus student mobility for studies (SMS) 1994/95 – 2008/09

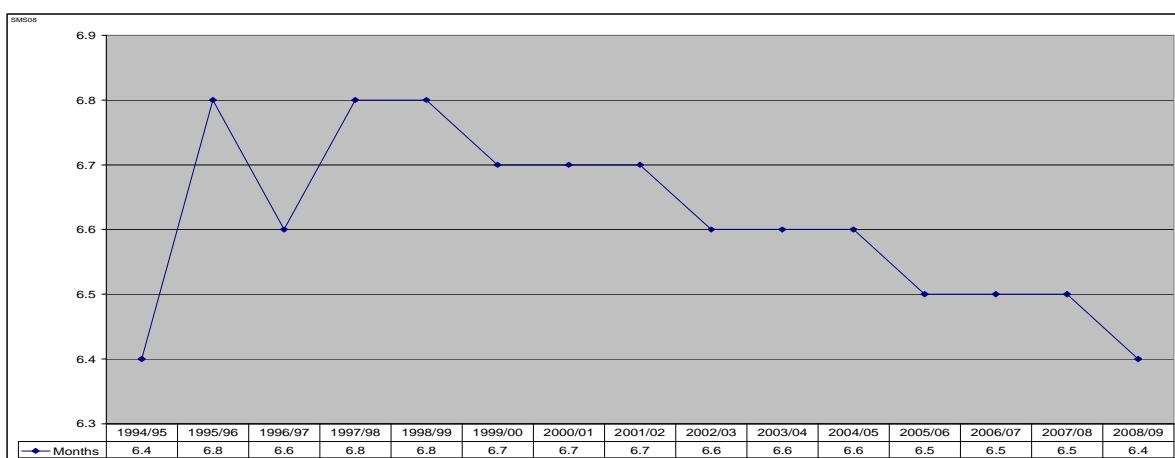
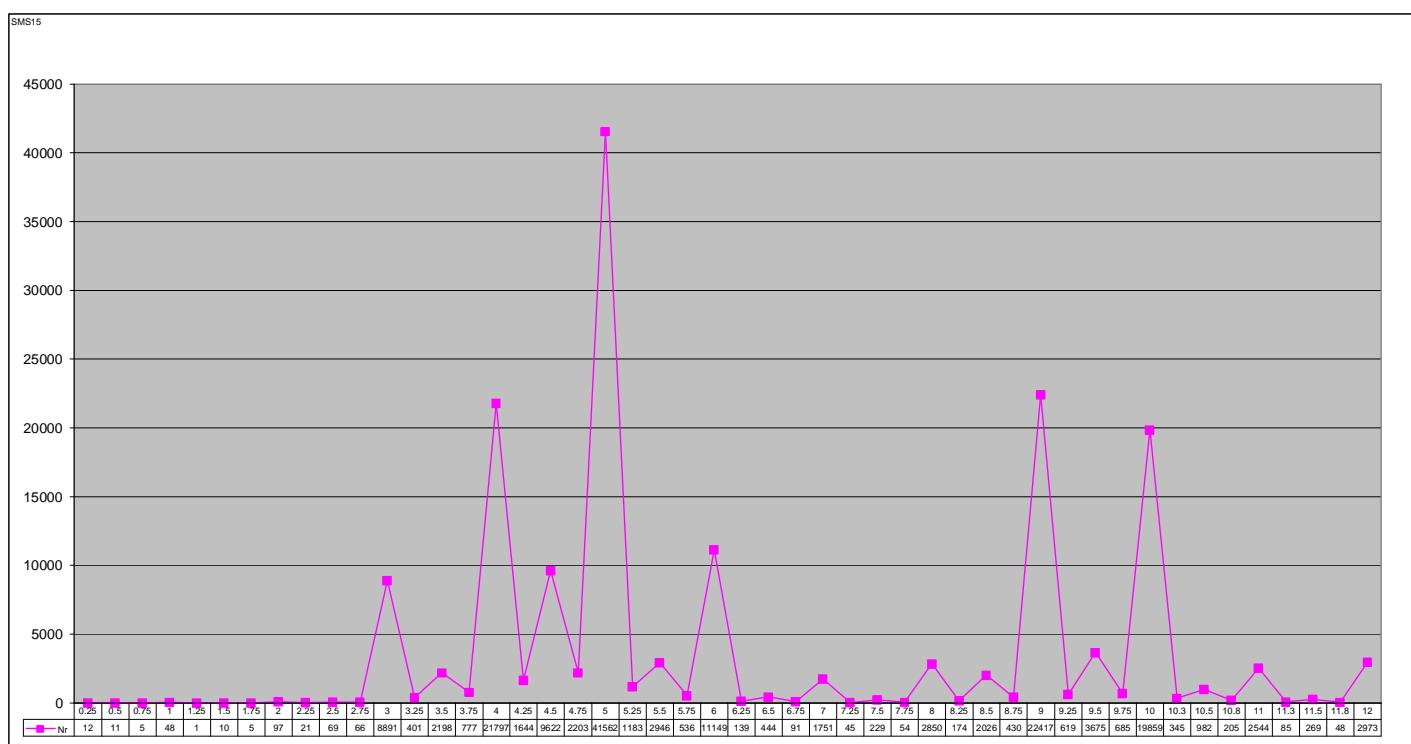


Chart 29 shows the number of Erasmus mobility for studies and the respective duration of each mobility in 2008/09. As the chart clearly shows, the highest number of mobilities for studies (41 562) lasted five months or one semester. The minimum duration for Erasmus mobility for studies is three months. Interestingly, a number of mobilities were reported that did not respect the minimum duration of stay. The explanation for most of these mobilities is that planned stays abroad had to be cancelled early due to unforeseeable events. It is also interesting to see how many students stayed for nine or ten months abroad which is the equivalent of two semesters.

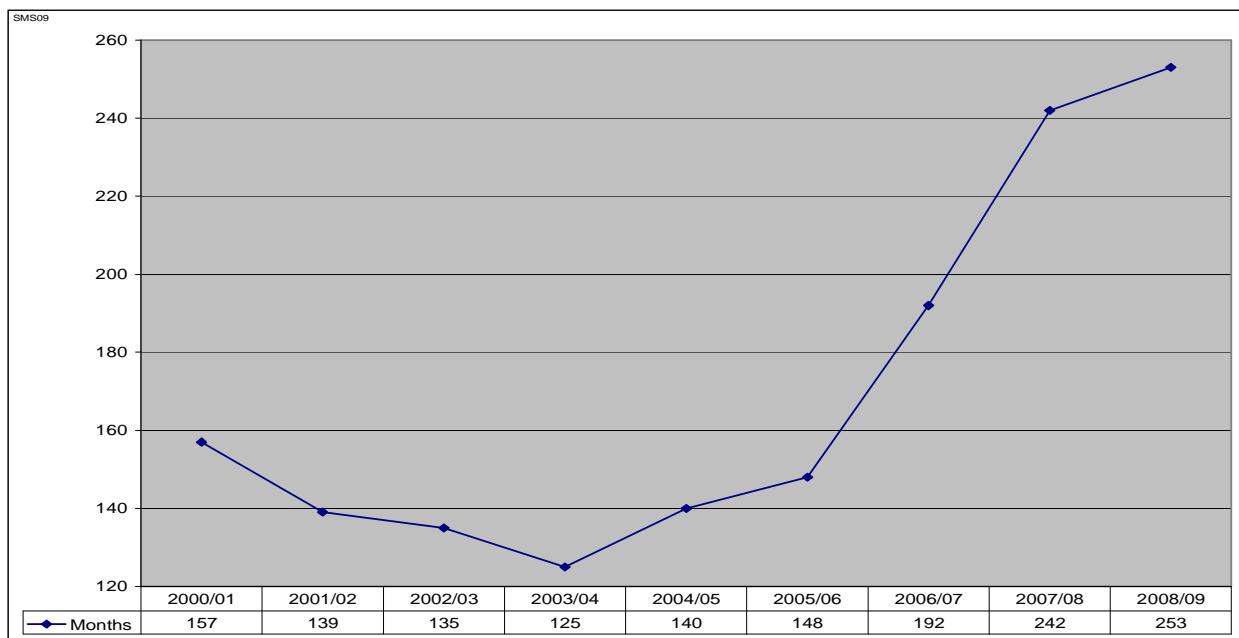
Chart 29: Distribution of duration of mobility for studies in 2008/09



1.2.6 Study grants

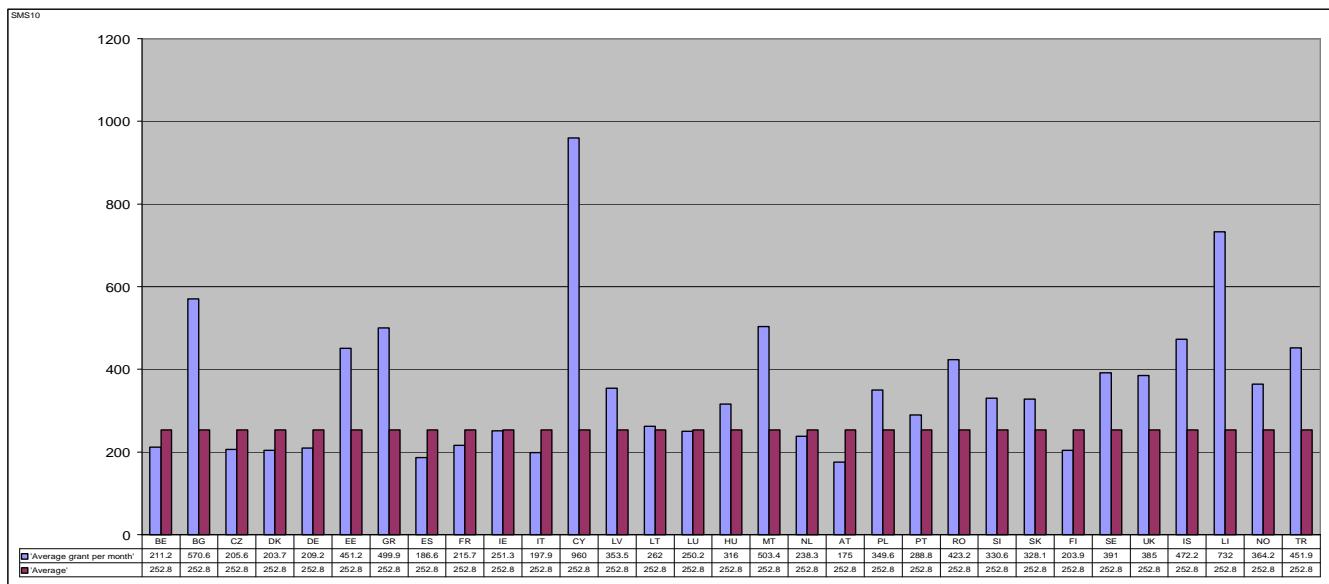
The average monthly EU grant for Erasmus mobility for studies in the 31 participating countries was 253€ in the academic year 2008/09 compared to 242€ in 2007/08. This constitutes an annual growth of 4.5%.

Chart 30: Average monthly EU grant per student from 2000/01 - 2008/09



Erasmus students received very different amounts of EU monthly grants depending on their home country and their home higher education institution. The overall Erasmus budget for mobility actions is divided up into 31 national Erasmus funds according to a distribution key. Each National Agency has a different student grant allocation policy. Their policies, however, have to be in accordance with EU rules and guidelines and respect the maximum grants ceilings set by the Commission. Home higher education institutions can further decide on the maximum grant amounts their own students receive. The average monthly EU study grant in the 2008/09 academic year ranged from 175€ in Austria to 960€ in Cyprus. With reference to section 1.1.6 it should be pointed out that in Austria (as well as in other countries) the EU grant is complemented by national, regional and private funds.

Chart 31: Average monthly EU grant per home country in 2008/09



1.2.7 Students with special needs

203 students with special needs or severe disabilities went on study mobility in Erasmus in the academic year 2008/09, compared to 161 students in 2007/08. Students with special needs accounted for 0.12% of student mobility for studies this year. This means that one out of every 825 Erasmus students who studied abroad was a student with special needs. The average duration abroad was 6.7 months and the average EU supplementary grant per student was 3938 €(compared to 3200€in the previous year) or 588€per month.

Italy had the highest number of students with special needs participating in the programme or 47 in total (a 23.2 % share), followed by Poland with 27 (13.3 %), and then Hungary with 26 (12.8%). Eleven countries, or more than one third of the participating countries, did not fund any Erasmus students with special needs to study abroad in 2008/09.

Spain received the highest number of students with special needs in 2008/09 or 45 (22.2 % share) followed by Germany with 28 (13.8 %) and France with 23 (11.3 %). Cyprus and Liechtenstein did not receive any students with special needs.

1.2.8 Zero-grant students for studies

Every year, several thousand students participate in student mobility for studies using the Erasmus label but without receiving an EU grant. These students are called "zero-grant students."¹³ A majority of countries send out zero-grant students every year but the number of zero-grant students is gradually declining. The total number of zero-grant students in 2008/09 was 4138 (down from 4629 in the previous year). The share of zero-grant students of the total Erasmus study mobility is also declining. In 1997/98 students without an EU grant made up 8.8 % of all Erasmus students whereas in 2008/09 they accounted for 2.5% of study mobilities. The highest number of "zero-grant" students came from France or 1834 (44.3% share), followed by students from Austria, a total of 898 (21.7%) and then students from Finland, a total of 355 (8.6%). See more in Annex 8.

The most popular destination for "zero-grant" students in 2008/09 was Spain, where 19% of the zero-grant students went to, then Germany with a 13.5% share, followed by the UK with a 12.9% share. The average duration of stays of zero-grant students was about 6.2 months.

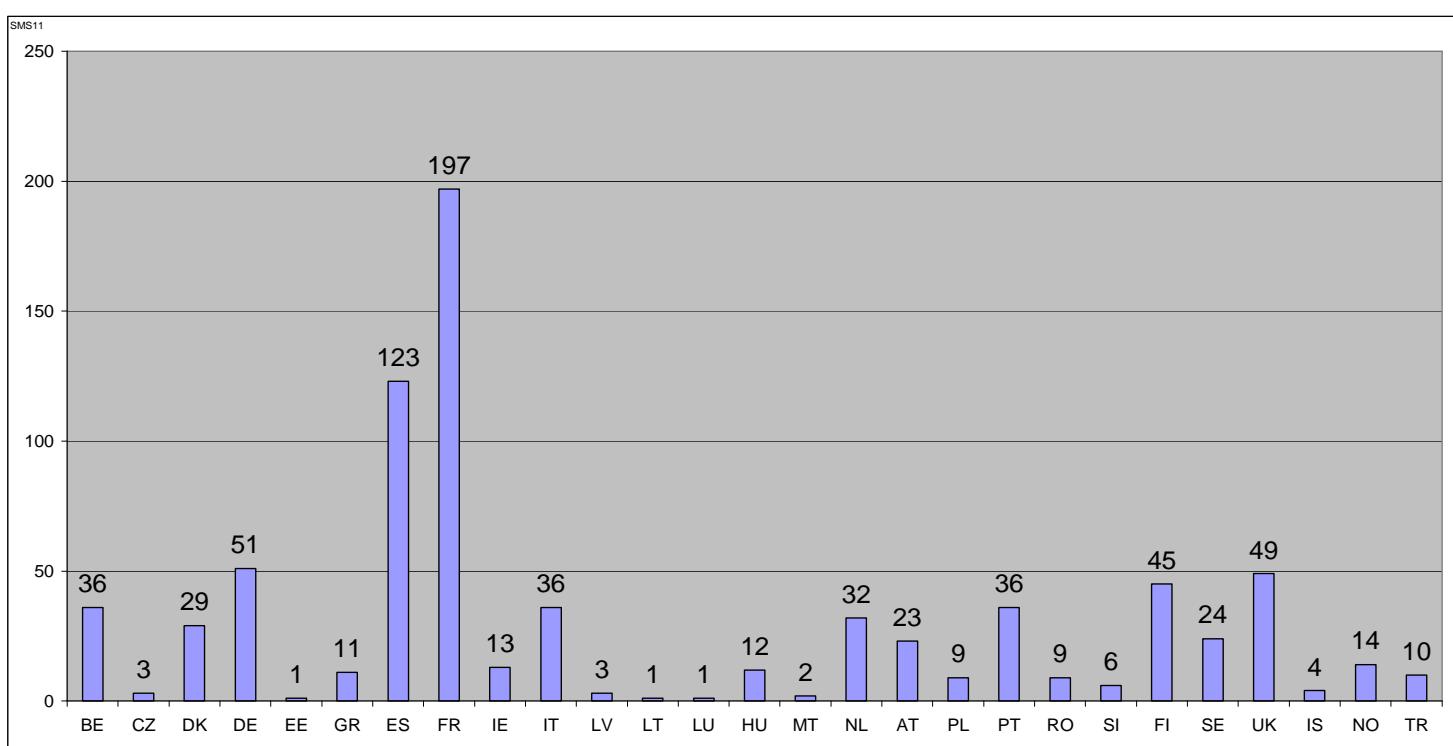
¹³ In some countries, for example in Austria, Erasmus students who are national grant holders get a national Erasmus monthly grant instead of the EU monthly grant which is at least at the same level. These students are reported as zero-grant students.

1.2.9 Combined period of study and placements (integrated placements)

According to Erasmus rules it is possible to combine a period of placement with a period of study and the mobility is considered as a single "study" mobility period abroad. In the academic year 2008/09, a total of 780 students did an integrated placement period during their Erasmus study mobility. This represents 0.46% of all Erasmus students studying abroad (down from 0.7% in the previous year).

The highest number of students doing an integrated placement period came from Germany (183 or 23.5%), Spain (95 or 12.2%) and Belgium (70 or 9%). The most popular destinations for integrated placements were France (197 or 25.3%), Spain (123 or 15.8%) and Germany (51 or 6.5%). See also chart 32 below for information on the host countries of integrated placements.

Chart 32: Number of combined study and placements per host county 2008/09



1.3 Erasmus Student Mobility for Placements

1.3.1 Student mobility for placements

Since the academic year 2007/08, the Erasmus programme has offered students the opportunity to go abroad for placements (traineeships) in companies. This new action enables students at higher education institutions to spend a placement period of between three and twelve months (or at least two months for students in short-cycle vocational higher education institutions) in companies in another participating country.

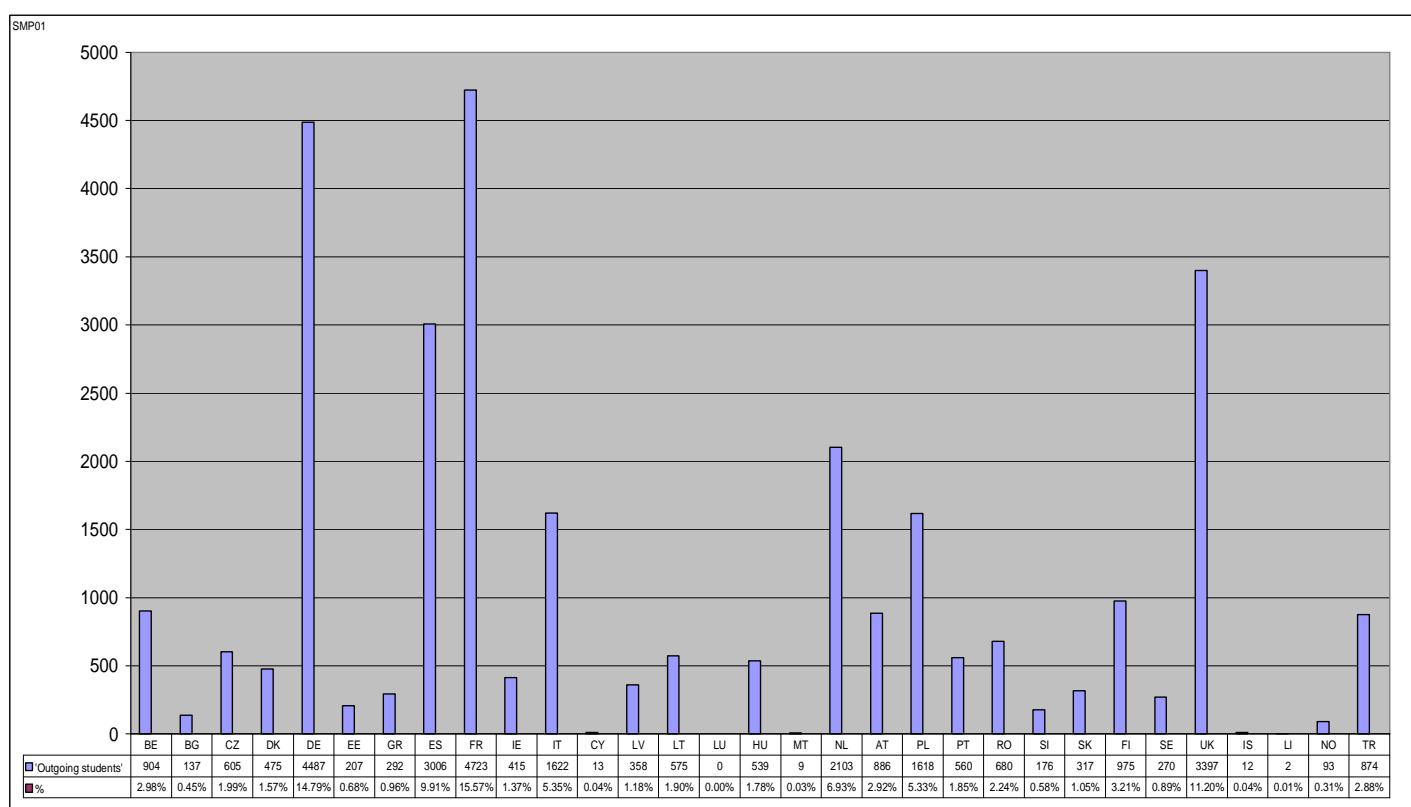
Placements for students in higher education until 2007 were supported through the Leonardo da Vinci Programme for vocational education and training. Since the placement action was moved over to the Erasmus programme, it has experienced a very strong growth. Given the current demand the number of students participating in the action is likely to grow considerably in the future.

1.3.2 Outgoing student mobility for placements

In 2008/09 a total of 30 330 students undertook placements abroad (up from 20 002 students in 2007/08). This is an increase of 51.6% between academic years. Placements represented a 15.4% share of all Erasmus student mobilities in 2008/09 whereas in the academic year 2007/08 they were 10.95% of the total number of Erasmus mobilities. Luxembourg was the only country out of the 31 participating countries that did not send any students on Erasmus placements in 2008/09.

The largest number of students going on Erasmus student mobility for placements in the academic year 2008/09 came from France which sent 4723 students on placements (15.6% share), followed by Germany with 4487 placement mobilities (14.8%), and then the UK with 3397 placements (11.20%). (See chart 33).

Chart 33: Outgoing Erasmus student mobility for placements per home country in 2008/09



Approximately 61.4% of Erasmus placement students in the academic year 2008/09 were women. This percentage is somewhat higher than the share of female students in the total student population in the 31 participating countries in 2008/09 (53.94 %)¹⁴. The average age of Erasmus placement students was 23.6 years (up from 22 years in 2007/08). The age of Erasmus placement students ranged from 17 to 69 years.

The proportion of Erasmus student mobility for placements in the academic year 2008/09 of the total student population in the 31 participating country was very low or 0.14%.

¹⁴ Eurostat data from 2008

1.3.3 Incoming student mobility for placements

During the academic year 2008/09, Spain received the highest number of placement mobilities, or 5003 which accounts for a 16.5% share of the total number of Erasmus placement mobilities, followed by the UK with 4786 mobilities (15.8%), and then Germany with 4210 incoming mobilities (13.9%). (See chart 34).

Chart 34: Incoming Erasmus student mobility for placements in each of the 31 participating country in 2008/09

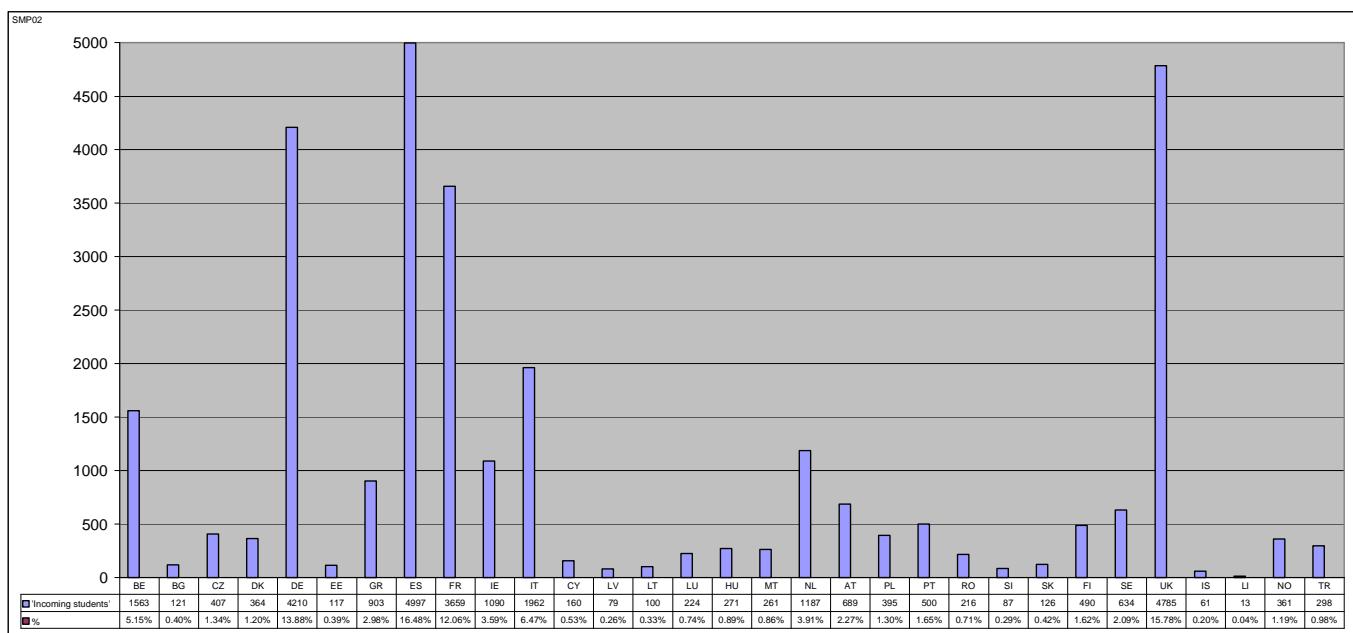


Chart 35 shows the imbalance in terms of incoming and outgoing Erasmus students for placements in 2008/09. Thirteen countries had higher numbers of incoming students for placements than outgoing. While Luxembourg received 224 students it did not send any out in 2008/09. The imbalance was also high in many of the other smaller participating countries like Malta, Cyprus, Liechtenstein, Iceland and Norway (see more in Annex 9).

The countries that had higher numbers of students going abroad for placements than coming to their respective countries were 18 in the academic year 2008/09. Lithuania received one student for every five going abroad for a placement period. The balance was one in four in Poland and Latvia and one in three in Romania and Turkey.

Of the 31 participating countries, Germany has the most balance between outgoing and incoming students, followed by Portugal, Bulgaria and Italy.

Chart 35: Outgoing - incoming Erasmus student mobility for placements in each of the 31 participating country in 2008/09

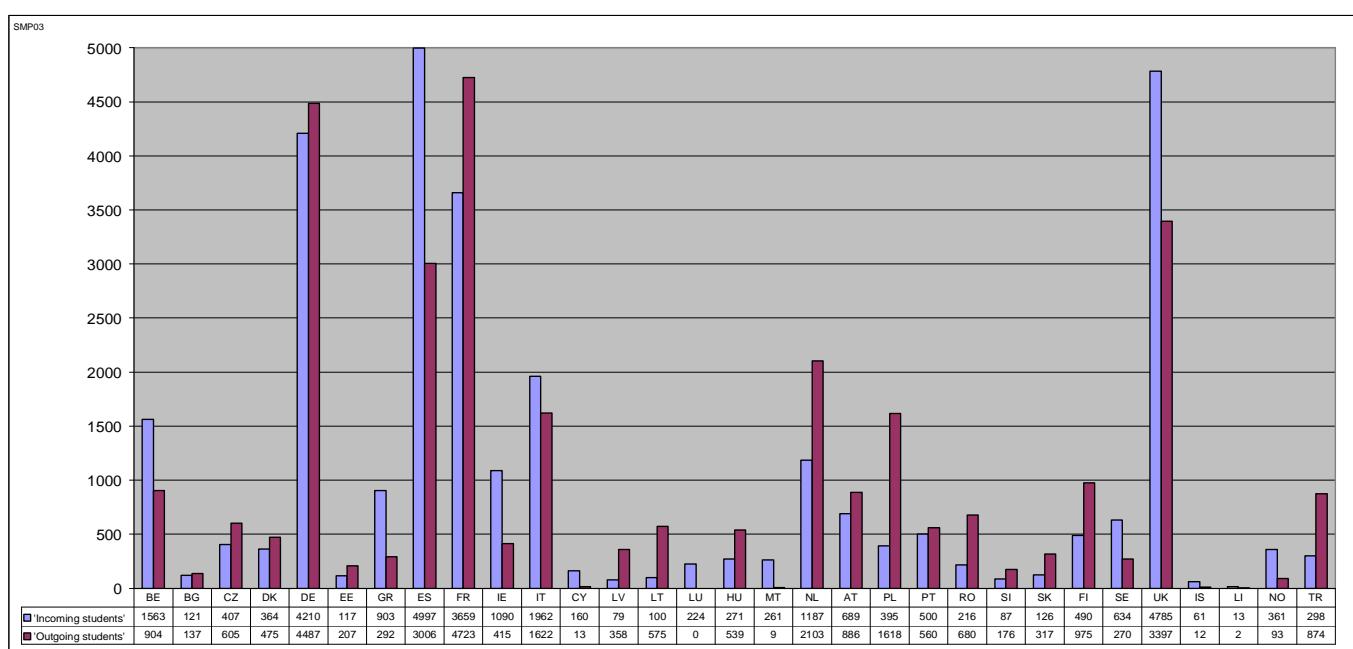


Chart 36: Growth of company placements for students from 2006/07 to 2008/09

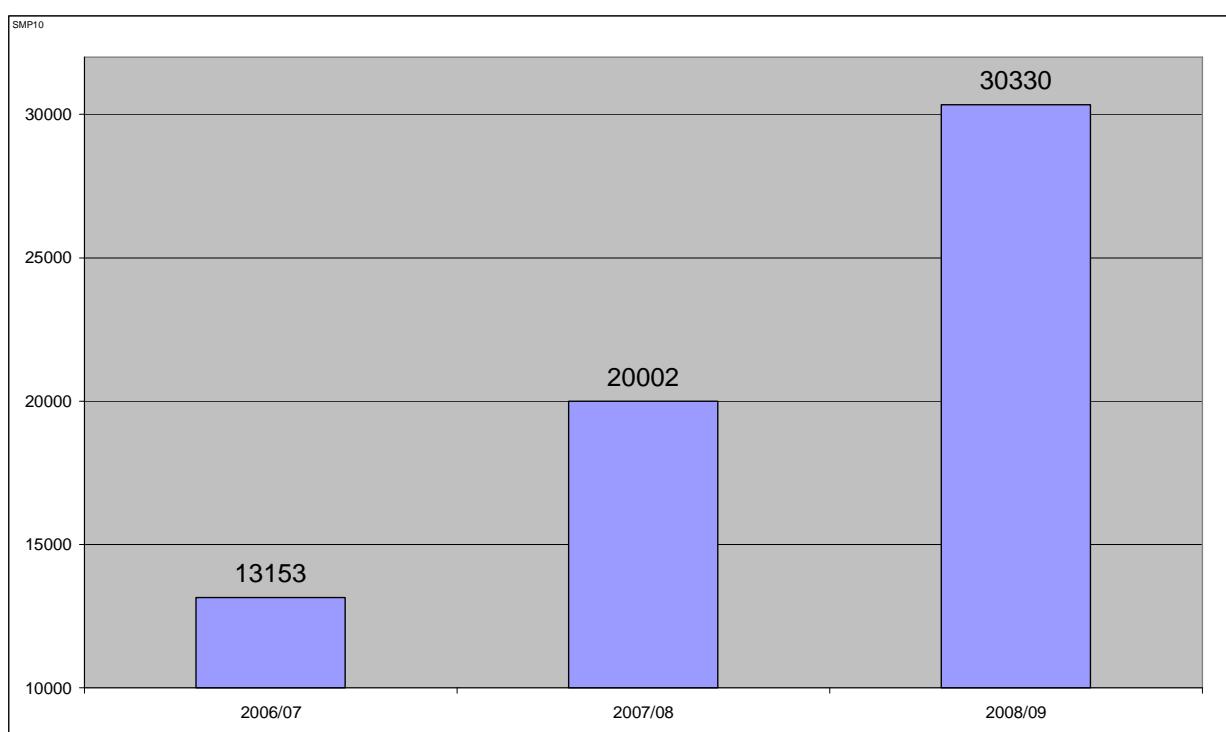
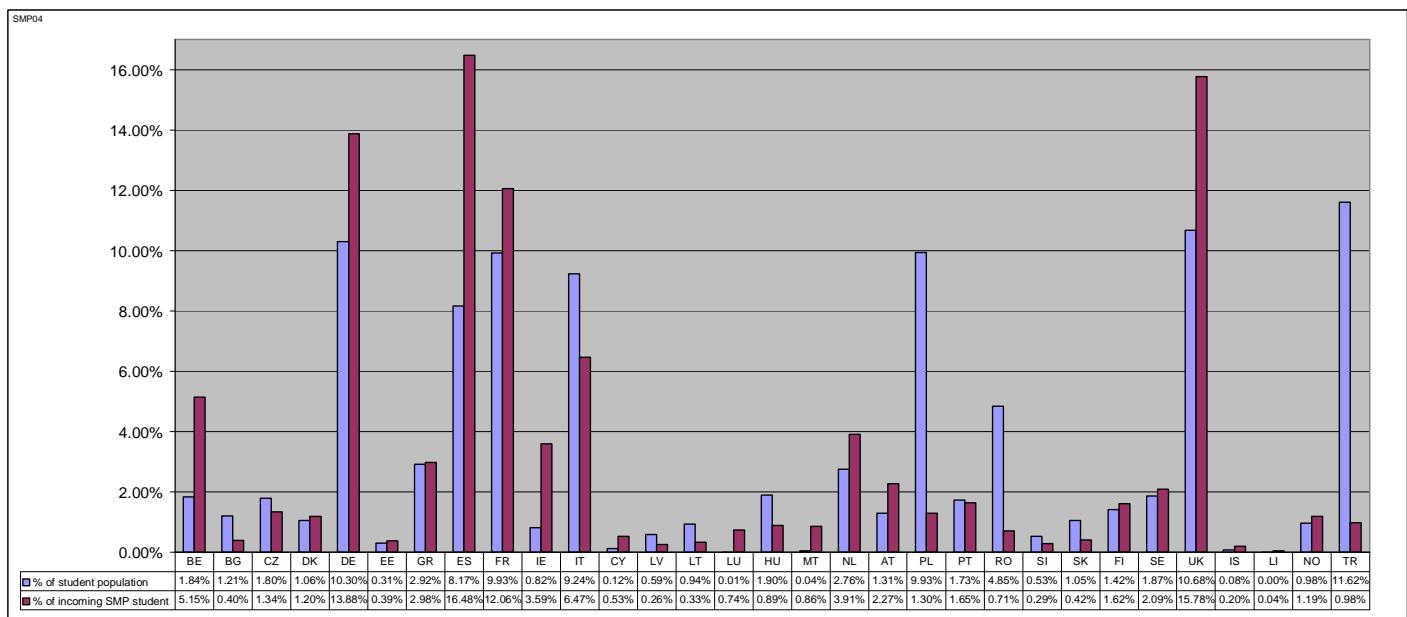


Chart 37 compares the share of incoming placement mobility with each country's share of the total student population in the 31 participating country in 2008/09. About half of participating countries had a higher percentage of incoming placement students than their share of the student population. The biggest contrasts were in Turkey, Poland and Romania where there were very few incoming Erasmus mobility placements in comparison to the size of the country's respective student population. Of the 19 countries receiving a higher number of students for placements than their country's share of the student population, the greatest imbalance, aside from the very small countries, was found in Belgium, Ireland and Spain.

Chart 37: Share of incoming Erasmus placement students in 2008/09 in comparison with each country's share of the total student population in 2008/09



1.3.4 Placement hosts and placement sectors

A total of 21 670 enterprises received Erasmus placement students during the academic year 2008/09. The enterprises varied greatly in type and size. Around 45.1% of the enterprises were small, 36.4 % medium-sized and 18.5% were large.

The share of small enterprises was highest in Malta or 62.6%, followed by Estonia with a 59.5% share. The highest share of medium-sized enterprises was in Luxembourg, or 48.2%, and in Germany with 41.3% of receiving enterprises being medium-sized. Large enterprises hosting Erasmus placement students were most prominent in Cyprus where the share of large enterprises was 34.4% but Finland also had a high share of large enterprises receiving Erasmus placement students, or 28.8%.

The most popular placement sector was “Education” with 4317 placements, or 14% of the total, followed by “Professional, scientific and technical activities” with 4289 mobilities. The least popular sectors were “Activities of households as employers”, and “Mining and quarrying.”

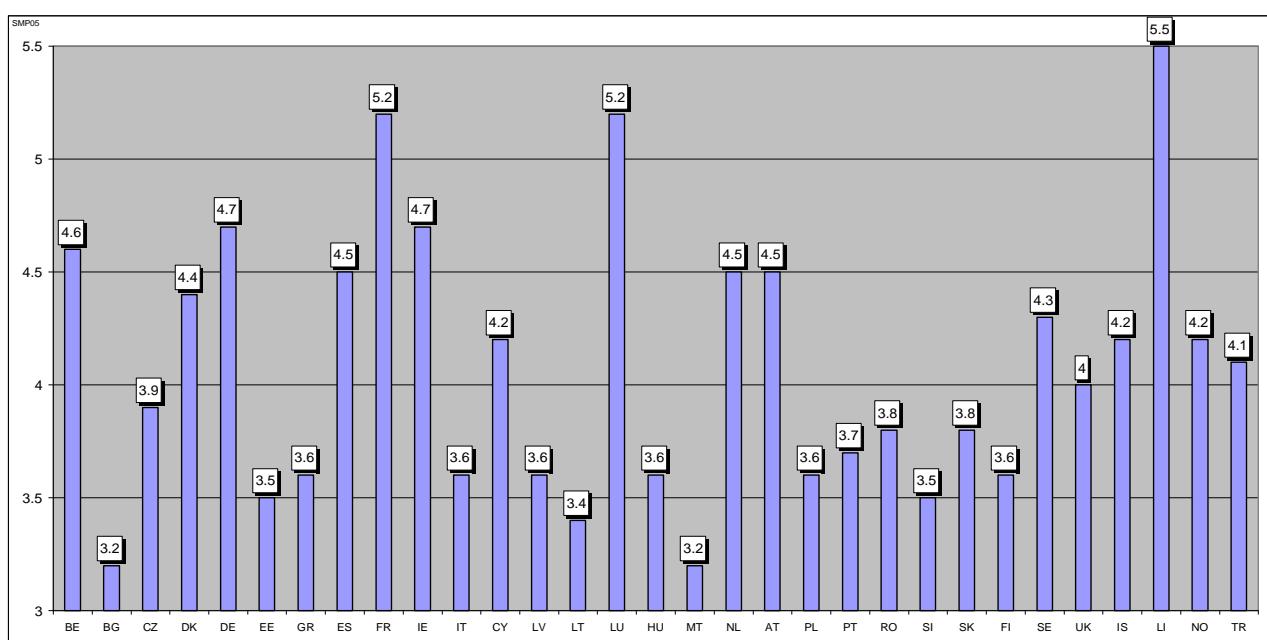
As noted above, 61.3% of participants in Erasmus placements were women. The gender difference was greatest in “human health and social work activities” and in “activities of extraterritorial bodies,” where female students represented 76% of participants in both sectors. The sectors where men were represented in over 50% of activities were “manufacturing, electricity, gas, steam and air conditioning supply,” and “construction.”

1.3.5 Placement duration and ECTS

The average duration of Erasmus student mobility for placements in 2008/09 was considerably lower than for studies, or on average 4.4 months (compared to 6.4 months for studies). The average duration ranged from 2.9 months for students coming from Turkey to 7 months for students coming from Liechtenstein. On average, placement students stayed the longest in Liechtenstein or 5.7 months, followed by Luxembourg (5.6 months), and then France (5.4 months). The shortest placement periods were in Malta and Bulgaria, 3.2 months respectively.

2454 placements, or 8.1% of the total Erasmus placements in 2008/09, were shorter than three months. A majority of these mobilities, or 53.3%, came from France (up from a 40.96% share in 2007/08), followed by Spain with 32.4% share and then Turkey with 5.8% of placements shorter than three months reflecting a high number of short-cycle higher vocational education institutions.

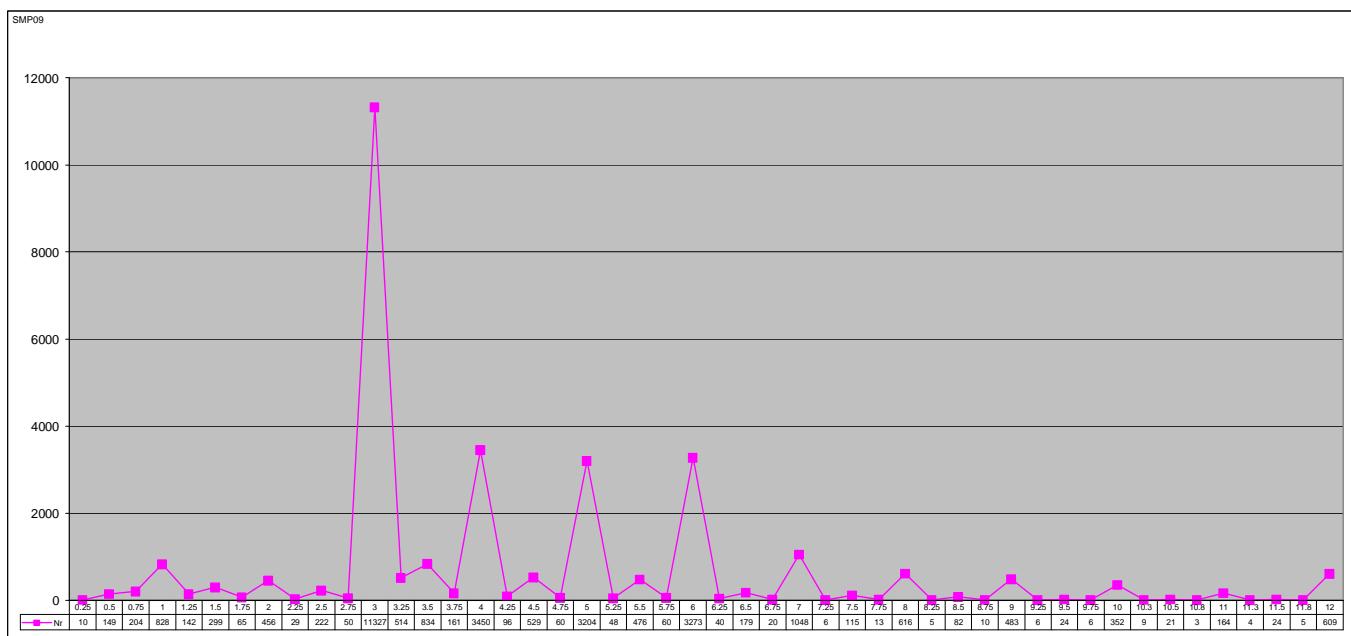
Chart 38: Average monthly duration of Erasmus student mobility for placements per home country in 2008/09



According to the National Agencies' reports, the average of anticipated ECTS credit hours for an Erasmus placement period abroad was 18 in the academic year 2008/09. Italian students had the lowest anticipated average ECTS credits, or 10.35, but students from the UK the highest, with 45 anticipated ECTS credits. Taking into account the average duration of Erasmus placements of 4.4 months, the average anticipated ECTS per month in the academic year 2008/09 was 4.1 ECTS credits.

Chart 39 below shows the number of Erasmus mobility for placements according to the length of each placement. The relative majority of Erasmus placements abroad lasted three months (13 weeks), or 11 307 mobilities which represent around one-third of all Erasmus placements in the academic year 2008/09. As can be seen in the chart, a high number of mobilities also lasted four, five or six months mostly due to rounding rules.

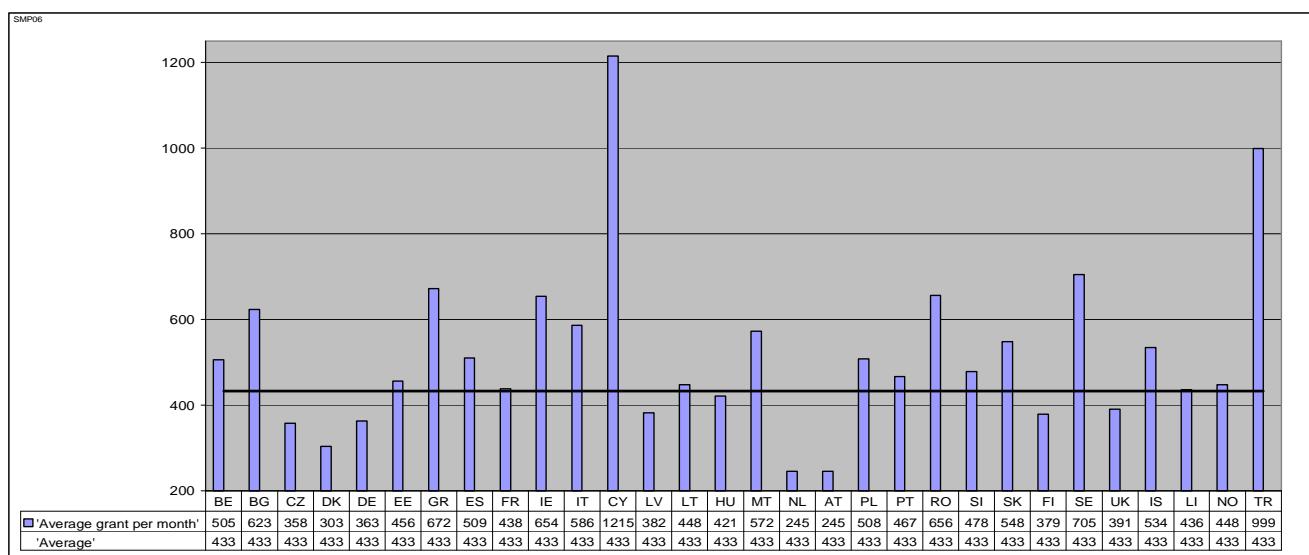
Chart 39: Distribution of duration of mobility for placements in 2008/09



1.3.6 Placement grants

In the academic year 2008/09 the average monthly EU grant for placements in the 31 participating country was 433€ up from 409€ in the previous academic year. Students received very different amounts in monthly EU grants depending on their home country and home higher education institution. The average monthly EU grant for placements per month ranged from 245€ for students from Austria and the Netherlands to 1215€ for students coming from Cyprus.

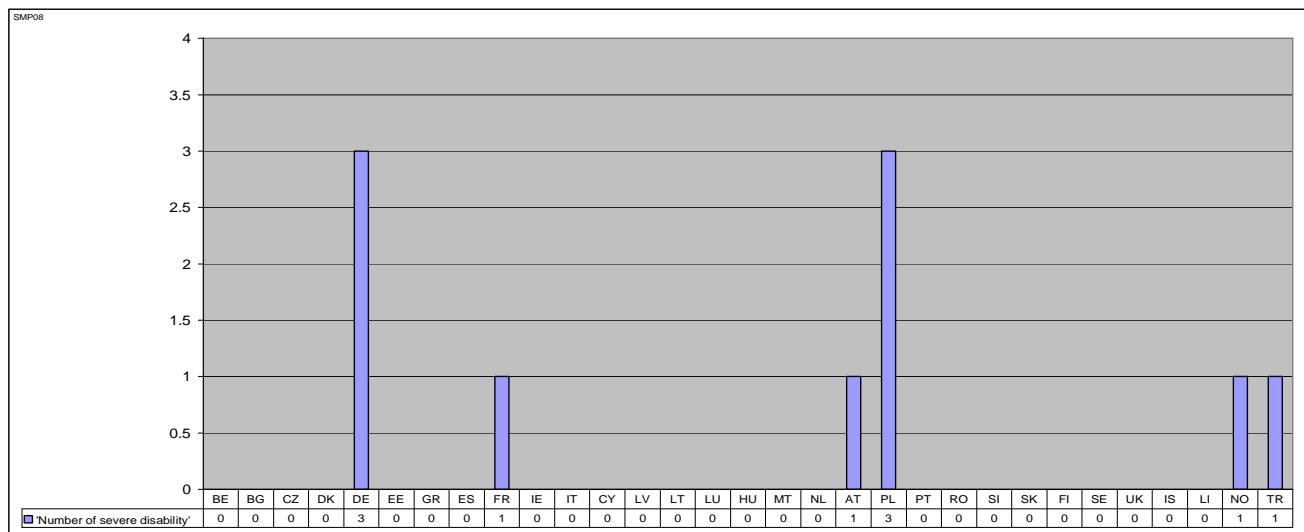
Chart 40: Average monthly EU grant for mobility of placements per home country in 2008/09



1.3.7 Placement students with special needs

Ten students with special needs participated in Erasmus student mobility for placements in the academic year 2008/09. This represents a 0.03% of all Erasmus placements this year. These students came from five countries: Germany, France, Austria, Poland and Norway. The average duration abroad was 4.4 months (down from 6.5 months in the previous year) and the average EU supplementary grant per student was 2385€ or around 542€ per month. This is almost a doubling from the previous year when the monthly supplementary grant was 293€.

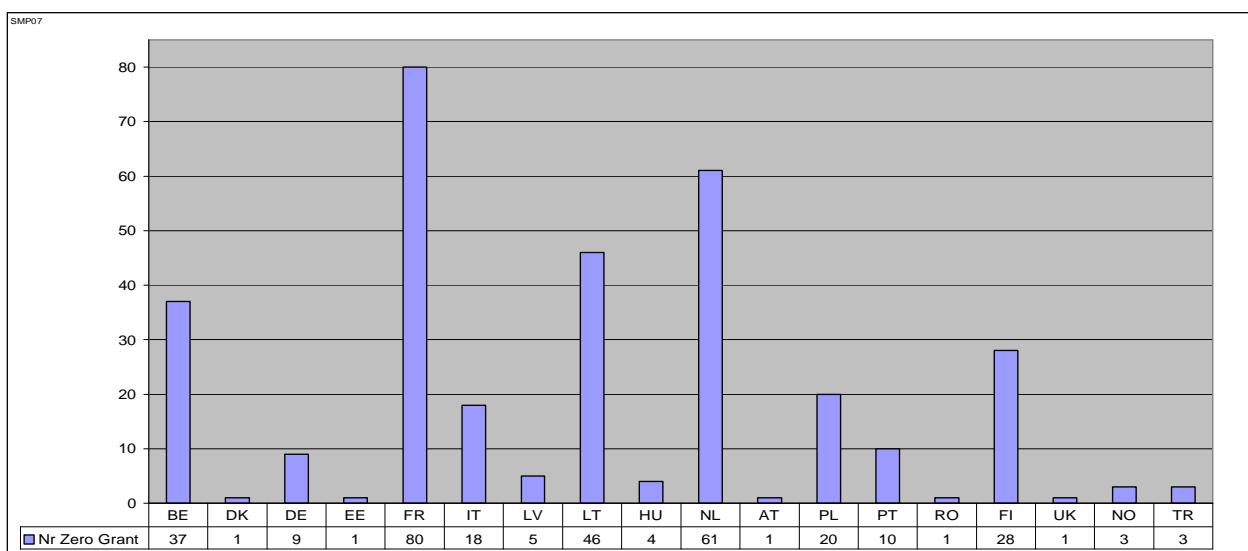
Chart 41: Number of Erasmus placement students with special needs in 2008/09 per home country



1.3.8 Zero-grant students for placements

A total of 352 Erasmus placement students did not receive an EU grant but undertook their placements nonetheless as Erasmus students. This is a considerable decrease from the previous year when a total of 1390 zero-grant Erasmus mobilities for placements were undertaken. In 2007/08 around 90%, or 1250, of the zero-grant students came from the UK. In 2008/09, however, only one zero-grant placement student came from the UK. Around 23% of these mobilities came from France, or 80, followed by the Netherlands with 61, and then Lithuania with 46 mobilities. The most popular destination for zero-grant Erasmus placement students in 2008/09 was Germany with 44 mobilities followed by the UK with 33 and then France with 29 (see Annex 10).

Chart 42: Number of Erasmus zero-grant mobility placements in 2008/09 per home country



1.3.9 Placement Consortia

Higher education institutions holding an extended Erasmus University Charter (EUC) can create a national consortium to organise Erasmus placements. Other organisations (enterprises, associations, chambers of commerce, foundations, etc.) can also participate in such a consortium. A consortium consists of at least one coordinating institution/organisation and one partner higher education institution. The coordinating institution/organisation applies for Erasmus student placement mobility grants and organisation of mobility funds to its home country's Lifelong Learning Programme National Agency.

In 2008/09, a total of 75 Erasmus placement consortia organised student placements in 14 out of the 31 participating country. Chart 41 shows the breakdown per country of the number of placement consortia, the number of institutions represented by the consortia in the country and the number of placements organised by the consortia in the country. Spain had the highest number of consortia in 2008/09, or 23, followed by Germany with 14, and then France with 12.

Although German consortia managed the highest number of placements in the academic year 2008/09 (a total of 1950), consortia coordinated from France managed on average the highest number of placements per consortium (a total of 139 placements). The second highest number of placements per consortium was managed by Dutch consortia, with 114, and then Austrian with 74.

Spanish consortia had by far the highest number of active higher education institutions/organisations participating in each consortium or on average ten institutions per consortium.

Chart 43: Active placement consortia per country, number of higher education institutions participating in consortia per country, and the number of placements per consortia per country in 2008/09

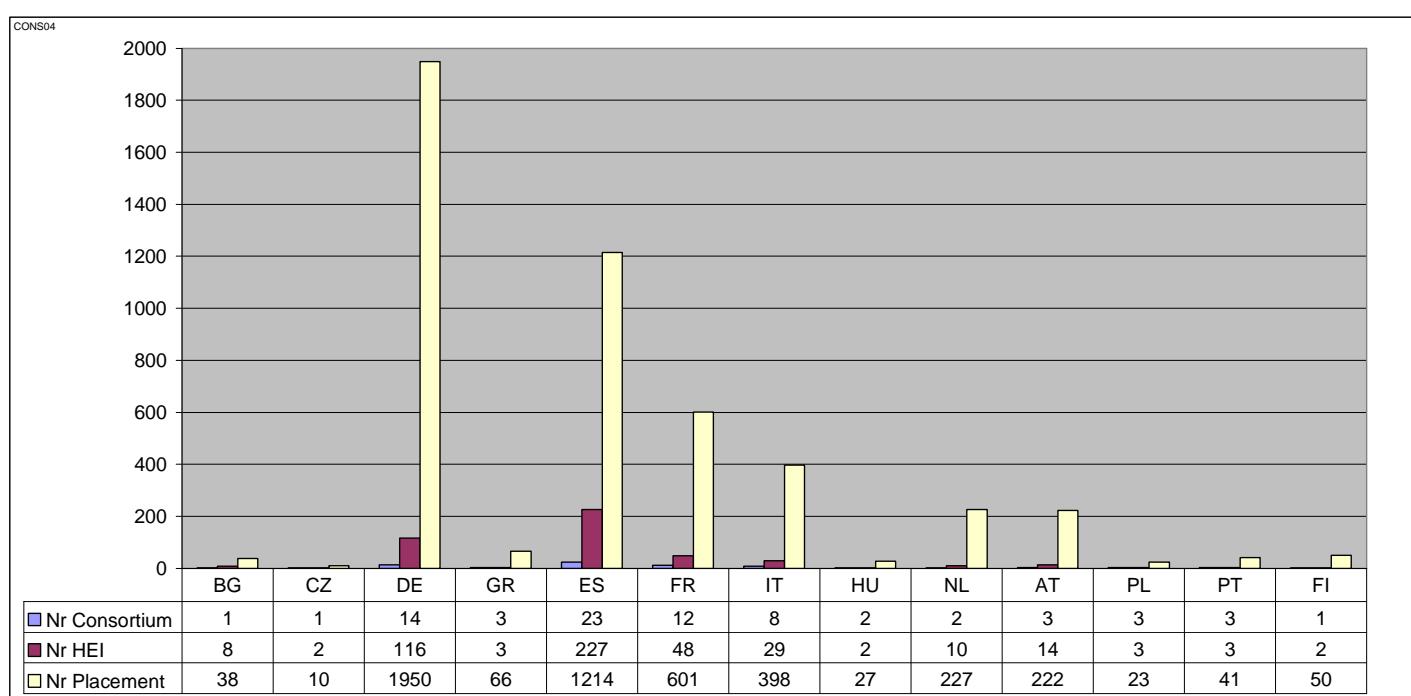
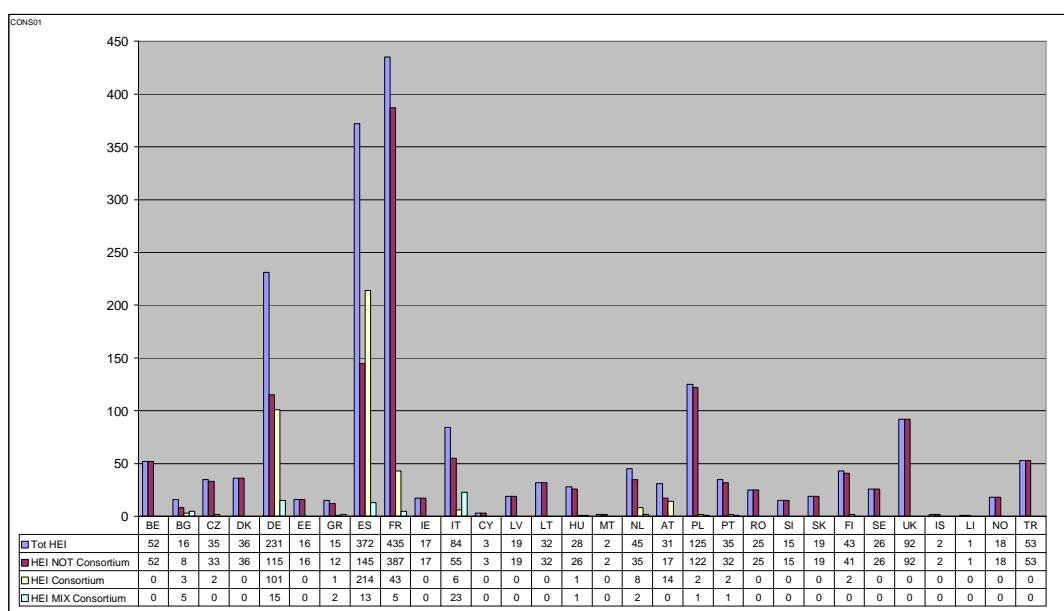


Chart 44 shows the different ways in which higher education institutions organised placements in 2008/09. Higher education institutions either organised placements by themselves, through a consortia, or through both channels. In 2008/09, Spain managed the highest number of consortia and had the highest number of participating higher education institutions in consortia in comparison with the total number of Spanish institutions participating in the Erasmus programme.

Higher education institutions in a majority of countries, or in 23 countries out of the 31 participating, did not manage or participate in an Erasmus placement consortium which is an indication of the possibility there is still for increasing the numbers of placements organised through a consortium.

Chart 44: Different ways placements were organised in 2008/09



2 Erasmus Staff Mobility

Erasmus staff mobility for teaching assignments has been a very popular action within the Erasmus programme since its addition to the programme in the academic year 1997/98. With the introduction of the Lifelong Learning Programme in 2007, Erasmus staff mobility for teaching assignments abroad was complemented with Erasmus staff mobility for staff training. Similarly, the Lifelong Learning Programme opened up the possibility for higher education institutions to invite staff of enterprises to come and teach at their institutions.

The number of Erasmus staff mobility increased considerably between years. The annual growth between the academic years 2007/08 and 2008/09 was 13.57%. Although both staff mobility for teaching assignments and for staff training increased between years, the increase in staff training mobility was considerably higher, or 59.2% versus 5.4% for teaching assignments. Chart 45 gives an overview of the growth of Erasmus staff mobility between years.

Chart 45: Erasmus staff mobility in 2007/08 compared to 2008/09

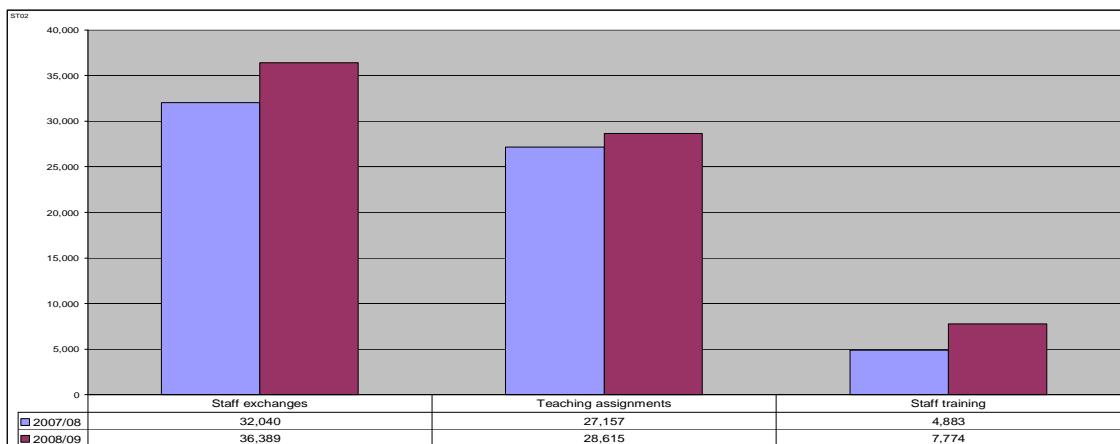
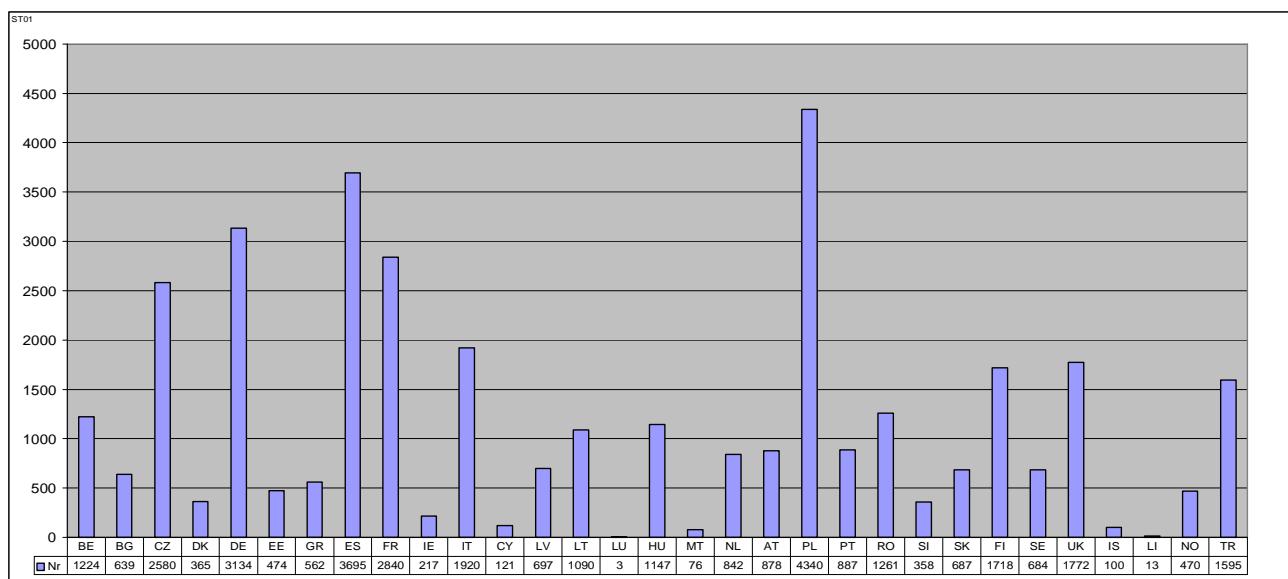


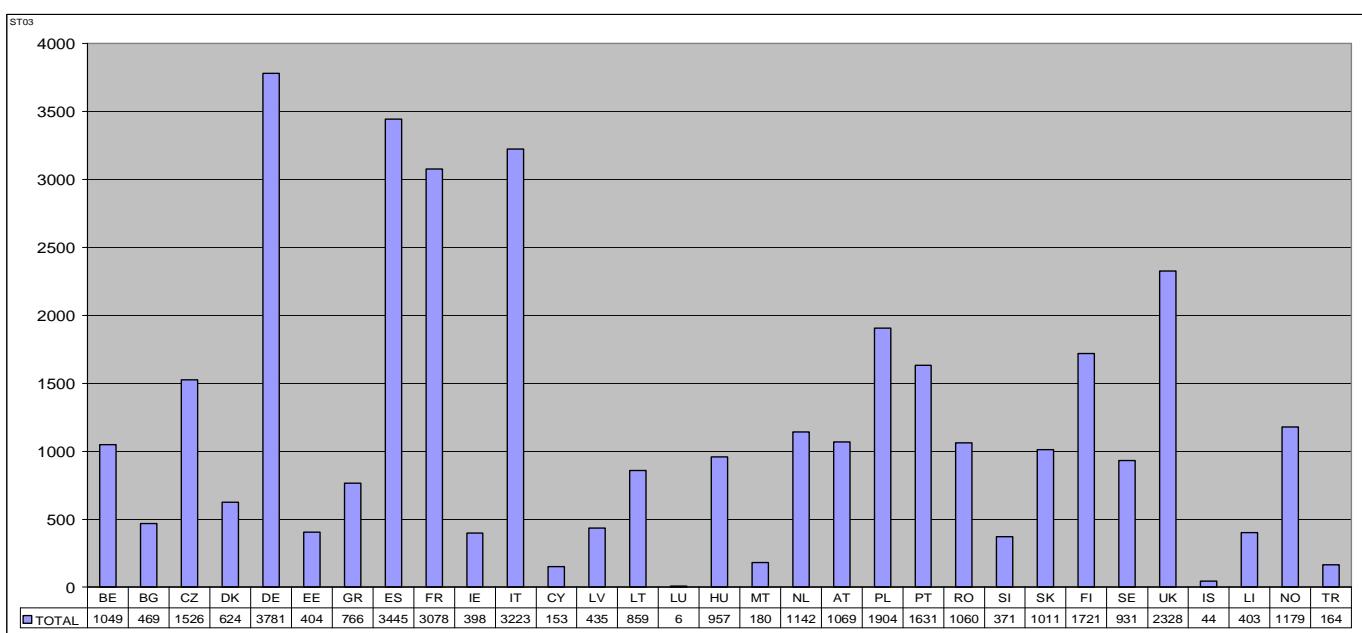
Chart 46 on the other hand shows the number of Erasmus staff mobility originating from each of the 31 participating countries. Poland had the highest number of outgoing staff mobility, or 4341 (11.9% share), followed by Spain with 3682 (10.1%), and then Germany with 3117 mobilities (8.6%). It is particularly interesting how many outgoing staff mobility periods there were from the Czech Republic in 2008/09, or 2595, representing a 7.1% share of the total Erasmus placements this year (see Annex 11).

Chart 46: Outgoing Erasmus staff mobility for teaching assignments and staff training from the 31 participating countries in 2008/09



The most popular destinations for Erasmus staff mobility were Germany with 3781 mobilities, followed by Spain with 3445 incoming mobilities and Italy with 3222. Chart 47 below shows the distribution of incoming staff mobilities between the 31 participating countries.

Chart 47: Incoming Erasmus staff mobility for teaching assignments and staff training from the 31 participating countries in 2008/09



2.1 Erasmus Staff mobility for teaching assignments

Erasmus staff mobility for teaching assignments enables staff from higher education institutions and enterprises to spend a teaching period of a minimum one day (or at least 5 teaching hours) up to 6 weeks at a higher education institution in another participating country in Europe.

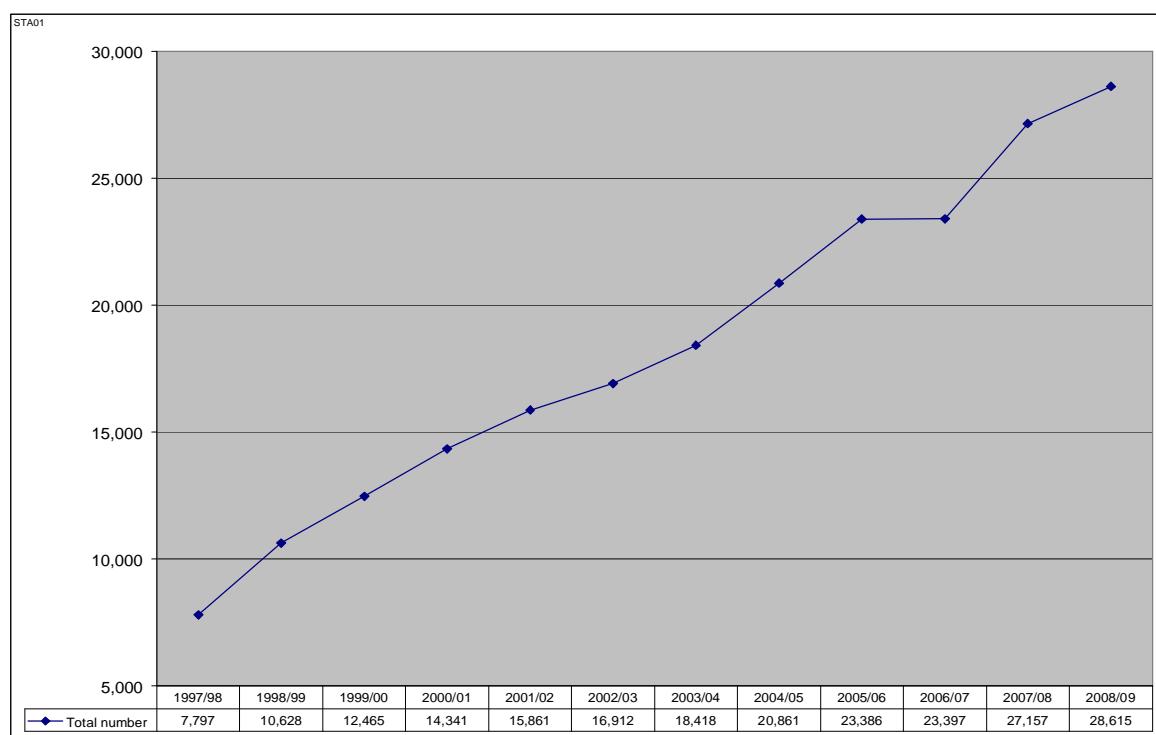
2.1.1 Staff mobility for teaching assignments

The number of teaching assignments supported through the Erasmus programme has steadily increased during the last 12 years. Erasmus staff mobility for teaching assignments rose in number from 7797 in the 1997/98 academic year to 28 615 in 2008/09. This represents a 267% growth during these 11 years. In addition, close to 220 000 teaching assignments have been supported by this action since it began in 1997. See Annex 16 for assignment flows without invited staff from enterprises and Annex 17.

The annual growth rate of Erasmus mobilities for teaching assignments between the academic years 2007/08 and 2008/09 was 5.4 % which is slightly higher than in the previous academic year.

285 mobilities out of the 28 615 mobilities for teaching assignments carried out in 2008/09 were undertaken by staff from enterprises who were invited to come and teach at a higher education institution in one of the 31 participating countries. The most popular destination for staff of enterprises were Lithuania with 38 mobilities, followed by Hungary with 35, and then Finland with 33 incoming mobilities of staff from enterprises. See Annex 18 for flows of staff from enterprises.

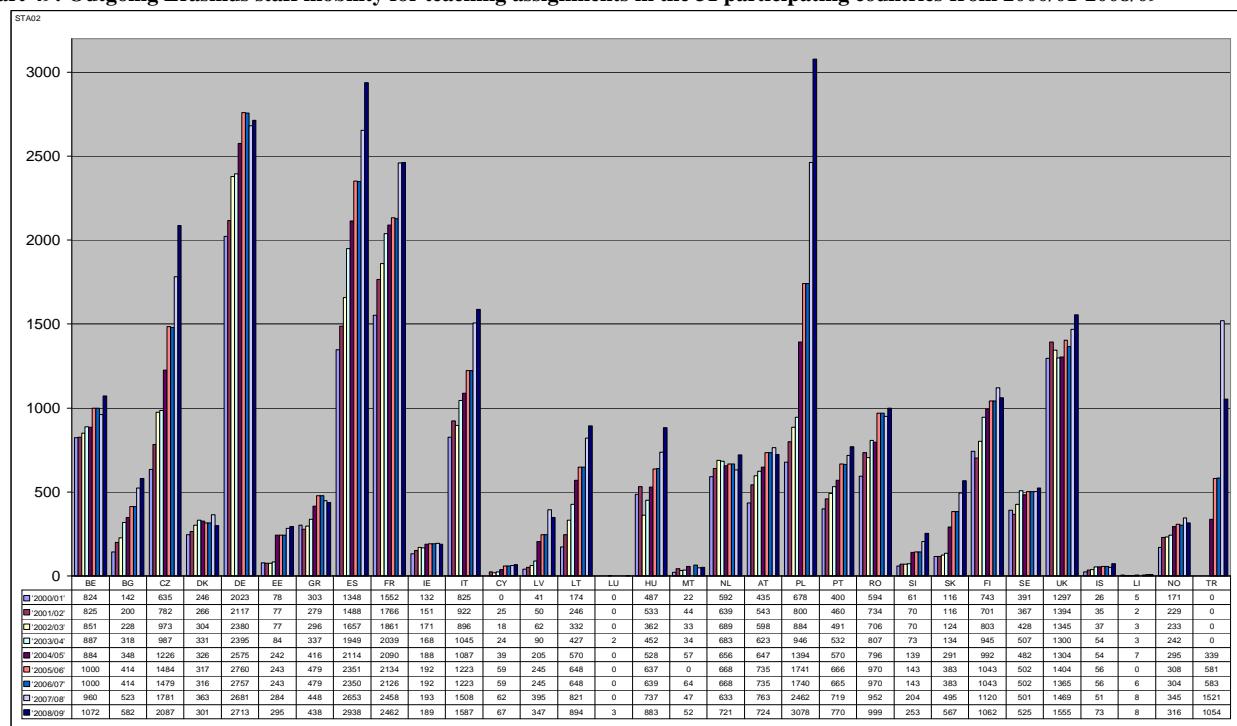
Chart 48: Erasmus staff mobility for teaching assignments from 1997/98 - 2008/09



2.1.2 Outgoing staff mobility for teaching assignments

Poland had the highest number of Erasmus teaching assignments in the academic year 2008/09 or 3079 (10.8% share), followed by Spain with 2925 (10.2%) and then Germany with 2696 teaching assignments (8.5%).

Chart 49: Outgoing Erasmus staff mobility for teaching assignments in the 31 participating countries from 2000/01-2008/09



Although most countries experienced an increase in the number of Erasmus mobility for teaching assignments in 2008/09 several still experienced declining or stagnating numbers compared to the previous academic year. The following eight countries had declining outgoing teaching assignment numbers: Austria (-6.3%), Denmark (-18.7 %), Greece (-4.0 %), Finland (-3.8), Ireland (-2.1%), Latvia (-13.4%), Norway (-6.4%) and Turkey (-30.2%). The decline in participation in teaching assignments was particularly steep in Turkey, Denmark and Latvia.

Chart 49 above shows clearly that in the majority of the 31 participating countries, outgoing staff mobility for teaching assignments has been growing in recent years. Of the 31 participating countries the highest relative increase in the academic year 2008/09 was in Iceland, or 43.1% annual growth, followed by Slovenia with 27.9% growth and then Poland with 25.1%. Staff mobility for teaching assignments from Poland have tripled in the last six years, from 946 in the academic year 2003/04 to 3078 in 2008/09.

The relationship between staff mobility for teaching assignments and student mobility for studies does not appear to be simple. Chart 50 below compares the increase and/or decrease in outgoing student mobility for studies and staff mobility for teaching assignments in the academic year 2008/09. Sixteen countries experienced an increase both in student mobility for studies and in staff mobility for teaching assignments whereas Austria, Denmark and Ireland on the other hand experienced a decrease in both actions from the previous academic year.

In 12 of the 31 participating countries, student mobility and teacher mobility are growing in opposite directions. These countries are Germany, Estonia, Greece, Cyprus, Latvia, Poland, Finland, the UK, Iceland, Liechtenstein, Norway and Turkey.

Chart 50: Increase/decrease in Erasmus student mobility for studies versus staff mobility for teaching assignments per home country in 2008/09

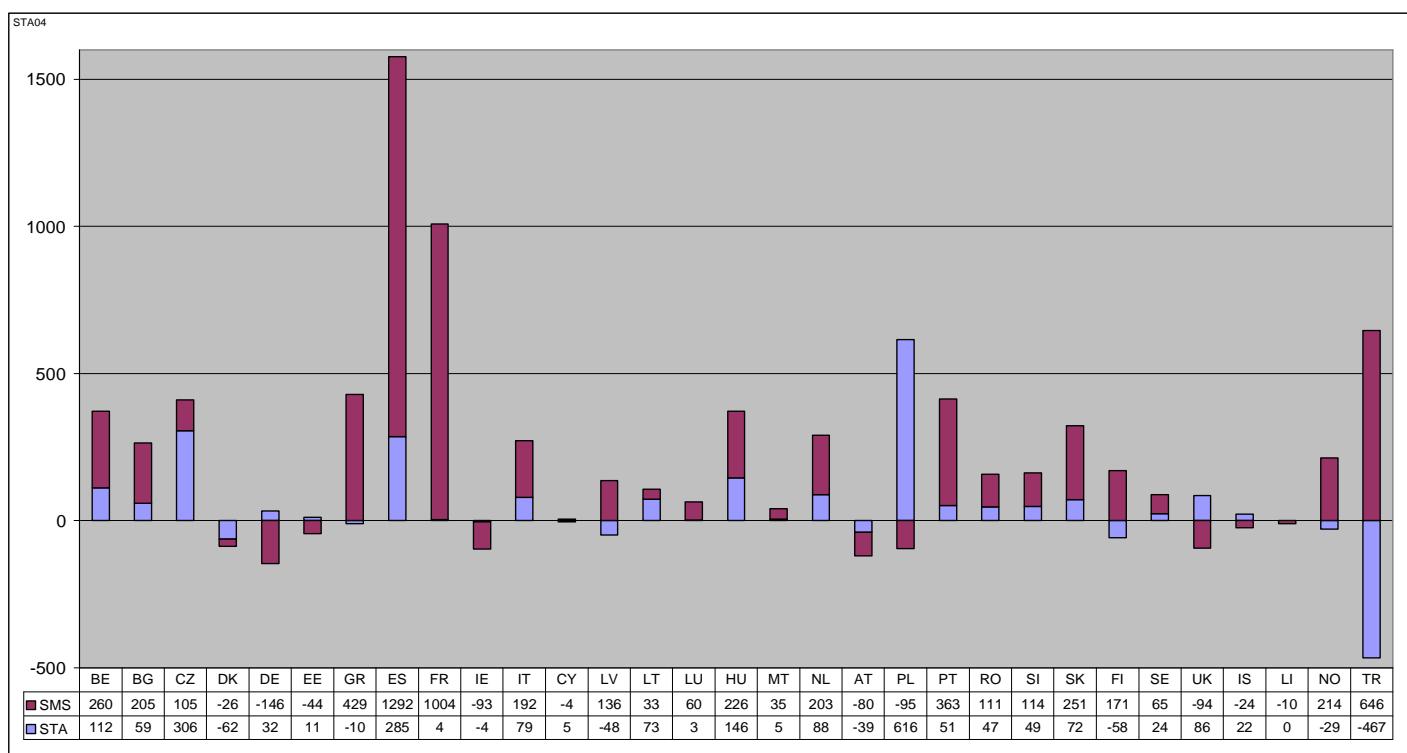
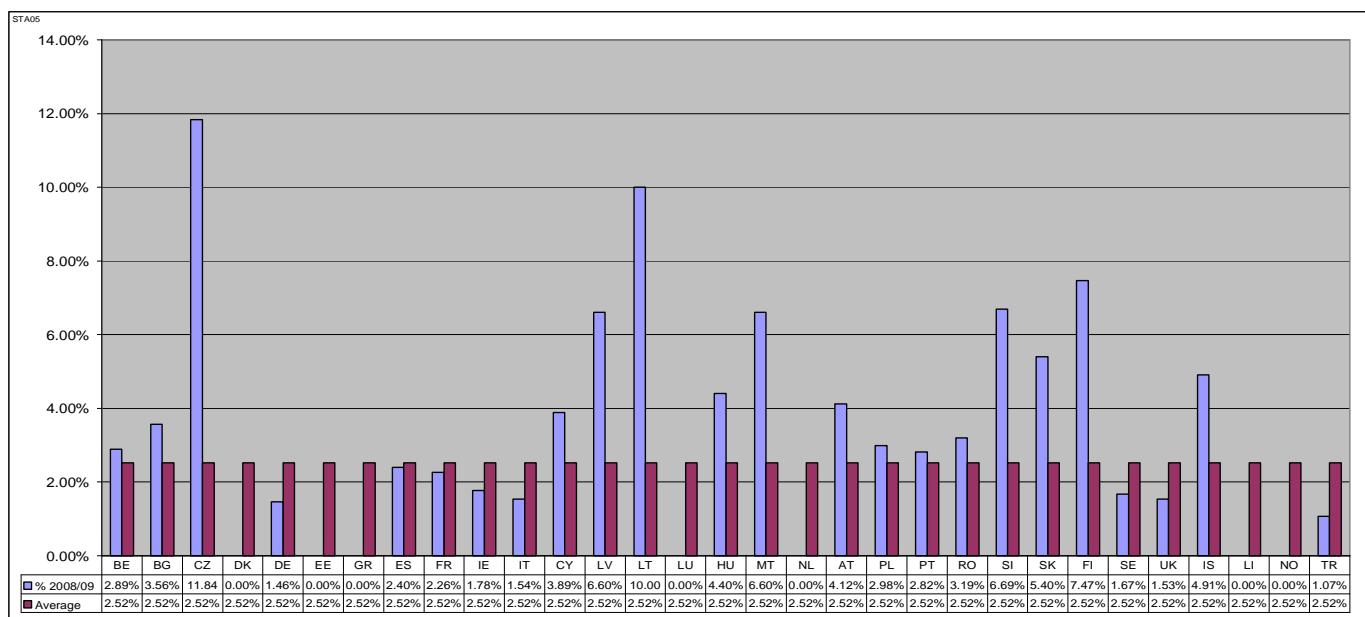


Chart 51 compares the number of Erasmus staff mobility for teaching assignments to the teaching staff population in the 31 participating countries in 2008. Around 2.52% of the total higher education teaching population in the 31 participating country in 2008 took part in Erasmus staff mobility for teaching assignments in the same year.¹⁵ The Czech Republic (11.92 %), Lithuania (10.42%) and Finland (7.57 %) had the highest ratio of outgoing Erasmus teachers when compared with the total staff population in the 31 countries. Several countries, among there Turkey, Germany, Spain, Italy, Ireland, Sweden, and the UK, had very low numbers of teachers going abroad for teaching assignments if compared with their size (see chart 50).

¹⁵ Multiple staff mobilities for teaching assignments are allowed within an academic year. The average does not take into account possible multiple mobilities of individual teachers within the same year.

Chart 51: Erasmus staff mobility for teaching assignments as a proportion of the teaching staff population in the 31 participating countries¹⁶

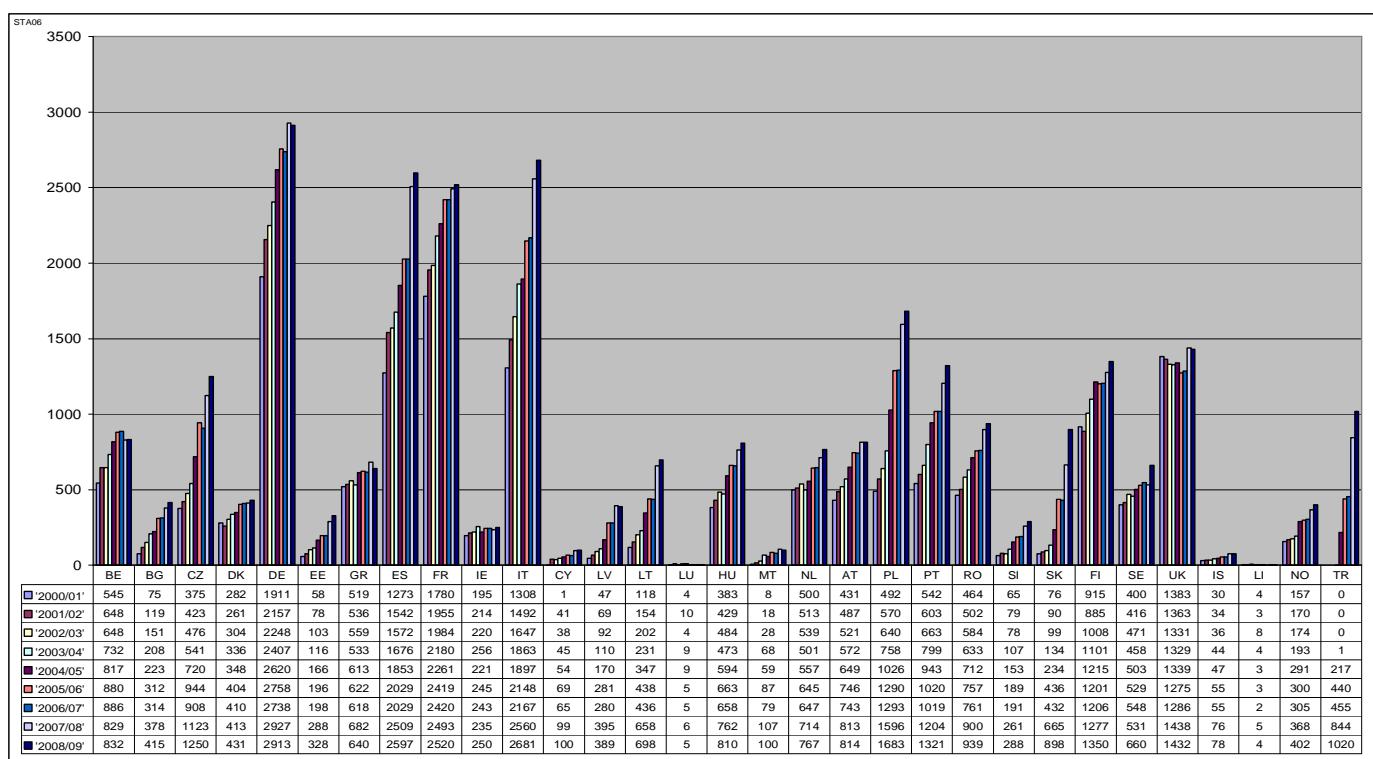


¹⁶ The teaching staff population data is from 2008. The total number of teaching staff in the 31 LLP countries was 1 013 192 in 2008 (Source: Eurostat).

2.1.3 Incoming staff mobility for teaching assignments

Chart 52 shows that Germany was the most popular destination for Erasmus teaching assignments in 2008/09 with 2913 incoming teaching assignments (10.2% share), followed by Italy with 2681 (9.4%) and then Spain with 2597 (9.1%). Slovakia experienced the highest relative increase in incoming teaching assignments among the 31 participating countries between years, or 35%, followed by Sweden (24.3%) and Turkey (20.9%). Seven countries experienced a decrease in incoming teaching assignments in 2008/09. The most decrease in incoming teacher assignments between years was in Liechtenstein (-20%), followed by Luxembourg and Malta. Austria, Belgium, Cyprus and France, experienced a stagnation in incoming teaching assignments between years.

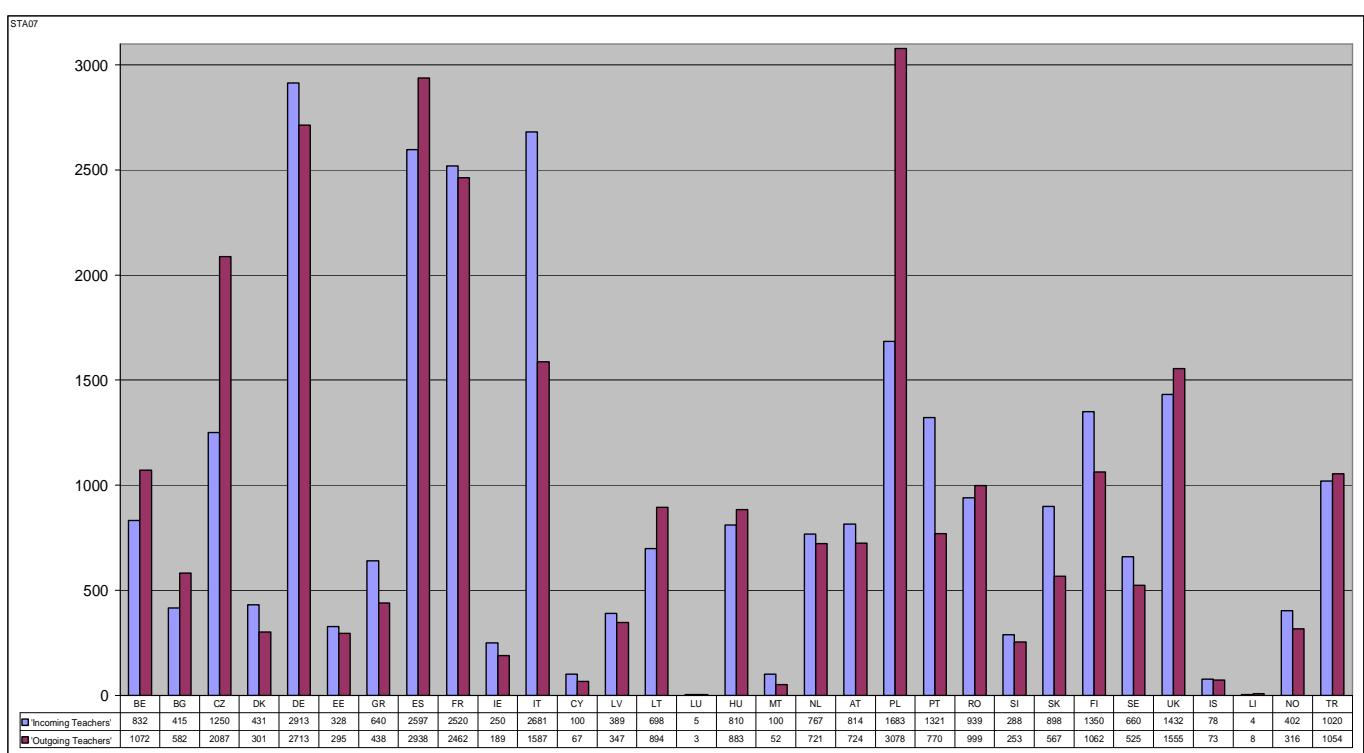
Chart 52: Incoming teaching assignments in the 31 participating countries from 2000/01 – 2008/09



The flow between outgoing and incoming Erasmus staff mobility for teaching assignments in the 31 participating countries was still unbalanced in 2008/09. That year, 20 countries received more teachers than they sent out on assignments. These countries are: Denmark, Germany, Estonia, Greece, France, Ireland, Italy, Cyprus, Latvia, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia, Slovakia, Finland, Sweden, Iceland and Norway. Only one country, Hungary, had a reversed balance from the academic year 2007/08, with 11% more outbound staff mobility for teaching assignments than inbound. In the remaining 11 countries the number of outgoing mobility for teaching assignments was higher than the number of incoming mobility. This was the case for Belgium, Bulgaria, the Czech Republic, Hungary, Spain, Lithuania, Poland, Romania, Liechtenstein, the UK and Turkey (see chart 52). Annex 13 shows the flow of Erasmus teaching assignments in 2008/09.

In 2007/08 the greatest imbalance in the ratio of incoming and outgoing teachers was in Turkey where there were two outbound mobilities for every incoming. This year, however, the second best balance between outgoing and incoming teachers, only behind France, was in Turkey where there were 1054 outgoing versus 1020 incoming. There was also a very good balance of staff mobility in Germany, the Netherlands and Iceland.

Chart 53: Outgoing and incoming staff mobility for teaching assignments in the 31 participating countries in 2008/09



2.1.4 Subject areas

Teaching assignments in the “Humanities and arts” subjects were the most popular among teaching staff participating in Erasmus mobility for teaching assignments in 2008/09. The share of assignments within “humanities and arts” areas was 27% of all assignments supported. The second most popular subject area was “social sciences, business and law” (24% share) followed by “engineering, manufacturing and construction” (15%). “education”, “health and welfare” and “agriculture and veterinary” remain less popular subject areas for Erasmus teaching assignments.

A similar trend is noted when looking at the total duration of teaching assignments where “Humanities and arts” took the first place, “Social sciences, business and law” the second and “Engineering, manufacturing and construction” the third.

Chart 54: Share of staff mobility for teaching assignments per subject area in 2008/09

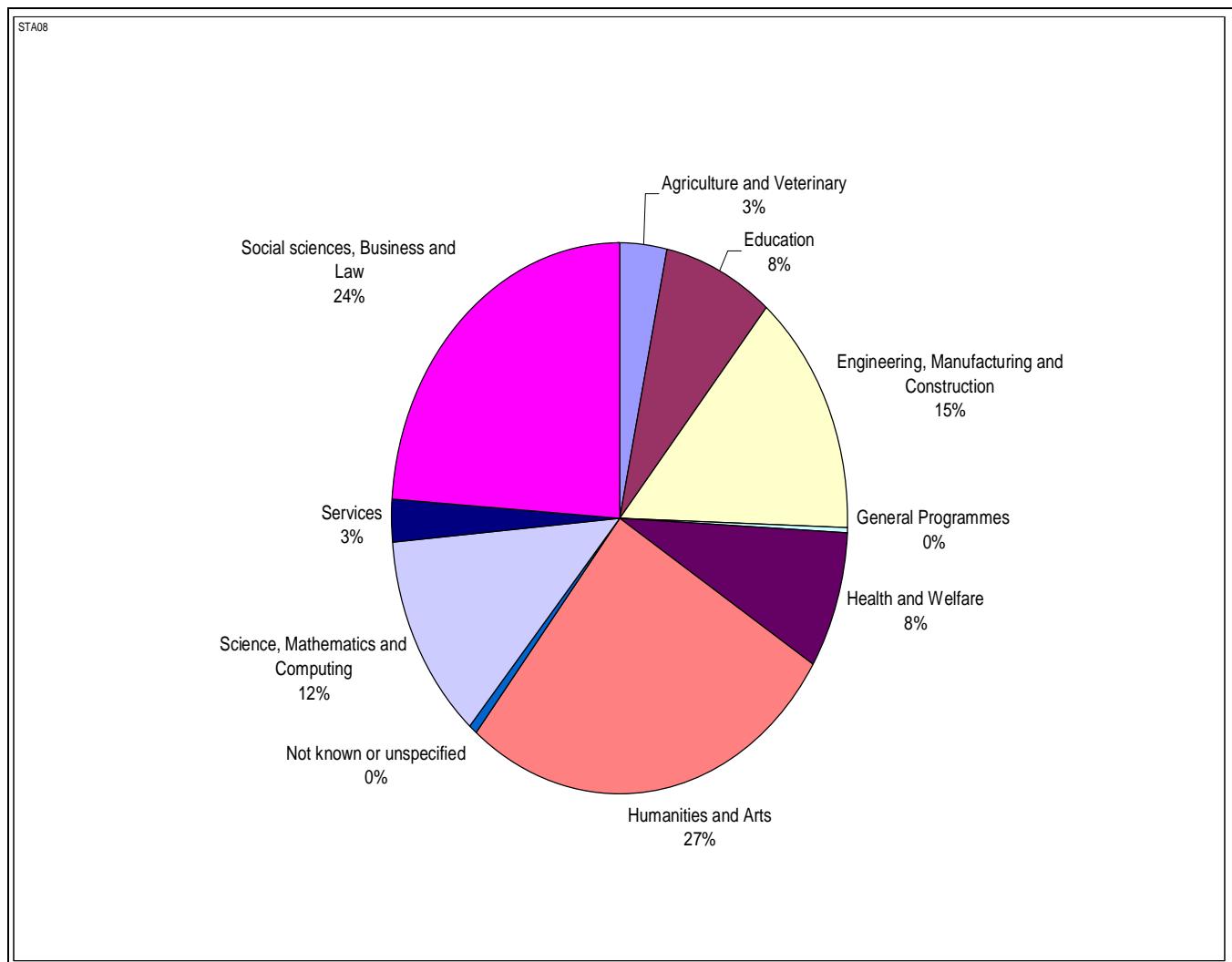
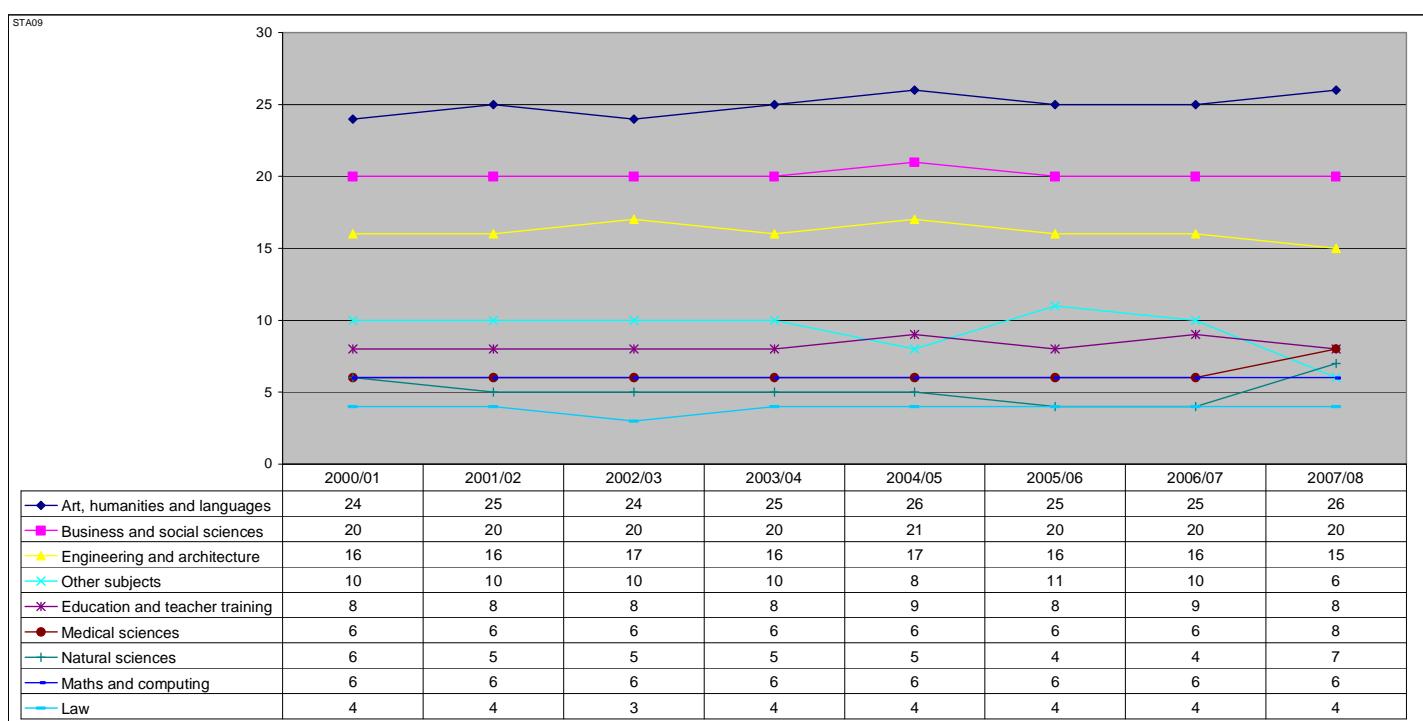


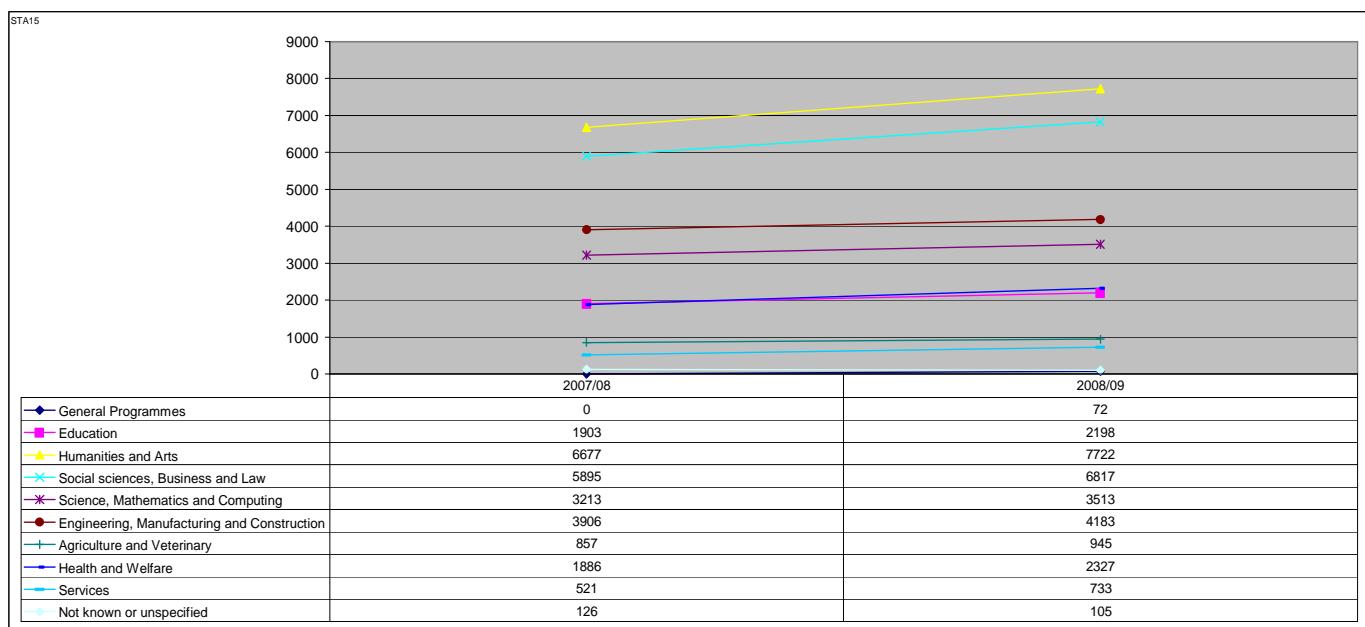
Chart 55 consists of more or less straight lines, revealing, as in student mobility, a high degree of stability in the distribution of subject areas for teaching assignments over time.

Chart 55: Erasmus teaching assignment subject areas from 2000/01 – 2007/08



Subject areas for teaching assignments are only comparable over time until 2007/08 when the subject area codes in the Erasmus data reporting were changed. Chart 56 shows trends in subject areas of staff mobility for teaching assignments between 2007/08 and 2008/09. As can be seen in the chart there were no major changes between the two academic years.

Chart 56: Erasmus teaching assignment subject areas 2007/08 - 2008/09



2.1.5 Duration of teaching assignments

Chart 57 shows that the European average duration of an Erasmus staff mobility for teaching assignments has shortened over the years. In the academic year 2008/09 the average duration was 5.6 days, down from 6.9 days in 2000/01.

Chart 57: Average duration of teaching assignments from 2000/01 – 2008/09

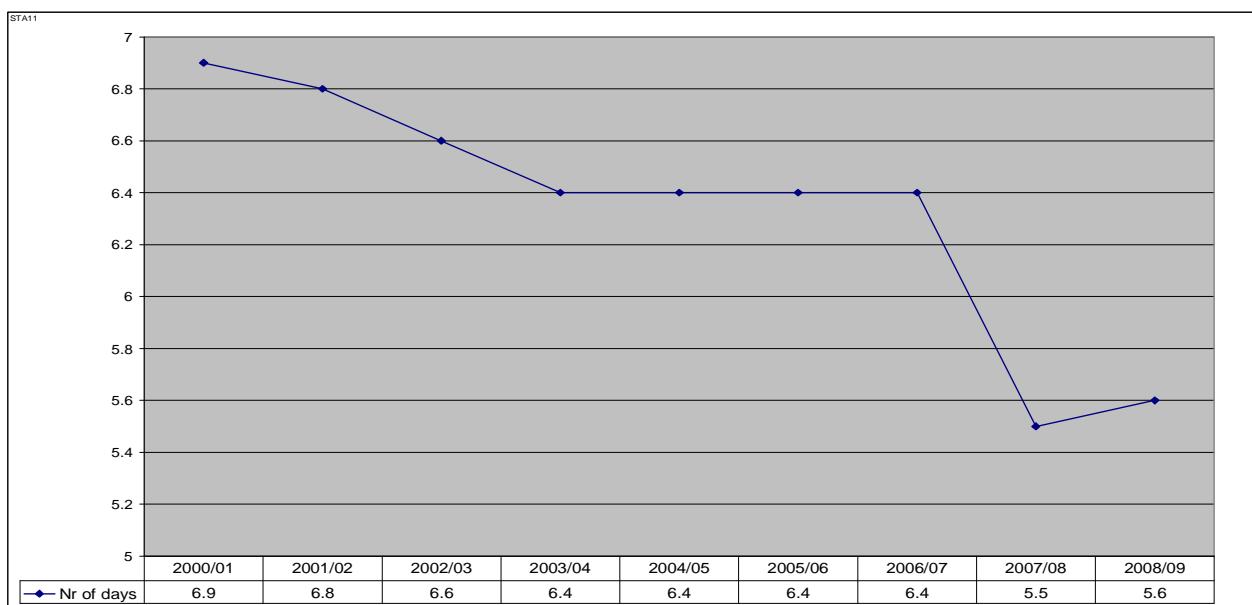
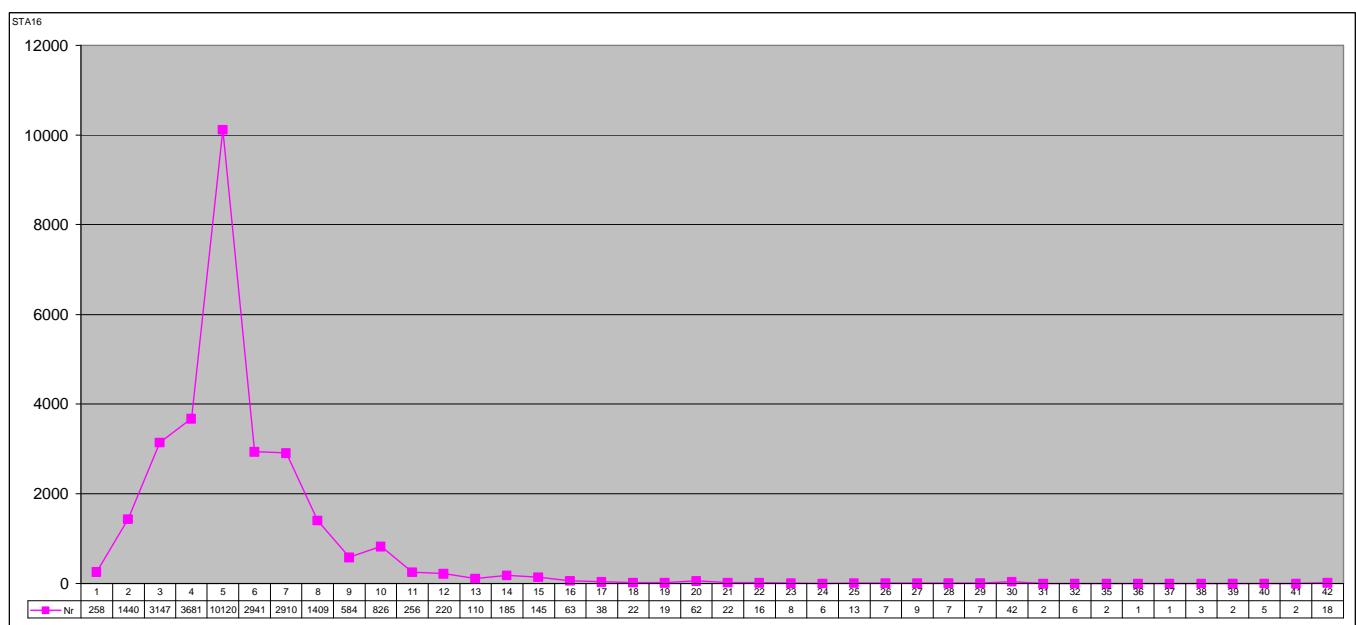


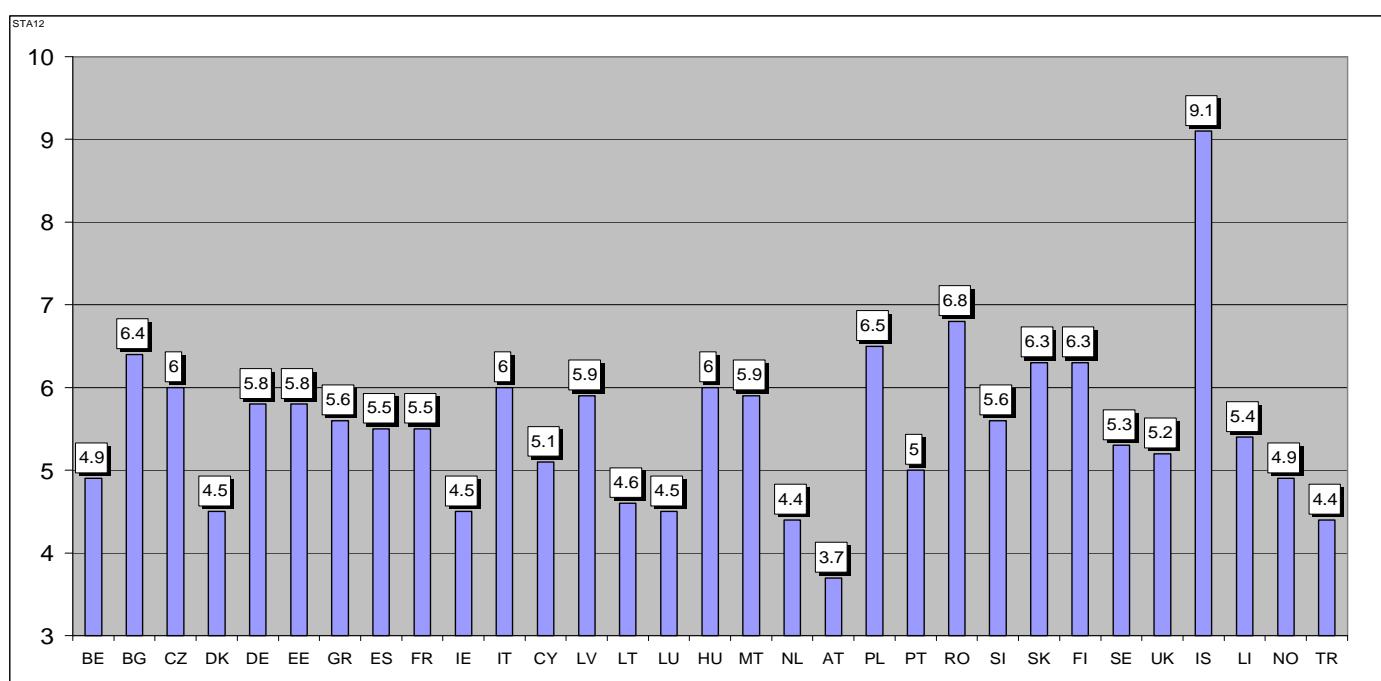
Chart 58 on the other hand shows the connection between the number of staff mobility for teaching assignments and their duration. As the chart clearly shows, the highest number of mobility for teaching assignments lasted five days (or 10 120 out of 26 815). This means that 35% of all teaching assignments lasted five days. Around 3700 mobilities lasted four days and some 3150 lasted three days. 86% of staff mobility for teaching assignments lasted seven days or less.

Chart 58: Distribution of duration of staff mobility for teaching assignments in 2008/09



The average duration varied considerably from one home country to another, ranging from 9.1 days for teaching assignments from Iceland going down to 3.7 days for teaching assignments from Austria (see chart 59 below).

Chart 59: Average duration of teaching assignments in 2008/09 by home country



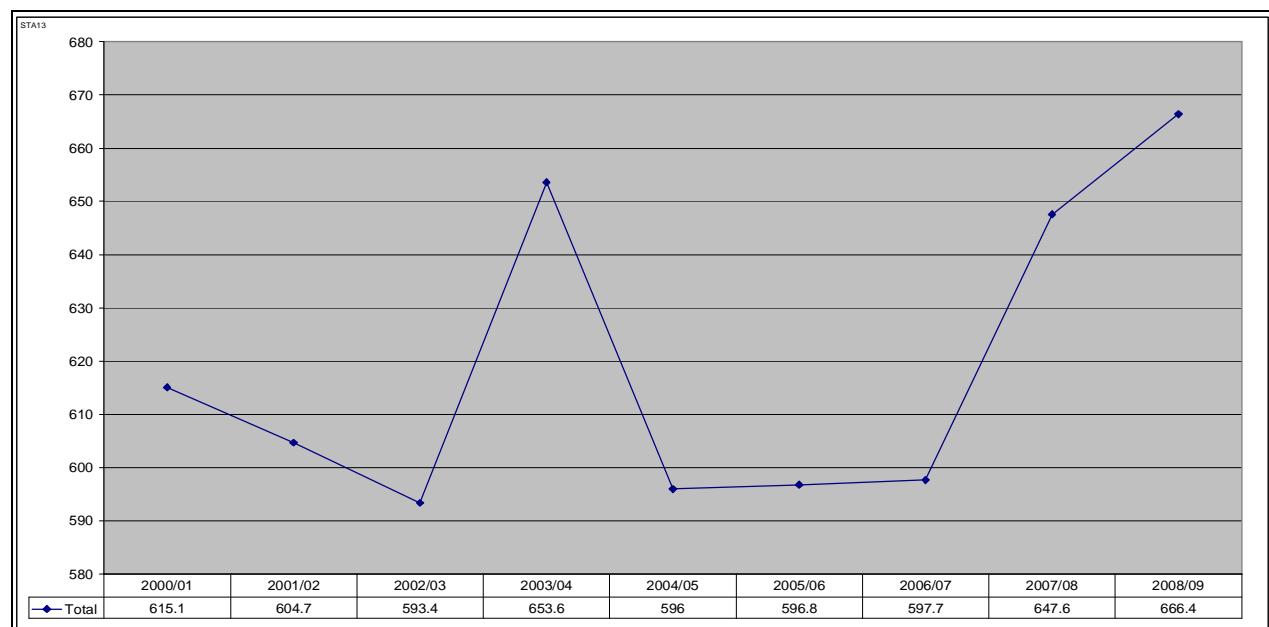
The most popular destination for Erasmus teaching assignments in 2008/09 was Germany with 2913 incoming teaching assignments, followed by Italy with 2681 and then Spain with 2597. The teaching assignments lasted on average the longest in Luxembourg, or nine days, followed by Iceland (6.7 days) and Turkey (6.3 days). The shortest teaching assignments were in Liechtenstein (3.5 days), and the Netherlands and Belgium (4.8. days in both countries).

2.1.6 Grants for teaching assignments

Chart 60 shows that the average EU grant per teacher has remained fairly constant since 2000/01 at around 619€ on average. The average EU Erasmus grant for a teaching assignment mobility was 666€ in the academic 2008/09 (up from 648€ in the previous year). This makes about 119€ per day. There were, however, large differences in grant amounts between the 31 participating countries ranging from 156€ for teachers going from the Czech Republic up to 1353€ for teachers going out of Turkey¹⁷. When taking into account the duration of the teaching assignment, teachers coming from Turkey, Cyprus and Ireland received the highest EU grants per day, or 300€, 210€ and 203€ respectively, whereas teachers from the Czech Republic received the lowest grant amount per day or 25€. This daily rate is extremely low, in particular when the destination countries of these mobilities are examined.

Teachers going on teaching assignments to Iceland received the highest grants, or 844€ for each mobility. Swedish teachers received 791€ per teaching assignment and Danish teachers 764€. According to information received from individual countries, teachers often received complementary grants, which came almost exclusively from university sources. Only a few countries mentioned other complementary funding sources, such as national funds. (See more on duration and grant levels over time in Annex 12).

Chart 60: Average daily EU grant per teaching assignment from 2000/01 to 2008/09



¹⁷ This does not take into account that duration may be different between countries. Other factors also play a role, e.g. different travel and living costs etc.

2.1.7 Teachers with special needs

During the academic year 2008/09, eight teachers with special needs participated in Erasmus mobility for teaching assignments. This is doubling the numbers from the previous year when four teachers with special needs participated in Erasmus teaching assignments. The participating teachers came from Belgium, Germany, Spain, Italy, Hungary and Poland. The destination countries were equally as many. The average duration of stay was 8.9 days, ranging from a four day stay in the Netherlands to a 30 day teaching assignment in Iceland. The average EU supplementary grant per teacher with special needs was 1283€ or 145€ per day.

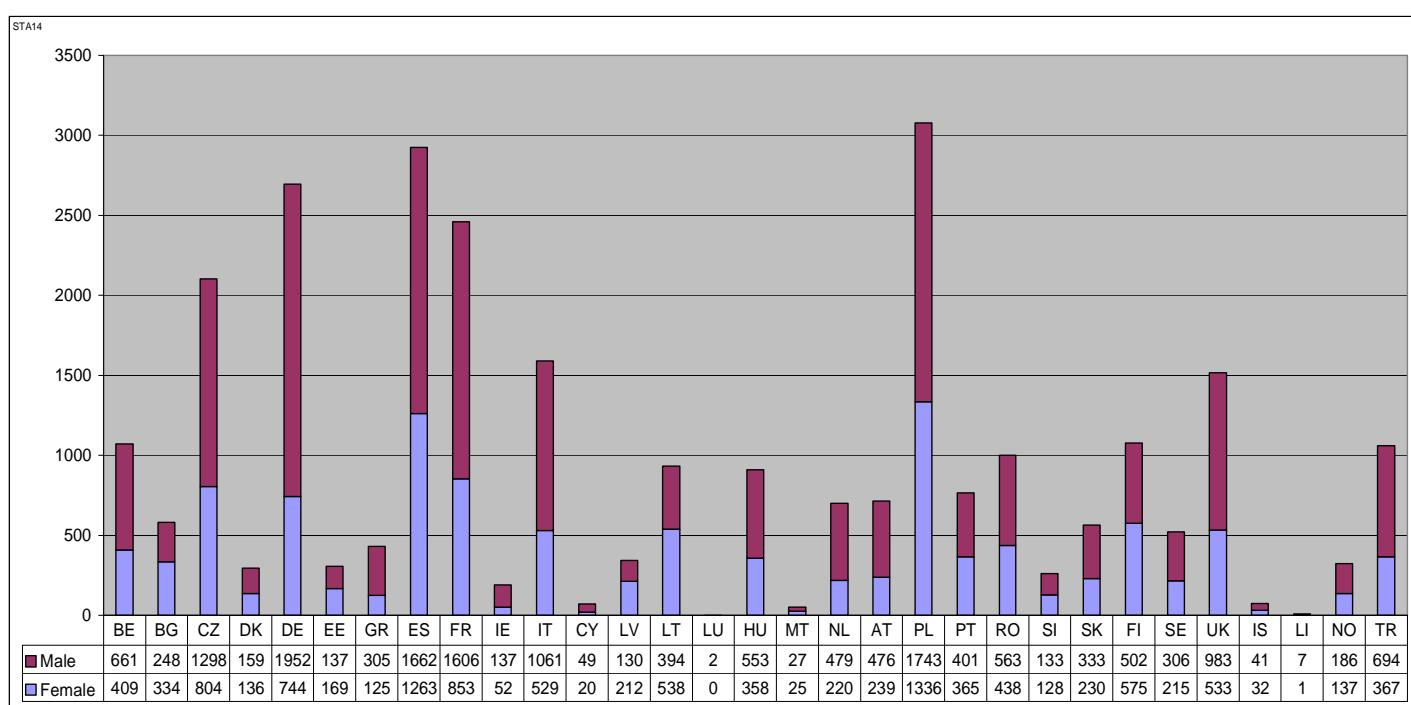
2.1.8 Zero-grant teachers

377 zero-grant teachers took part in Erasmus mobility for teaching assignments in 2008/09 which is four times higher than the number of zero-grant teaching assignments in 2007/08. Zero-grant teachers constituted about 1.3% of the total number of teaching assignments. The highest number of zero-grant teaching assignments came from Portugal, Finland and Italy and the most popular destination for zero-grant teaching assignment was Spain, followed by Germany and the Poland.

2.1.9 Gender of staff participating in staff teaching assignments

Chart 61 shows the staff mobility for teaching assignments according to the gender of participants. More men than women participated in Erasmus teaching assignments in 2008/09, or 60.2% versus 39.8% respectively. No countries had a really balanced participation of men and women but the countries that came closest were Slovenia, Malta and Denmark. Female teachers only outnumbered men in five countries: Bulgaria, Estonia, Latvia, Lithuania and Finland. The gender imbalance was on the other hand the highest in Liechtenstein, where women were only one in seven participants, followed by Ireland and Germany where men were over 70% of participants.

Chart 61: Gender of outgoing staff mobility for teaching assignments in 2008/09



2.2 Erasmus staff mobility for staff training

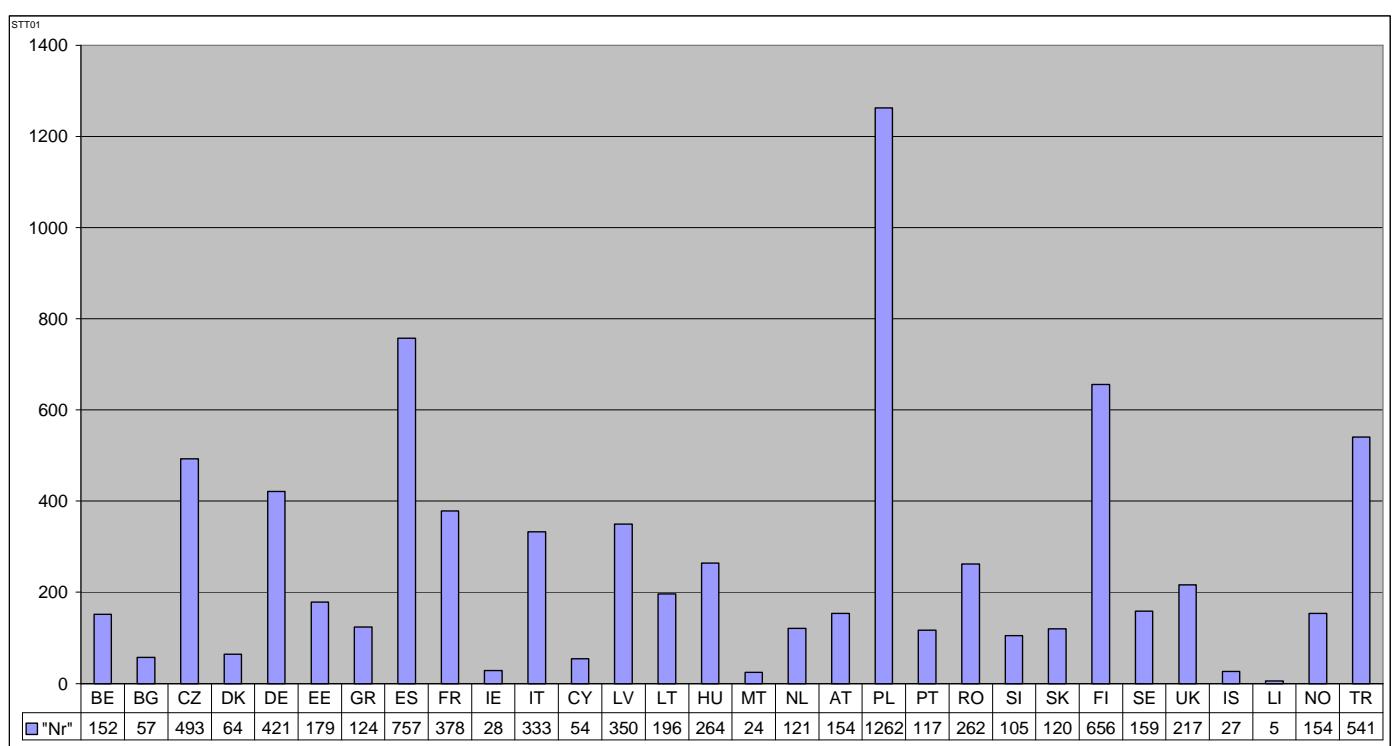
2.2.1 Staff mobility for staff training

The Erasmus action staff mobility for staff training started only in the academic year 2007/08. This action offers both teachers and other staff at European higher education institutions, as well as staff from enterprises (only in 2007/08), an opportunity to go on training for a period of one week (five working days) up to six weeks in an enterprise or an organisation, such as a higher education institution, in another participating country. With the introduction of this action, Erasmus finally addresses all staff involved in higher education in Europe.

2.2.2 Outgoing staff mobility for staff training

This new action truly strengthened its grounds in the second year of its operation. Whereas 4883 staff training periods were held in the academic year 2007/08, 7774 took place in 2008/09. This constitutes an increase of 59.21% between years. The highest number of mobility periods came from Poland or 1262 (a 16.2% share), followed by Spain with 757 (9.7%) and then Finland with 656 (8.4%) (see chart 62). The lowest number of outgoing staff mobility for staff training was from Liechtenstein, a total of 5 (0.1% share), followed by Iceland with 27 outgoing staff training mobilities (0.3%) and then Ireland with 28 (0.4%).

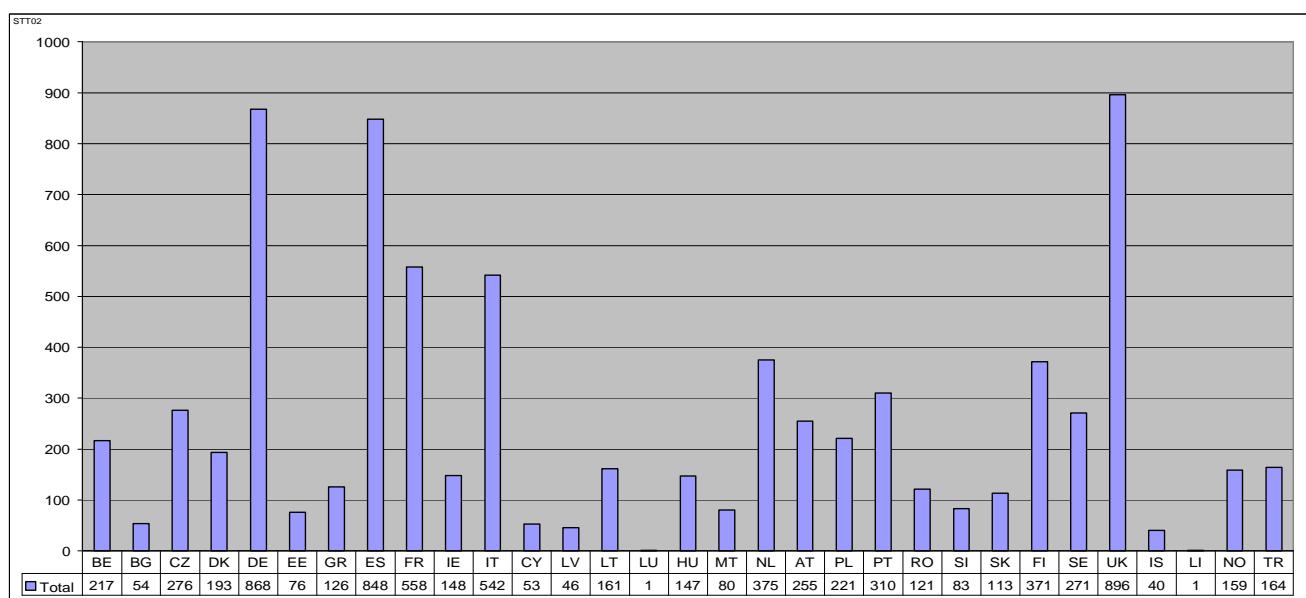
Chart 62: Outgoing Erasmus staff mobility for staff training per home country in 2008/09



2.2.3 Incoming staff mobility for staff training

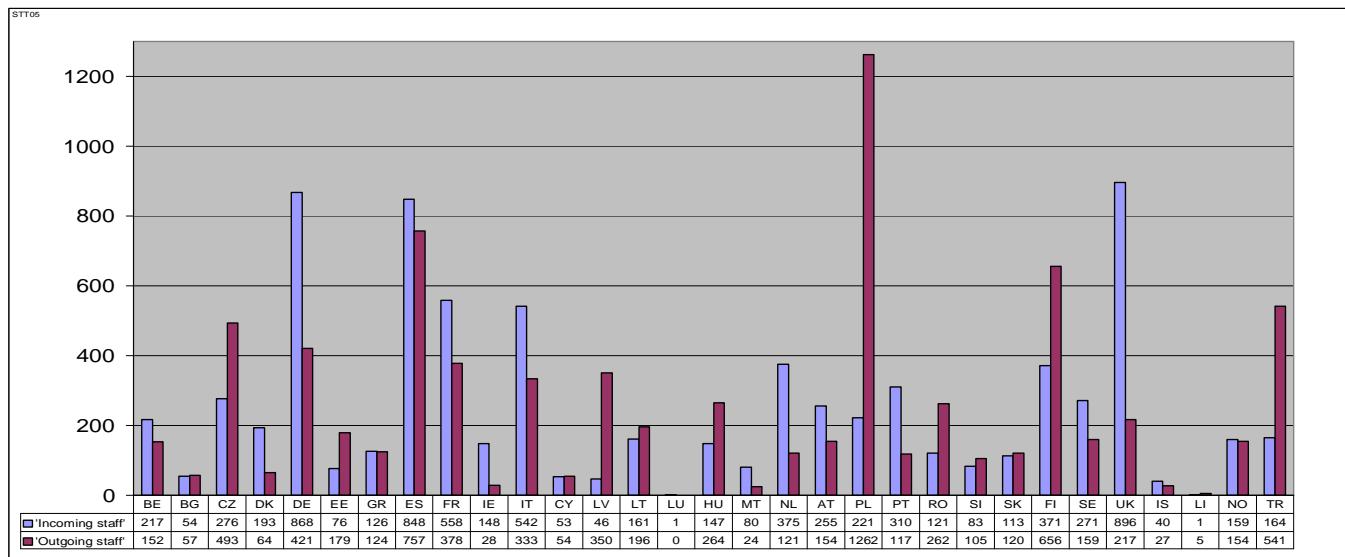
Chart 63 below shows that the United Kingdom continued from the previous year to be the most popular destination for Erasmus staff training mobility. Incoming staff for training were 896 in the UK which constitutes an 11.5% share of the total. Germany was the second most popular destination with 868 staff training mobility periods (11.2%) followed by Spain with 848 (10.49%). The least popular destinations for staff training in 2008/09 were Luxembourg and Liechtenstein with one incoming staff training mobility each.

Chart 63: Incoming staff mobility for staff training in each of the 31 participating countries in 2008/09



As can be seen in chart 64, the following 14 countries sent more staff on Erasmus staff training than they received: Bulgaria, the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia, Slovenia, Finland, Liechtenstein and Turkey. The remaining 17 countries received more staff for staff training than they sent out: Belgium, Denmark, Germany, Greece, Spain, France, Iceland, Ireland, Italy, Malta, the Netherlands, Austria, Portugal, Sweden, Norway, the UK and Liechtenstein. The imbalance in the ratio of incoming and outgoing staff was one to eight in Latvia and one to five in Poland and Liechtenstein. See Annex 14 for outbound and incoming flows of staff mobility for staff training and Annexes 17 and 19 respectively for flows to and from universities and from a university to an enterprise.

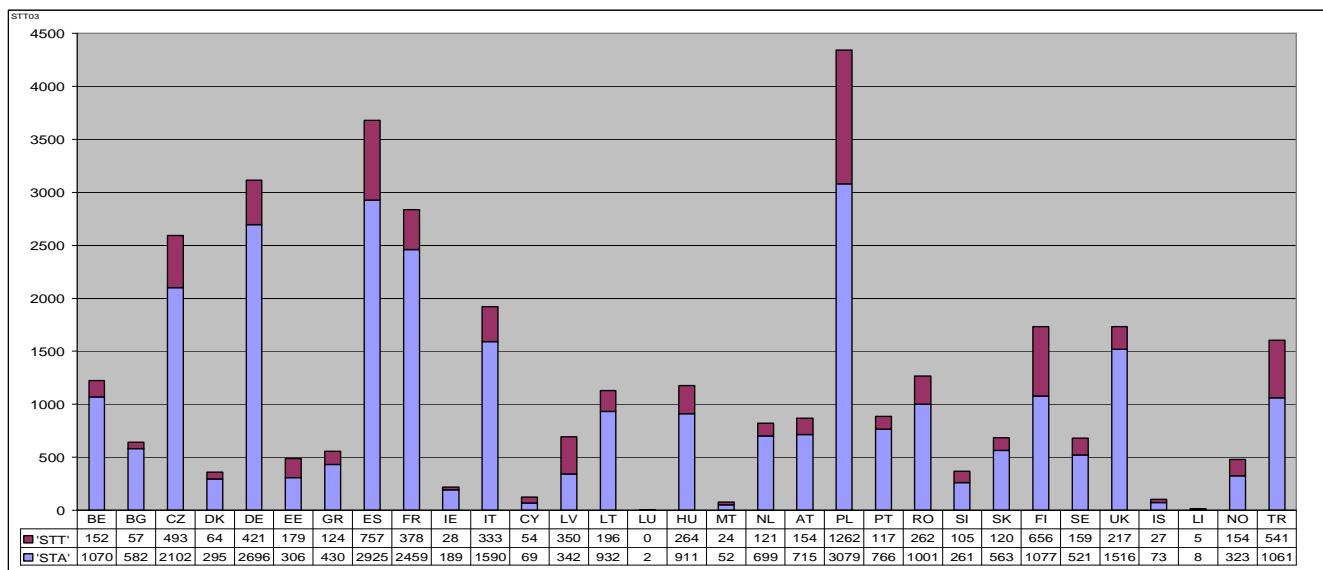
Chart 64: Outgoing and incoming staff mobility for staff training in the 31 participating countries in 2008/09



2.2.4 Share of staff mobility for staff training versus teaching assignments

Chart 65 shows the share of Erasmus staff training versus Erasmus teaching assignments in the 31 participating countries in the academic 2008/09. The country that had the highest share of staff training compared to teaching assignments was Latvia which was also the only country out of the 31 participating that has higher outgoing staff for training than for teaching assignments (50.8% share of staff training). The second highest share of staff training versus teaching assignments was in Cyprus (43.9%) followed by Finland (37.9%). The lowest share of staff training periods of the total Erasmus staff mobility was in Bulgaria with a 8.9% share, followed by the UK (12.5%) and then Ireland (12.9%).

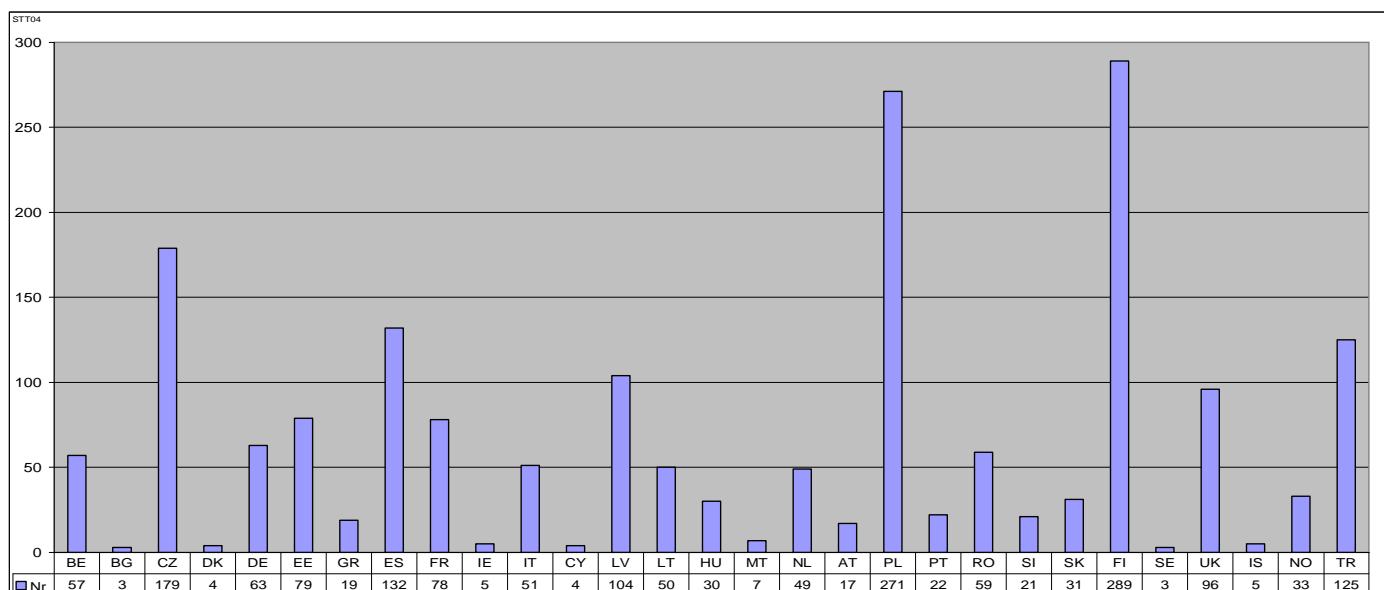
Chart 65: Share of staff mobility for staff training versus teaching assignments in the 31 participating countries in 2008/09



2.2.5 Staff training in enterprises by host country

In 2008/09, 1886 higher education institution staff went on training in enterprises abroad. Training in enterprises constituted 24.3% of all Erasmus staff mobility for staff training. The highest number of staff went for training in enterprises in Finland, or 289, followed by enterprises in Poland (271) and then the Czech Republic (179). See Annex 19 on the flow of staff to enterprises.

Chart 66: Staff training in enterprises by host country



2.2.6 Staff composition in staff training and type of activity

In the academic year 2008/09, teaching staff made up the largest part of staff participating in Erasmus staff mobility for staff training, or 36.3%, followed by staff from general administration (22.8%) and then staff in international offices (21.1%).

Chart 67: Category of work in home institution

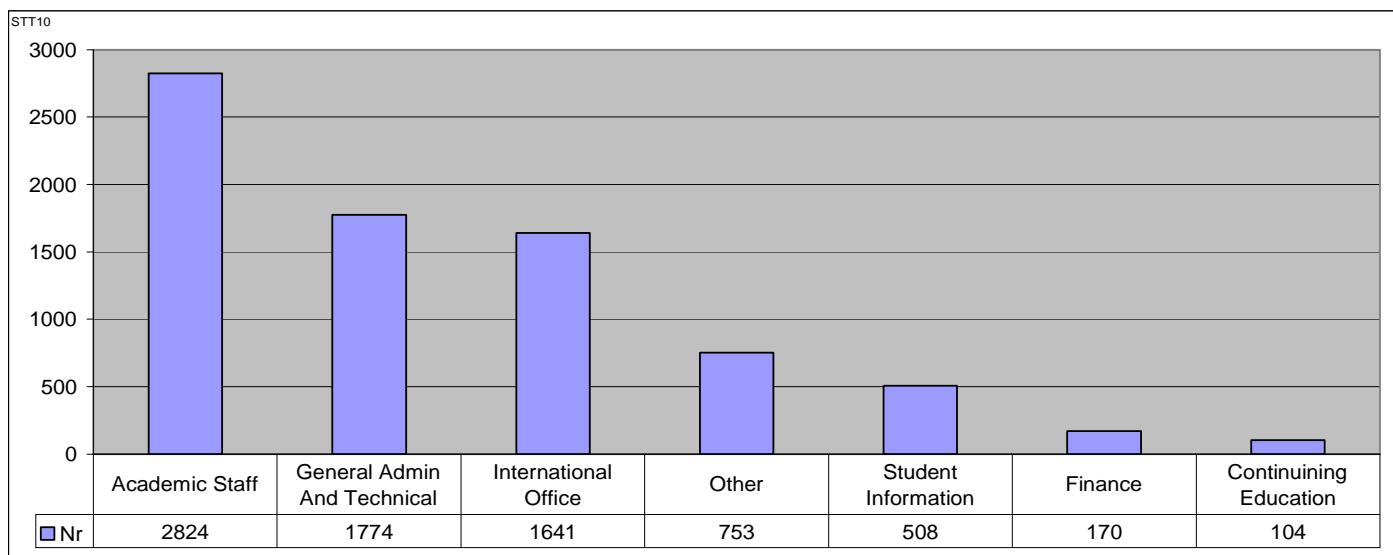
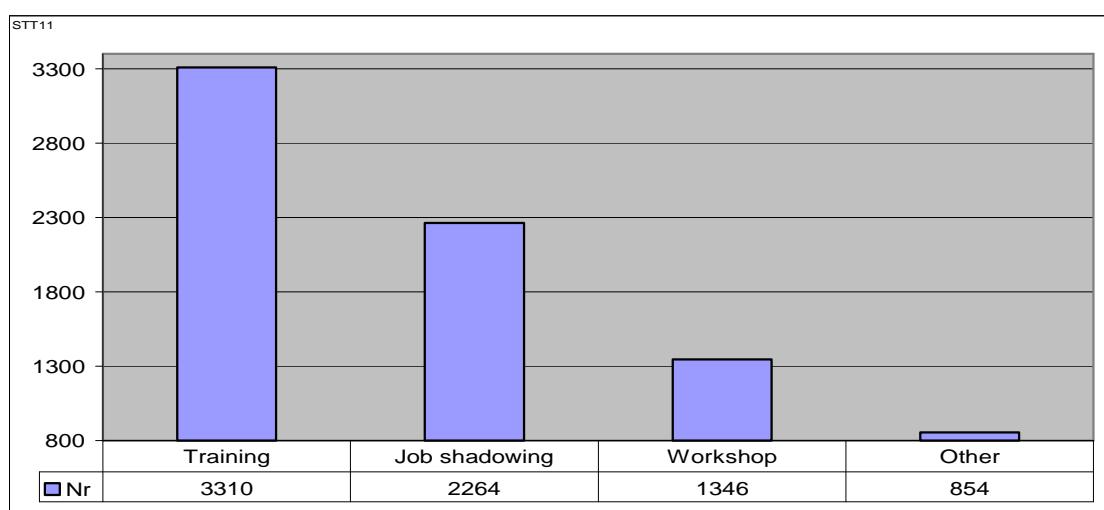


Chart 68 below shows the type of activity participants in Erasmus staff training engaged in during their training period abroad. The highest number participated in general training, or 3310, (42.6%), followed by job shadowing (29.1%) and then participation in workshops (17.3%).

Interestingly, a total of 854 participants in staff training (or 11% of the total number of participants) specified the type of activity they engaged in during their training under the category "other."

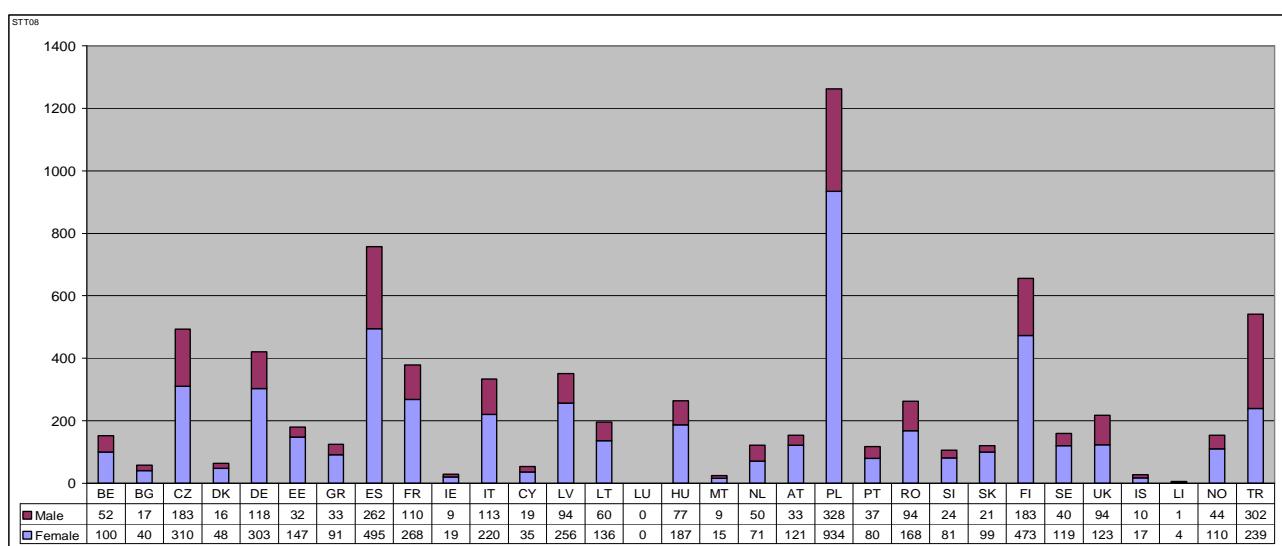
Chart 68: Type of activity during staff training



2.2.7 Gender composition in staff training

Chart 69 shows the composition of gender in Erasmus mobility for staff training. In 2008/09, more women participated in the action than men, or 68% versus 32% respectively. The balance did not improve from the previous year as female participation increased slightly between years (up from 66% in 2007/08). Only one country, Turkey, sent more men out on staff training than women. The gender imbalance was quite high in most of the participating countries. The country that had the most balanced gender participation in staff training was the UK, with 123 women participating versus 94 men, followed by the Netherlands and Malta.

Chart 69: Composition of gender in staff training in 2008/09



2.2.8 Duration of staff training

The average duration of Erasmus staff training in 2008/09 was 6.5 days. This is the same average duration as in the academic year 2007/08. Mobility for staff training lasted on average longer than Erasmus teaching assignments which lasted on average 5.6 days. The duration varied between countries. Staff from Iceland stayed the longest abroad on training or on average 9.3 days, followed by staff from Malta (8.1 days) and then the Netherlands (7.6 days) (see chart 70). Higher education staff going on training abroad stayed on average the longest in Malta (8.7 days),

followed by Ireland (8.1 days) and the UK (7.7 days). Most days were spent on training in the UK (6892 days) followed by Spain and then Germany.

Chart 70: Average duration of staff training in days per home country in 2008/09

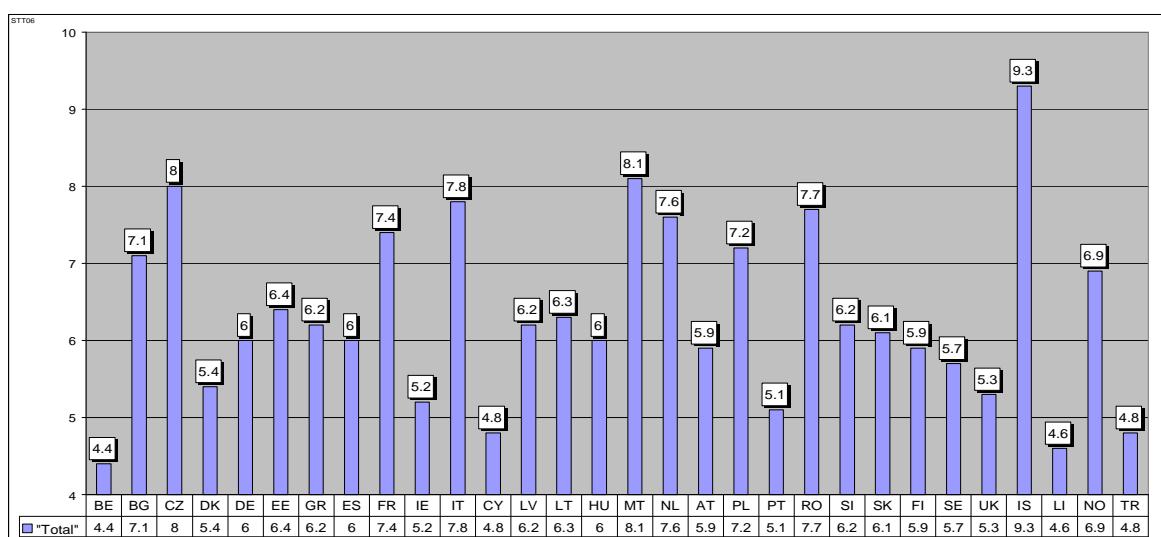
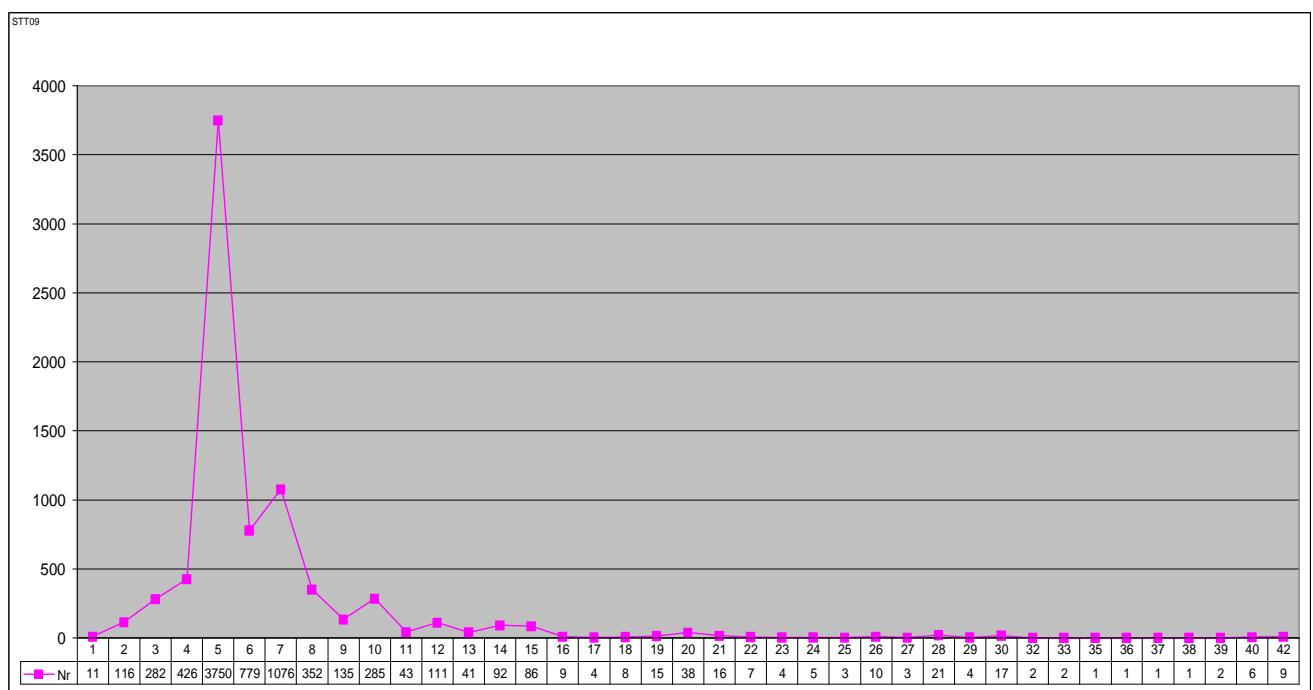


Chart 71 shows on the other hand the connection between the number of mobilities for staff training and their duration. As the chart clearly shows, the highest number of mobilities lasted five days (3750 out of 7774). This means that 48.2% of all staff training mobilities lasted five days. 82.8% of staff training mobilities lasted, however, seven days or less. The chart further shows that 10.7% of mobilities for staff training (or 835) were shorter than the minimum requirement of five days. It should be noted that shorter durations are allowed in exceptional cases.

Chart 71: Distribution of duration of staff mobility for staff training in 2008/09

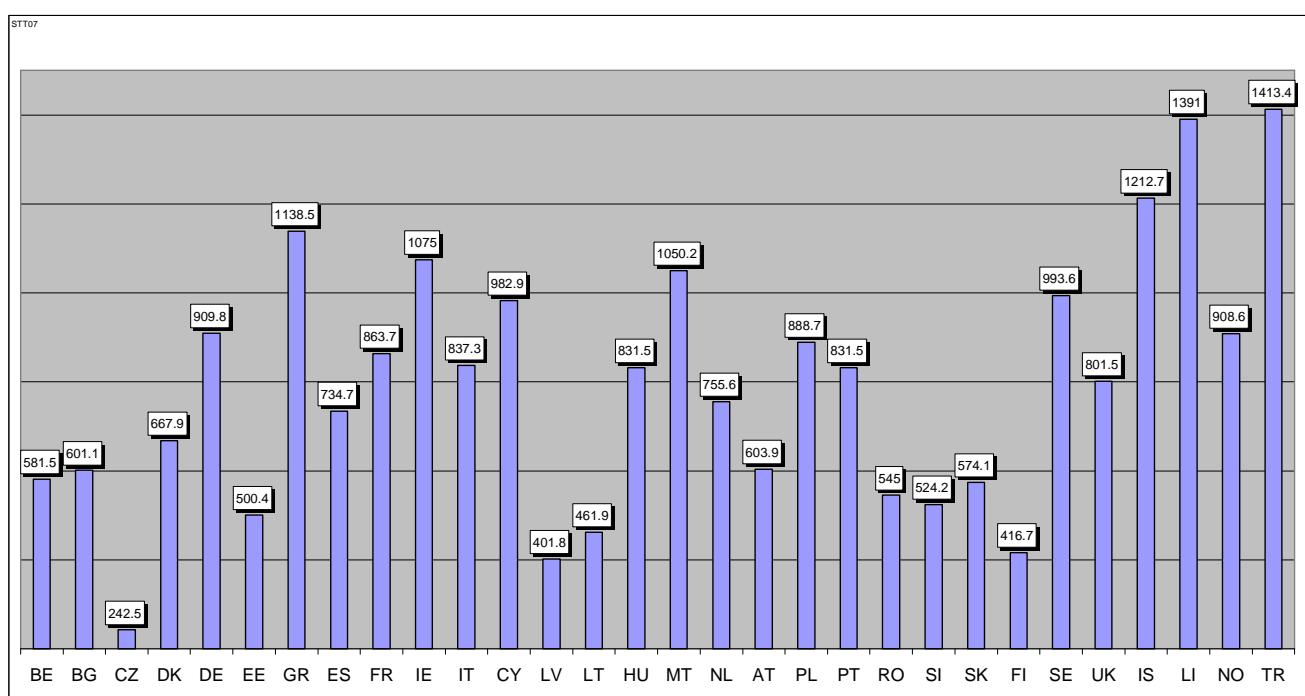


2.2.9 Grants for staff training

The average EU grant per staff training mobility in 2008/09 was 751€ (up from 734€ in the previous year), or 116€ per day (see chart 72). Staff training grants are on average higher than EU grants for teaching assignments (667€ in 2008/09) due to longer duration. The average EU grants vary greatly between countries, ranging from 1391€ for staff from Liechtenstein, followed by a 1213€ grant for Icelandic staff, down to 242€ grant for staff coming from the Czech Republic.¹⁸ Staff going on training to Denmark and Italy received the highest EU grants (see more on duration and grant levels in Annex 15).

¹⁸ This does not take into account that duration may be different between countries. Other factors also play a role, e.g. different travel and living costs etc.

Chart 72: Average daily EU grant of staff mobility for staff training in 2008/09



2.2.10 Staff with special needs

During the academic year 2008/09 no higher education staff with special needs participated in the Erasmus staff training action.

2.2.11 Zero-grant staff for staff training

Out of the total number of staff participating in staff training, 136 were zero-grant staff (up from 32 in the previous year). This constitutes an increase of 425% between years. Zero-grant staff training periods were about 1.7% % of the total number of mobility for staff training. The majority of the zero-grant teachers came from Finland, or 39, followed by Poland (37), Latvia (14) and Lithuania (14). The most common destinations of zero-grant staff for staff training were Norway with 24 incoming training mobilities, Germany (15), and the Netherlands (11).

3 Erasmus Intensive Language Courses

3.1 Erasmus Intensive Language Courses since 2001

The Erasmus Intensive Language Courses (EILC) action dates back to 1996¹⁹. EILCs are specialised courses in the EU's less widely used and less taught languages. They are organised in the countries where these languages are used as teaching languages at higher education institutions. EILC are not organised for the most widely taught languages English, German, French and Spanish (Castilian).

In 2008/09 326 EILCs (up from 303 in the previous year) were organised in the following 22 countries: Belgium (Flemish Community), Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden and Turkey. No courses were organised in Malta that year but Malta can organise an EILC.

3.2 Participation in EILC

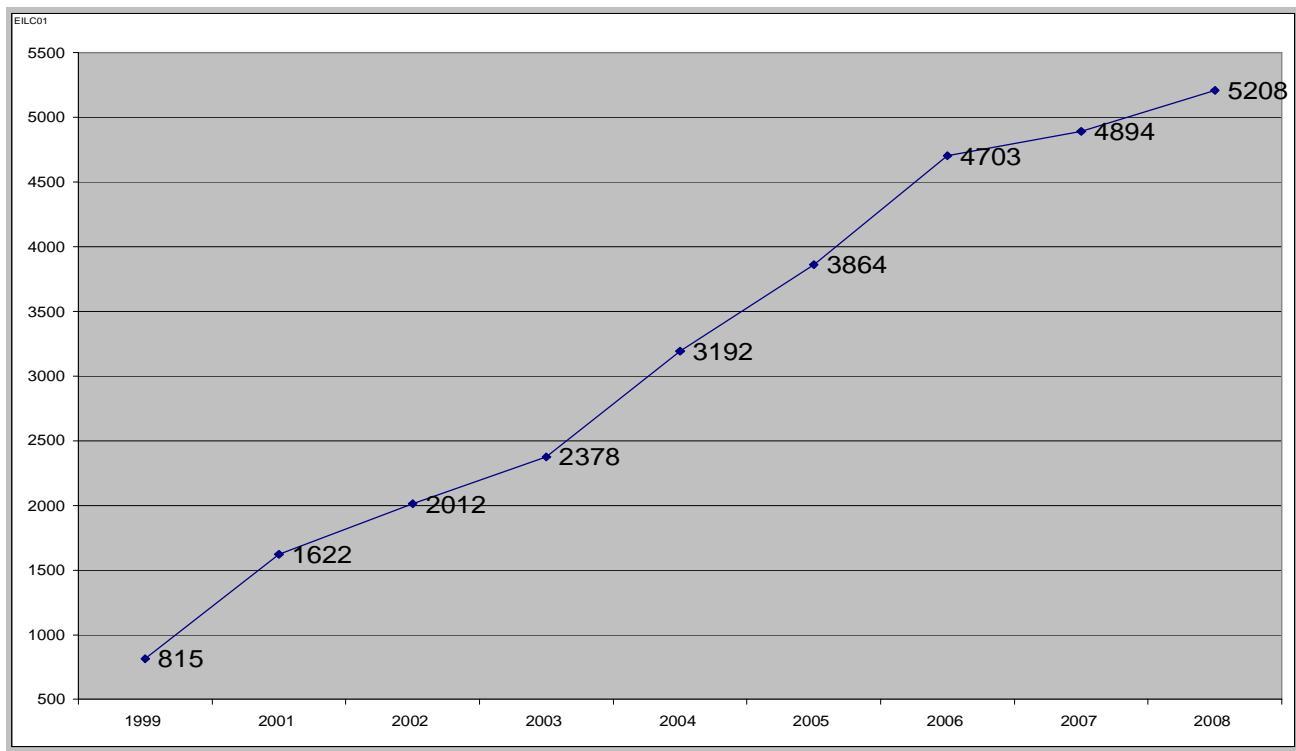
The EILC are available for students who have been selected for an Erasmus study or placement period. Comenius Assistants may also participate in the EILC, if there is a surplus of places. The aim of courses is to prepare incoming students for their Erasmus study or placement mobility period through a linguistic and cultural introduction to the host country.

In total, 28 688 Erasmus students (including students from the pilot phase period in 1999) have benefited from an Erasmus Intensive Language Course prior to their study or placement period abroad. 5208 students participated in an EILC in the 2008/09 academic year (up from 4894 in 2007/08) (see chart 73). The annual increase in participation rates was about 6.42% which is

¹⁹ The years between 1996 and 1999 was a pilot phase, under the name "Intensive Language Preparation Courses" (ILPC). EILCs were (re)launched in 2001 (no courses organised in 2000) and in 2004 the name "Erasmus Intensive Language Courses" was introduced for a stronger identification with the Erasmus programme.

somewhat higher compared to the previous year when it was 4%. This year eleven Comenius Assistants participated in an EILC compared to eight in 2007/08.

Chart 73: Participation in EILC from 1999-2008



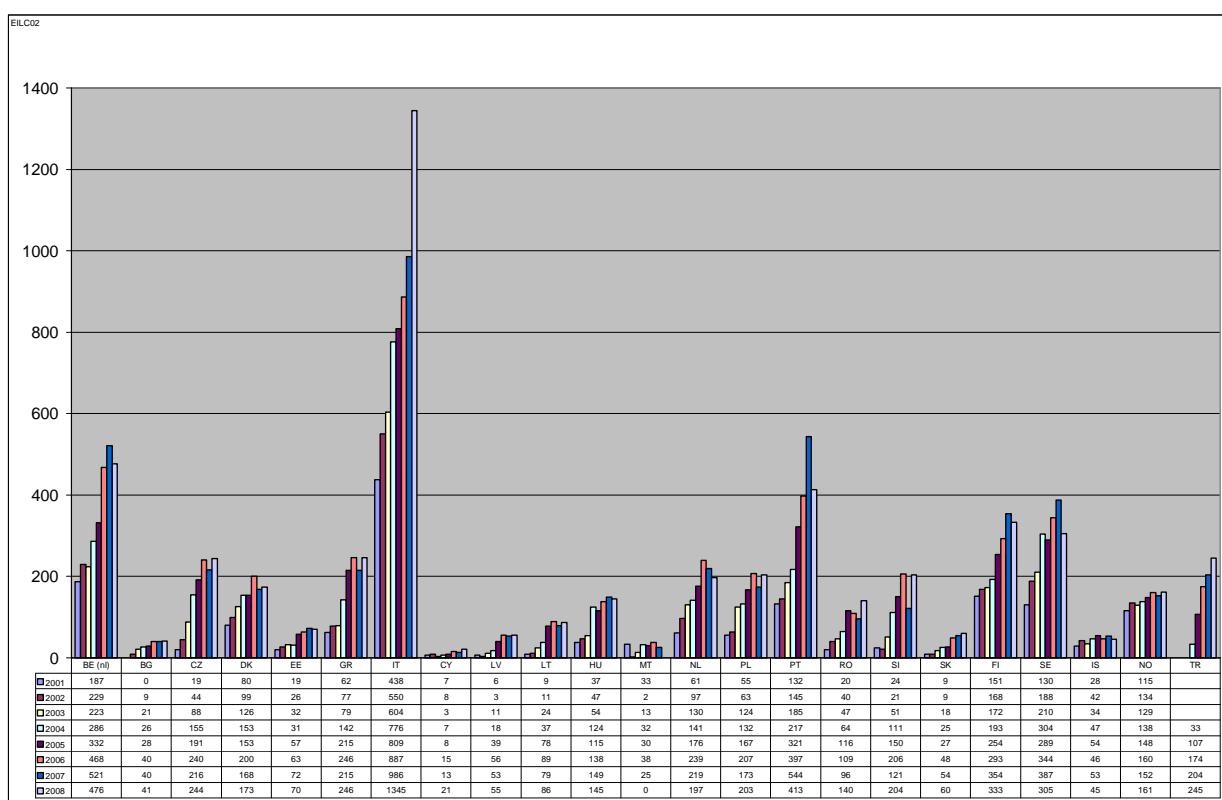
3.3 Incoming EILC participants

In 2008/09 seven of the 22 countries organising EILC courses received fewer EILC students than in 2007/08. The biggest decrease in numbers was in Portugal (-24.1%), followed by Sweden (-21.2%) and Iceland (-15.1%).

As in the previous years, Italy received the highest number of students, 1345 students, an increase of 36.4% between years. 26% of all students participating in the EILC scheme took a course in Italy. The Flemish speaking community in Belgium received the second highest number of students a total of 476, or 9.1% of the total number of participants. The third highest number of students participated in an Portuguese EILC, or 413 (a 7.9% of the total).

The highest annual increase was in Slovenia (68.6%), followed by Cyprus (61.5%) and Italy (36.4%).

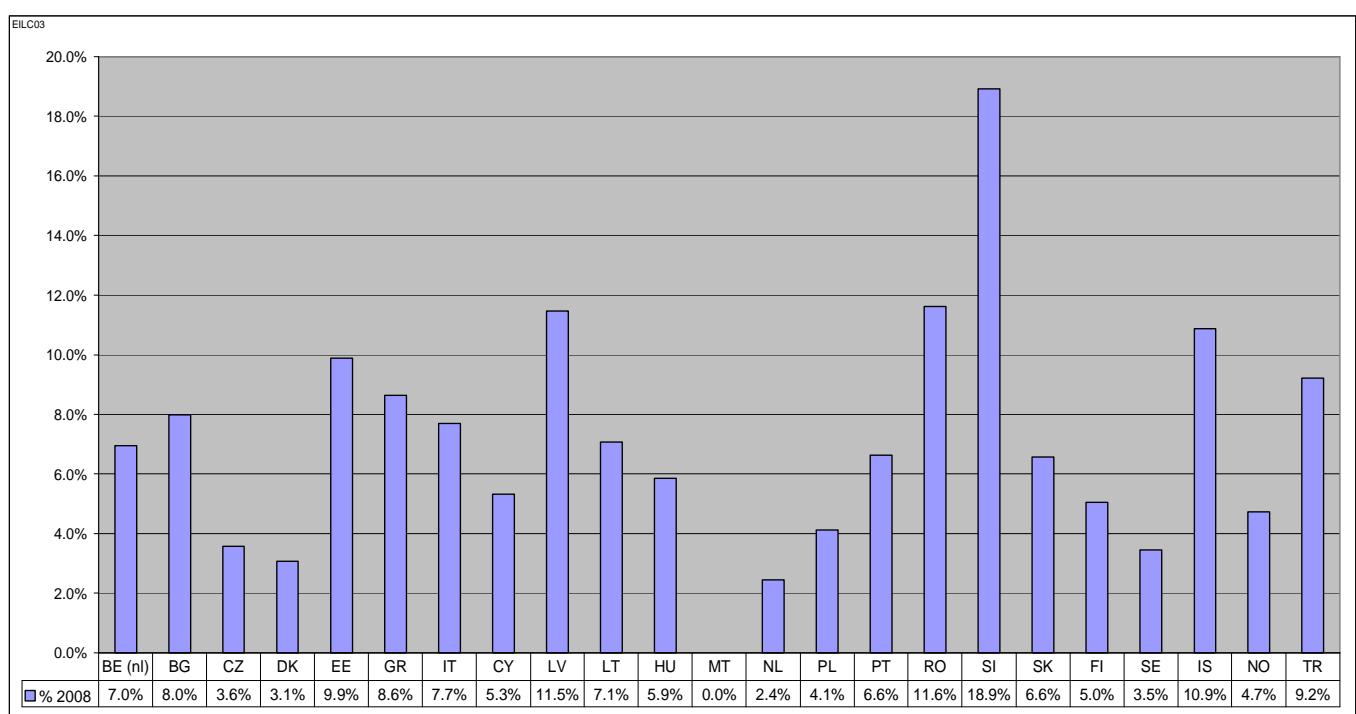
Chart 74: Incoming EILC participants from 2001/02 to 2008/09 per host country



5.8% of Erasmus students going to countries with less widely spoken languages participated in an EILC course, down from a 6.2 % participation rate in 2007/08.²⁰ Four countries: Slovenia (18.9%), Romania (11.6%), Latvia (11.5%) and Iceland (10.9%) had more than 10 % of incoming Erasmus students participating in an EILC. Ten countries were below the average. The Member States which joined the EU in 2004 and 2007 respectively had almost all above average participation rate but it should be noted that they have proportionally fewer incoming Erasmus students than most of the older Member States.

²⁰ Participation in EILC 2008 (5208 students) as proportion of the total number of incoming Erasmus students in 2008/09 in the 23 countries participating in EILC (90 427 students).

Chart 75: EILC students as percentage of incoming Erasmus students to countries with less widely spoken languages



3.4 Outgoing EILC participants

German students were by far the most active participants in the EILC action with 991 students participating in the academic year 2008/09. This constitutes about 19 % of all mobile German Erasmus students. The second highest participation was from Poland with 588 students (11.2%). The highest annual increase in the number of students participating in an EILC was in Poland (76 students). The highest annual percentage increase in participation was, however among Portuguese students, an increase of 63% between years. Romania, Estonia, Norway and Latvia also experienced over 40% increase in numbers between years. Ten countries sent fewer students to EILC courses than in the previous year. The most decrease was among students from the UK (73 fewer than last year). The most decrease in percentage was also from the UK (45% from the previous year) followed by Sweden (36%) and Lithuania (26%). In relative terms, the most increase was in the number of Portuguese students (an increase of 63% between years).

Chart 76: Number of outgoing EILC participants from 2001 to 2008 per home country

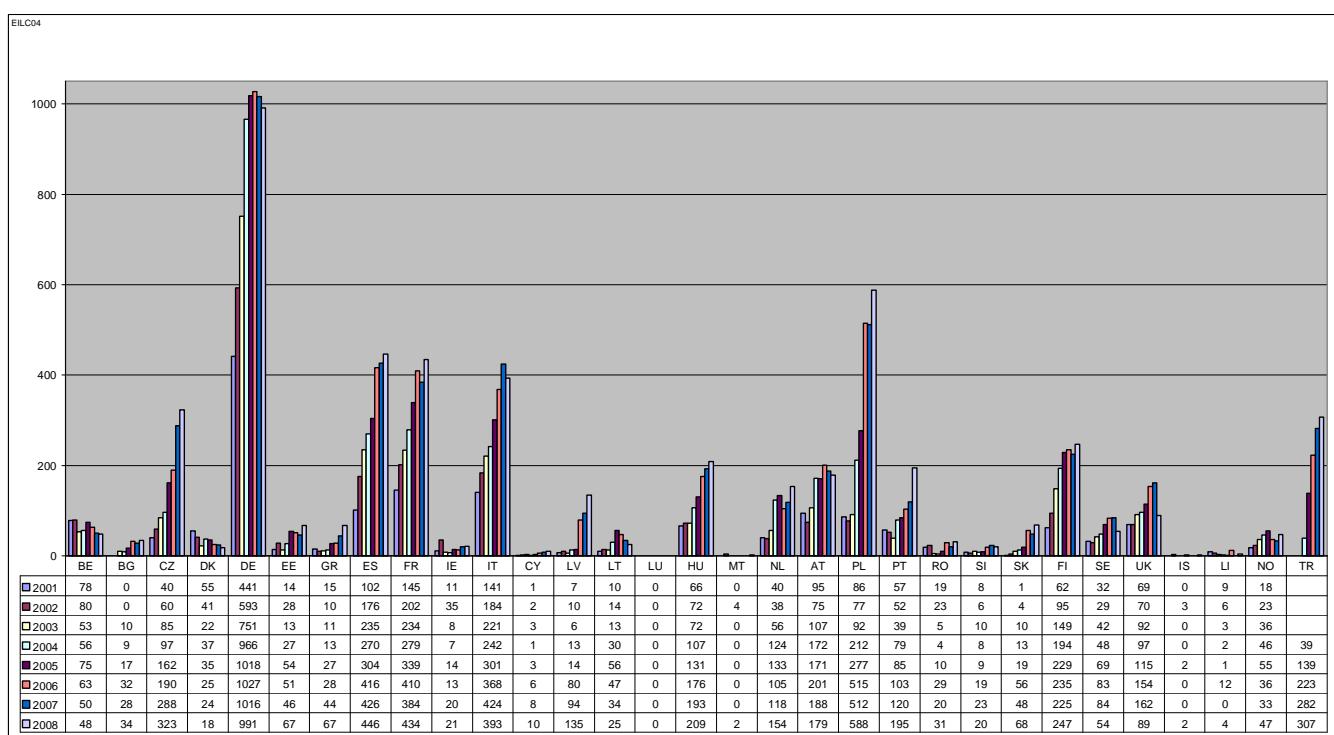


Chart 77 compares the EILC participation of outgoing students with the total number of students visiting the 23²¹ countries that organise an EILC. The percentage of outgoing students visiting these countries and participating in an EILC was 6.4% of the total.²² The chart shows that in relative terms students from Liechtenstein were the most active participants in EILC courses in 2008/09. 314% of students from Liechtenstein participating in Erasmus mobility took part in an EILC. The second highest participation rate was among Finnish students (16.3%) and then Latvian students (15.8%).

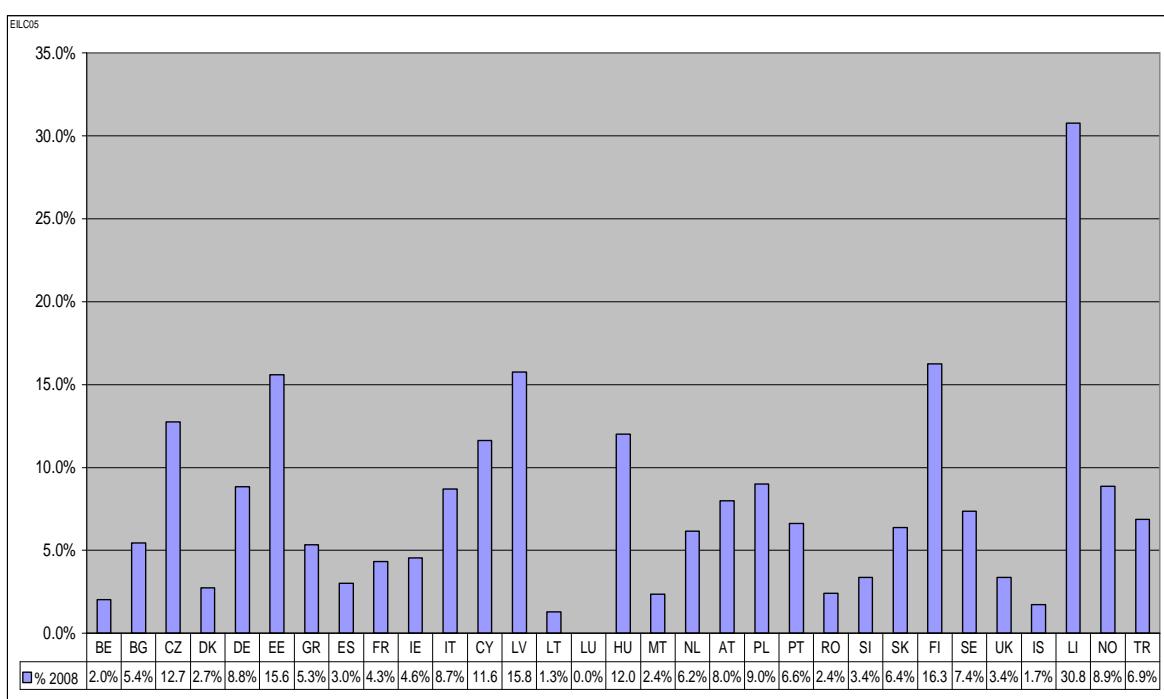
In 2008/09, a number of countries had a very low participation rate in the EILC action. The lowest participation rate was among Luxembourg's students none of whom participated in an EILC, followed by students from Lithuania (1.3%) and Iceland (1.7%).

Participation in EILC among students from the larger Member States that do not organise EILC courses varied greatly in the academic year 2008/09 as in previous years. Participation rates of outgoing students from Germany, France, Spain and the UK ranged from 3.0% in Spain to 8.8% in Germany.

²¹ No courses were organised in Malta in 2008/09. However, as Malta participates in the action, the number of outgoing Maltese students participating in EILCs are counted in the total number of participants

²² The total number of outgoing students to these 23 destinations was 80 906 in 2008/09 whereas EILC participants were 5208.

Chart 77: EILC participants as a percentage of Erasmus outgoing students



3.5 Types of EILC

Like in previous years, the majority of the 326 EILC courses organised in 2008/09 took place during the summer before the start of the fall semester. In 2005 it became possible for the first time to organise winter EILCs. Winter courses usually take place in January/February or before the start of the spring semester. In the academic year 2008/09, 256 courses were organised in the summer, or 78.5% of the total. A majority of the countries participating in the EILC action also offered winter courses which accounted for 21.5% of the total number of EILC courses held in 2008/09. The EILCs are organised at beginners and intermediate level. 83.4% of participants attended a beginner's course. In Finland, the organising institutions offer courses in Finnish and Swedish as both languages are official languages in Finland.

3.6 Recognition of EILC

Since 2004, the European Commission has recommended an assessment of the performance of each student participating in an EILC, as well as the issuing of a certification and awarding of ECTS credits for participation in an EILC course. Whether the home institution recognises credits earned through participation in an EILC depends, however, on what is stated in each student's Learning Agreement.

Since the use of ECTS is not required but only recommended, the situation varies between countries and between institutions within the same country. While some institutions issue ECTS credits others do not. According to the annual reports of the Lifelong Learning Programme National Agencies in each of the participating country, the majority of the EILC organising institutions award ECTS credits. Students can earn from two up to nine ECTS credits depending on the workload and the number of contact hours.

4 Erasmus Intensive Programmes

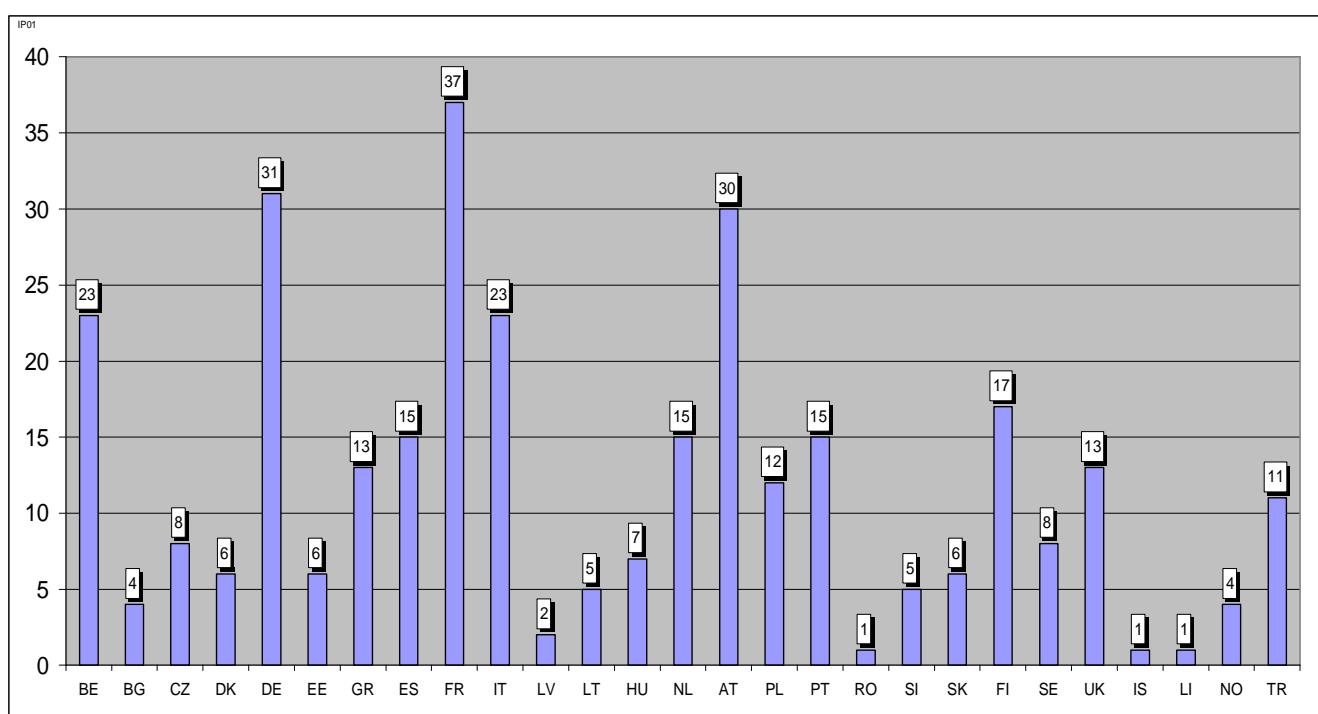
An Erasmus Intensive Programme (IP) is a short programme of study of ten days up to six weeks of subject related work bringing together students and teaching staff from higher education institutions of at least three countries.²³

4.1 Number of Intensive Programmes

The Intensive Programmes were for the first time managed by the Lifelong Learning Programme National Agencies in the 2007/08 academic year. In the academic year 2008/09 a total of 319 IPs were organised in 26 countries (see chart 78). The increase in the number of IPs between years was 24.1% (up from 257). France organised the highest number of courses, or 37, which represents 11.6% of the total number of courses organised this year. Germany organised the second highest number, or 31 (9.7% share), and Austria the third highest, or 30 (9.4% share). Liechtenstein, Iceland and Romania respectively organised one IP in 2008/09 but no IPs were organised in four countries: Cyprus, Ireland, Luxembourg and Malta.

²³ EUR31 can participate in the IP action

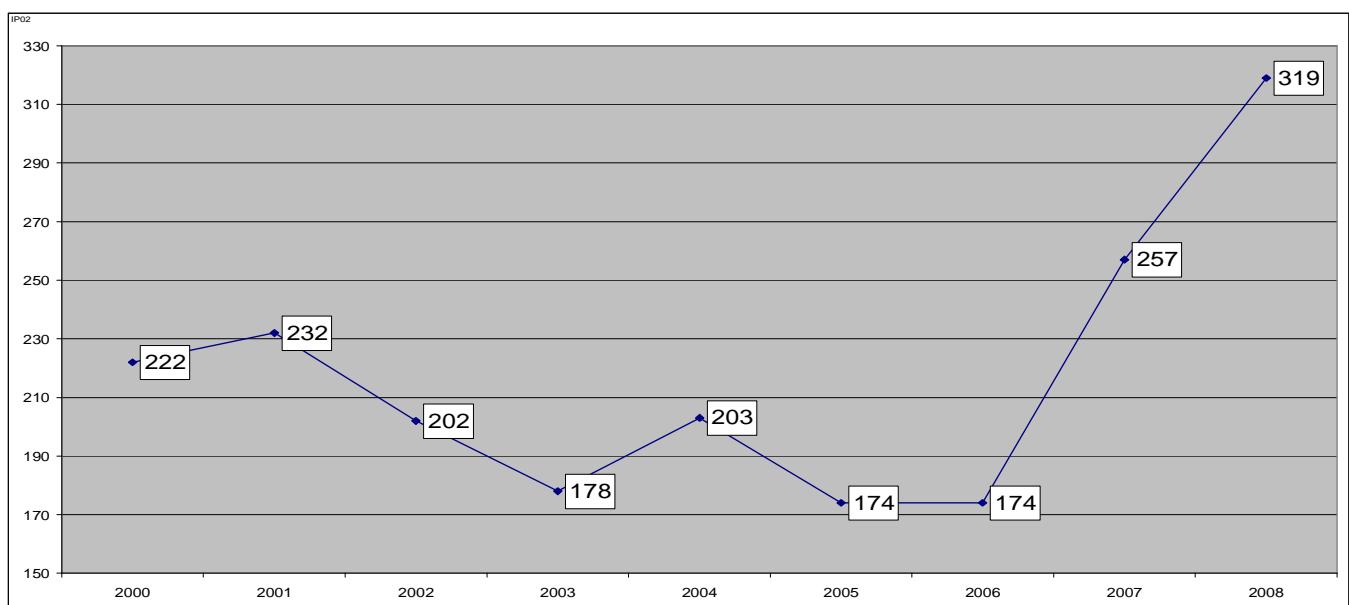
Chart 78: Number of Intensive Programmes per coordinating country in 2008/09



New Intensive Programmes constituted 49.8% of funded IPs in the academic year 2008/09. 32.6% were first time renewals (2nd year) and 17.6% were second time renewals (3rd year).

Chart 79 below shows the number of Intensive Programmes that have been funded since the academic year 2000/01. Since the beginning, a total of 1961 Intensive Programmes have been organized. The numbers have varied somewhat from year to year but there has been a steady increase in the number of funded IPs since the beginning of the Lifelong Learning Programme in 2007.

Chart 79: Number of Intensive Programmes from 2000/01 – 2008/09



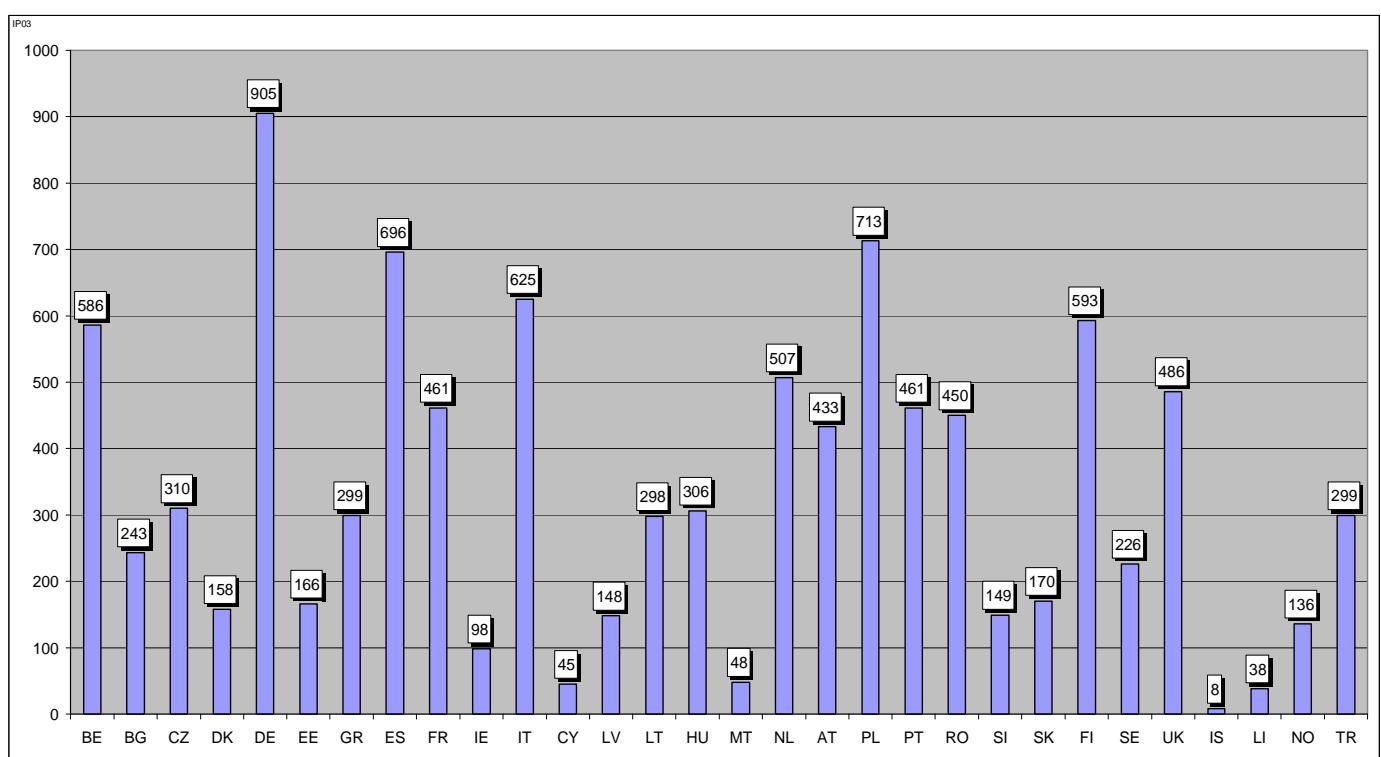
4.2 Participation in Intensive Programmes

13 560 students and teachers participated in the Intensive Programmes action in 2008/09 (up from 11 822 in 2007/08). This is a 14.7% year-on-year increase. The average number of participants per IP was 42.5 (down from 46 in the previous year).

A total of 10 061 students participated in IPs in 2008/09 (see chart 80) out of which the estimated number of international students is 7742 students. Students represented a 74.2% of the total number of participants. As can be seen in chart 79 below, the highest number of students participating in an IP came from Germany, or 905, then Poland with 713 students, followed by Spain with 696. Only eight students from Iceland participated in IPs in 2008/09 but Liechtenstein had a remarkable high participation rate in 2008/09 with 38 students participating in IPs.

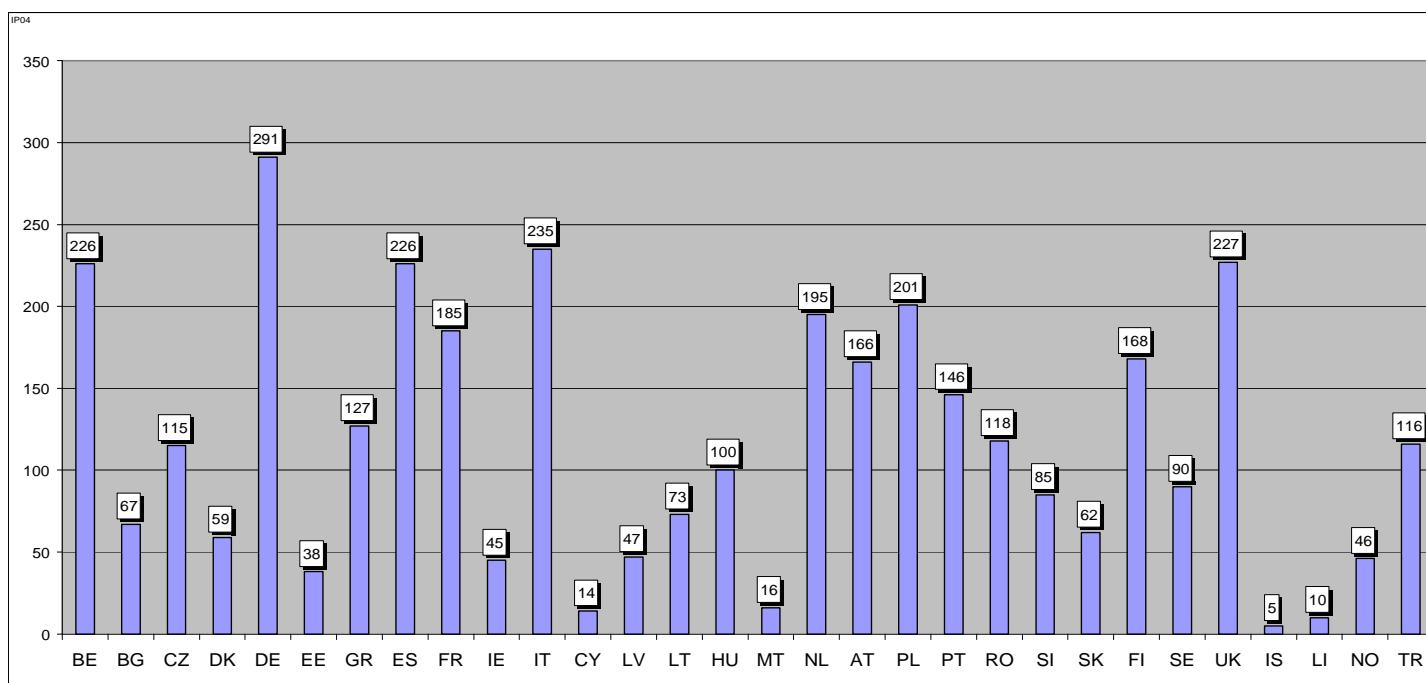
The average age of IP students was higher than Erasmus students going on mobility for studies and placements. On average, IP students were 24.9 years old, the youngest student being 17 and the oldest 71 years old.

Chart 80: Number of IP students per home country in 2008/09



The number of teachers participating in Intensive Programmes increased from 2781 in the academic year 2007/08 to 3499 in 2008/09. This constitutes a 25.8% year-on-year increase. Teachers represented 25.8% of participants in IPs in 2008/09, a slightly higher percentage than in the previous year. The highest number of participating teachers came from Germany, or 291, followed by Italian teachers (235) and then teachers from the UK (227).

Chart 81: Number of IP teachers per coordinating country in 2008/09

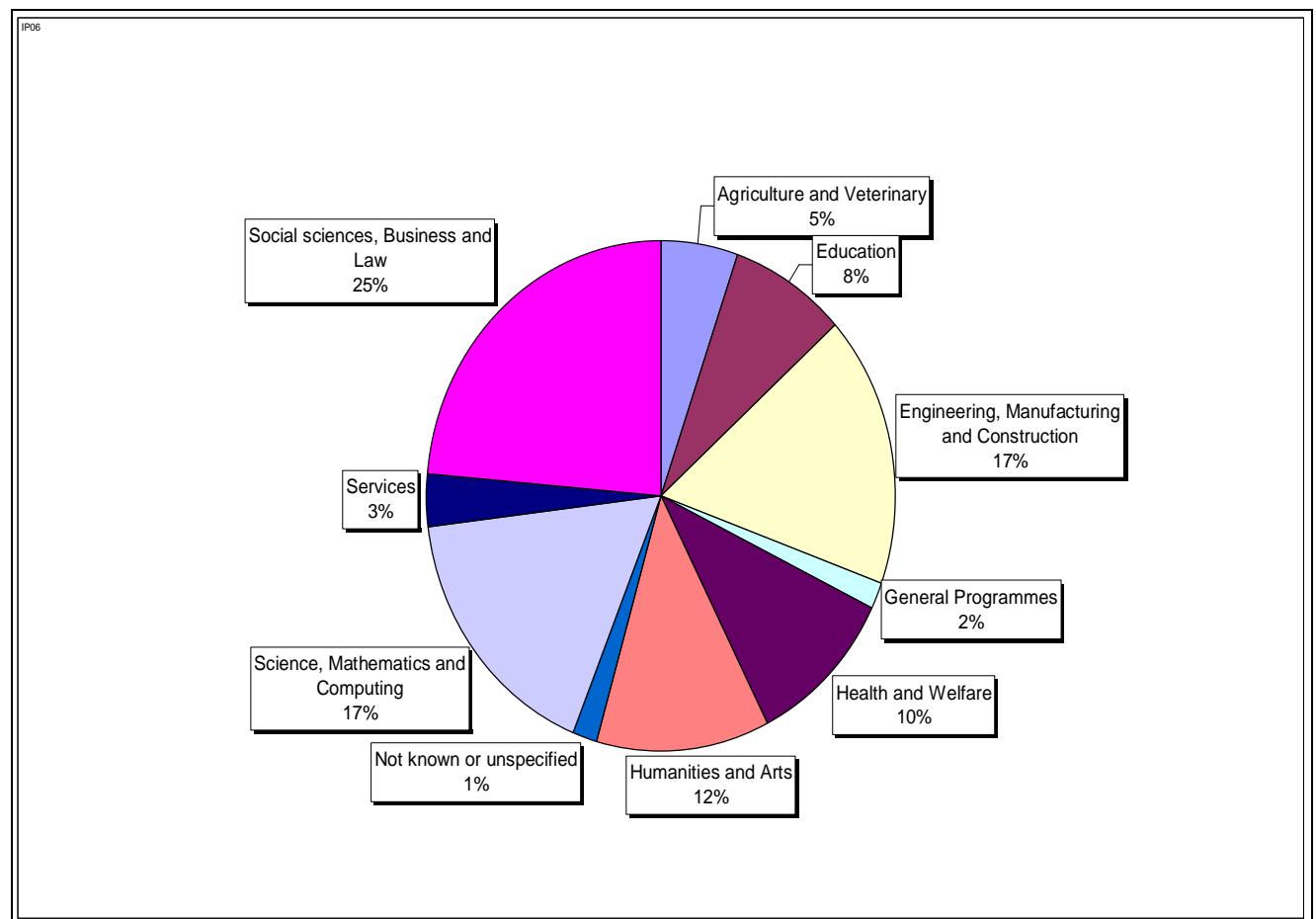


4.3 Subject Areas of Intensive Programmes and ECTS awarded

The main subject areas covered in IPs in 2008/09 were "social sciences, business and law," or 78 courses (see chart 82). This subject area represented 25% of courses funded in this academic year. "science, mathematics and computing" was the theme of 55 courses (a 17% share), whereas "engineering, manufacturing and construction" was the theme of 52 courses (17% share). There was an increase of 3% between years in the number of IPs organised in the "science, mathematics and computing" subject area. IPs dealing with "education" were fewer than last year and were the theme of only 8% of IPs funded this year. The least popular areas were "general programmes" with 2% share and "services" (see chart 81). Intensive Programmes can have more than one subject area and the trends for the second subject area are very similar. IPs within "social sciences" were the most numerous in days (a total of 939 days), followed by "engineering" (655 days), and "science" (634 days). On average, individual IPs in "general programmes" lasted the longest, or 26 days.

On average Intensive Programmes awarded 5.25 ECTS credit hours in 2008/09 (down from 6 in the previous year). The Netherlands and Liechtenstein didn't award any credits for a participation in an IP but Belgium and Latvia awarded the lowest average number of ECTS per IP, or 3.5. Greece, on the other hand, awarded on average the highest number of ECTS or 9.9.

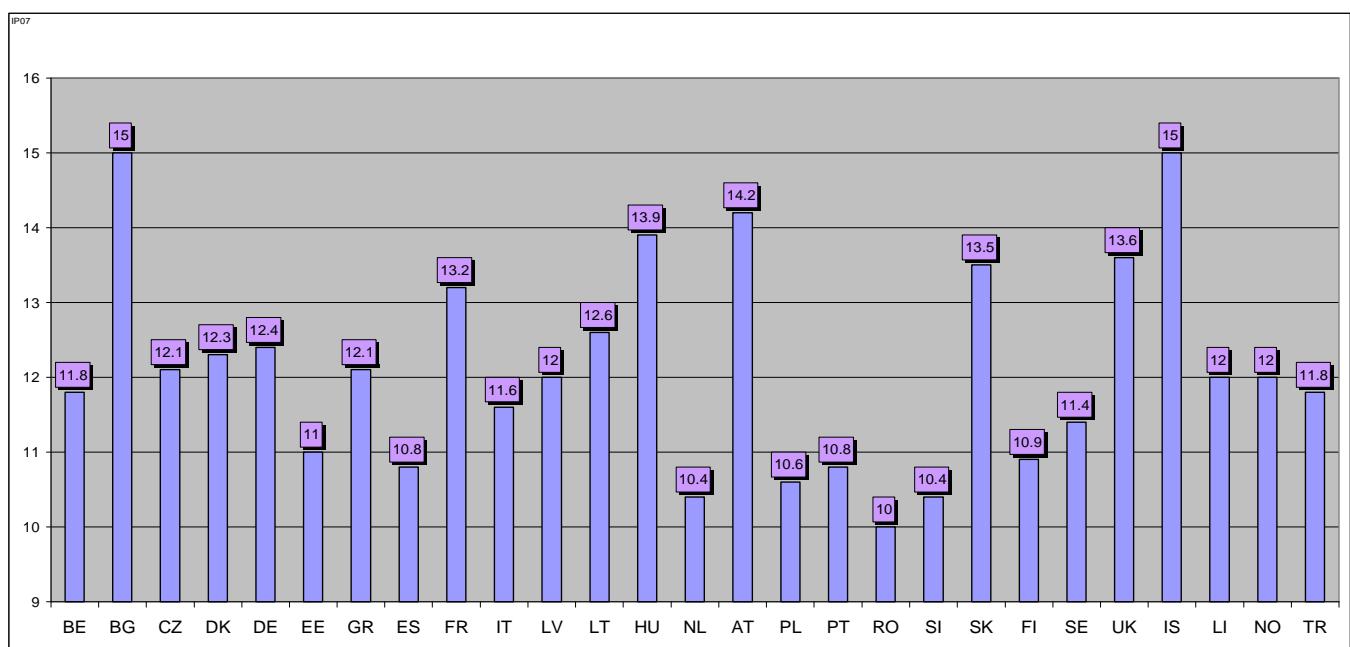
Chart 82: Share of IPs per first subject area 2008/09



4.4 Duration of Intensive Programmes

As can be seen in chart 83, the total duration of Intensive Programmes in 2008/09 was 3882 days. This means that on average each IP lasted 12.2 days. The average duration of an IP ranged from ten days in Romania to 14.2 days in Austria (see chart 82 below).

Chart 83: Average duration of IP in days per coordinating country in 2008/09



5 Erasmus Preparatory Visits

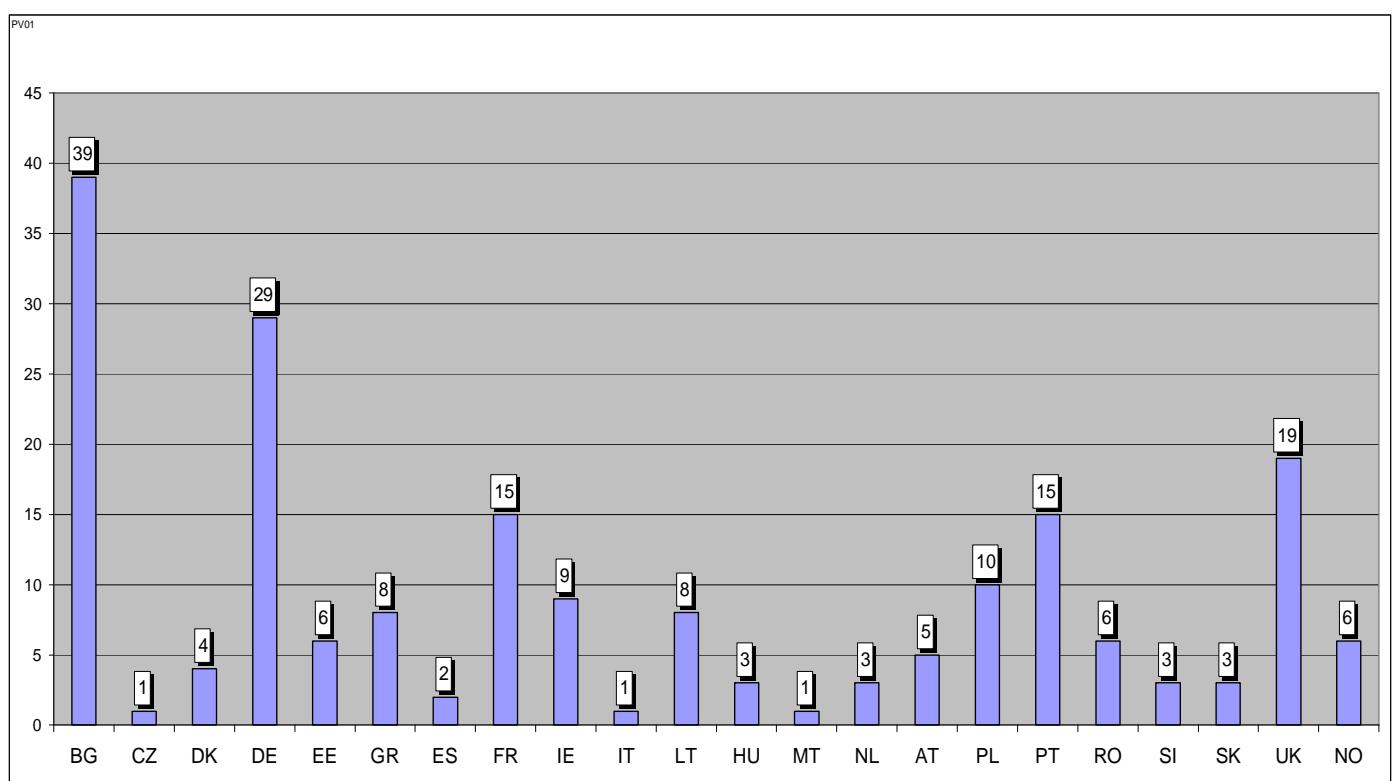
Erasmus Preparatory Visits (PVs) were introduced a new Erasmus action at the beginning of the Lifelong Learning Programme in 2007. The main objective of the action is to help higher education institutions establish contacts with prospective partner institutions in other participating countries and prepare participation in the different actions of the Erasmus programme. Only higher education institutions holding an Erasmus University Charter (EUC) can receive a preparatory visit grant. These grants can be used to visit new prospective partner institutions, or an enterprise, to establish future cooperation in teacher and student mobility and to prepare new Intensive Programmes.

Preparatory visit grants can also be used to participate in a partner-finding "contact seminar" organised by a Lifelong Learning Programme National Agency. In addition, preparatory visit grants may be awarded to staff at other organisations for the purpose of helping them establish consortia for the organisation of Erasmus student placements.

200 Erasmus preparatory visit grants were awarded in the academic year 2008/09. This is an increase of 257% from the previous year (up from 56). Out of the 31 participating country, 23 countries used preparatory visit grants. Bulgaria sent the highest number of people abroad on a preparatory visit grant, or 39. Germany used 29 preparatory visit grants and the UK 19. Several countries only used one preparatory visit grant.

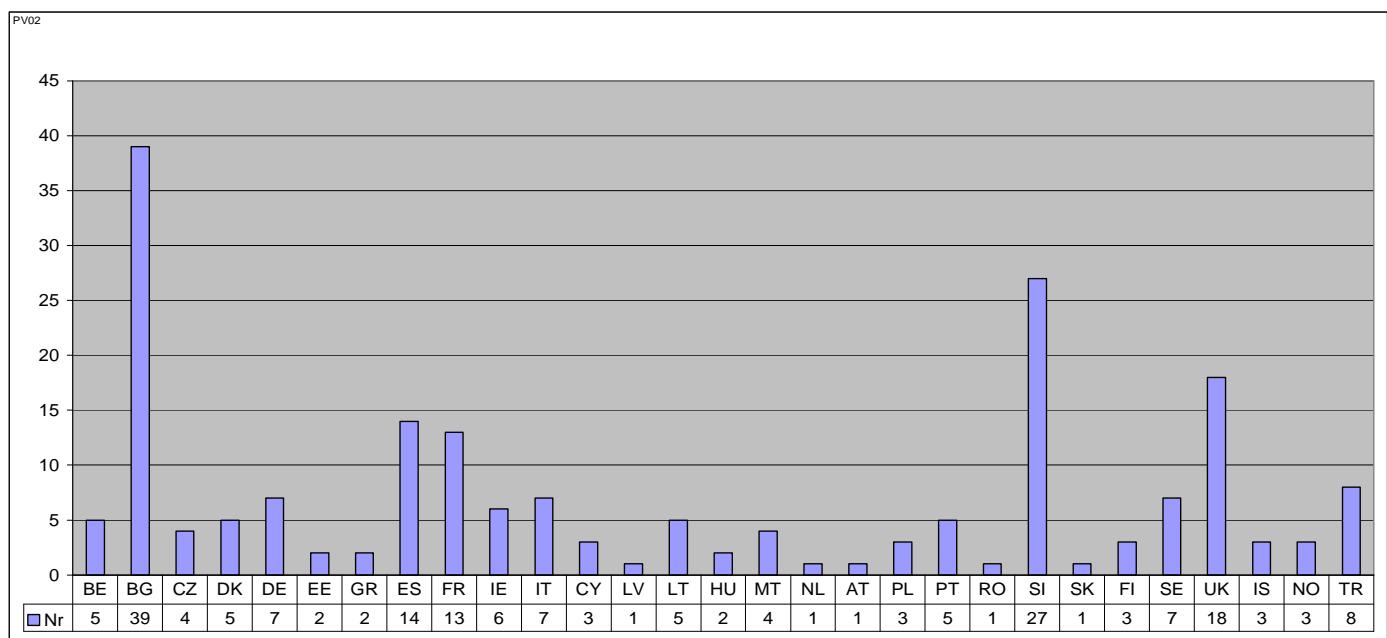
The use of preparatory visit grants is very limited in the Erasmus programme compared to other sub-programmes within the Lifelong Learning Programme. A partial explanation can be the fact that very few contact seminars are organised within the Erasmus programme.

Chart 84: Number of preparatory visits per home country in 2008/09



Bulgaria not only sent the highest number of people out on Preparatory Visit grants in 2008/09 but it also hosted the highest number of preparatory visits, a total of 39 (19.5% share), followed by Slovenia (29 – 13.5%) and then the UK (18 – 9%) (See chart 85). Preparatory visit grant recipients visited 29 countries in 2008/09.

Chart 85: Number of preparatory visits per host country in 2008/09



The total duration of preparatory visits across the 31 participating countries was 756 days and the average duration of a PV was 3.8 days. The average grant per preparatory visit across the 31 country was 962€

6 Overview of the Erasmus centralised actions

Besides the aforementioned decentralised actions, centralised actions are funded under the Erasmus Programme. These actions contain multilateral projects in the field of curriculum development, modernisation of higher education, cooperation between higher education institutions and enterprises, virtual campuses as well as Erasmus networks (academic and structural networks) and accompanying measures. For 2007, 2008, 2009 together the total amount of money granted to Erasmus centralised actions, was 55.749.569 €(for detailed figures see chart 88).

The following statistical overview shows and analyses the trends regarding Erasmus centralised actions from 2007 to 2009. It further provides financial information regarding the centralised actions and outlines the main differences between countries regarding their success in these actions. Chart 86 below compares the total number of received proposals and approved applications for all Erasmus centralised actions in each respective year.

Chart 86: Total number of received and approved applications for Erasmus centralised actions 2007-2009

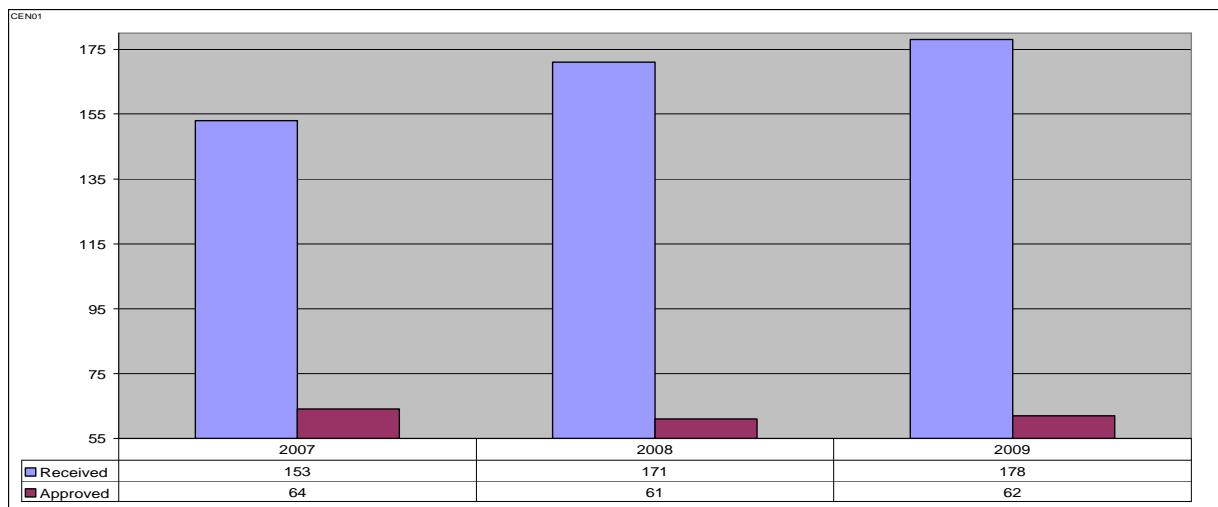
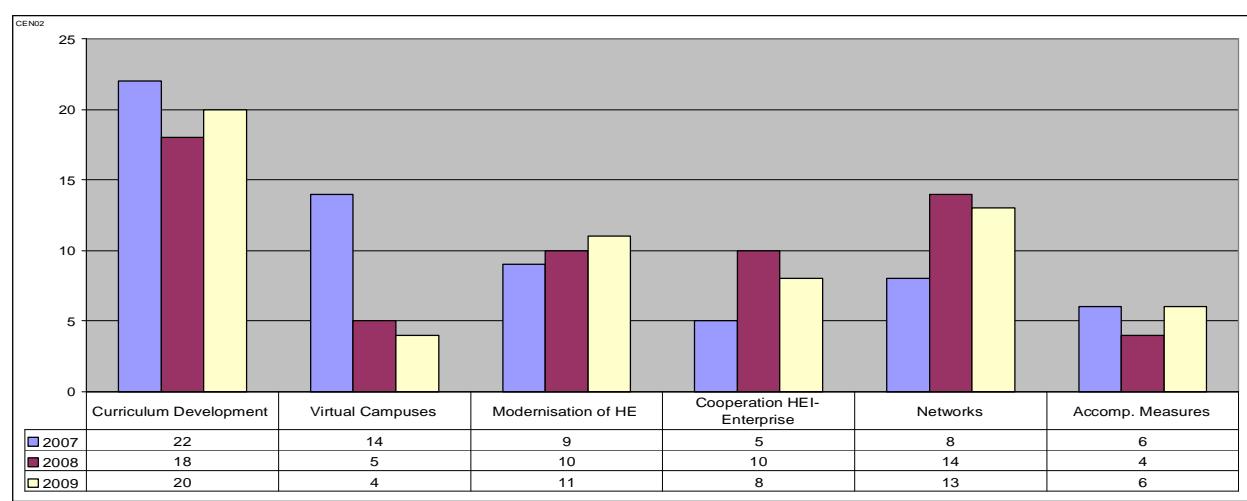


Chart 87 shows two trends. Firstly, the total number of received applications for Erasmus centralised actions increased from 153 in 2007 to 178 in the 2009 application year. Secondly, the total number of proposals approved was relatively stable with 64 successful applications in 2007, 61 in 2008 and 62 in 2009. This means that the overall success rate of applications each year declined from 41.8 % in 2007 to 35.6% in 2008 and to 34.8 % in 2009 respectively. The most plausible reasons for the lower success rate are not only the increased number of applications but also the fact that the budget for each action did not increase substantially between application years.

With regard to the total number of successful applications there are clear differences between the different types of centralised actions as chart 86 below indicates.

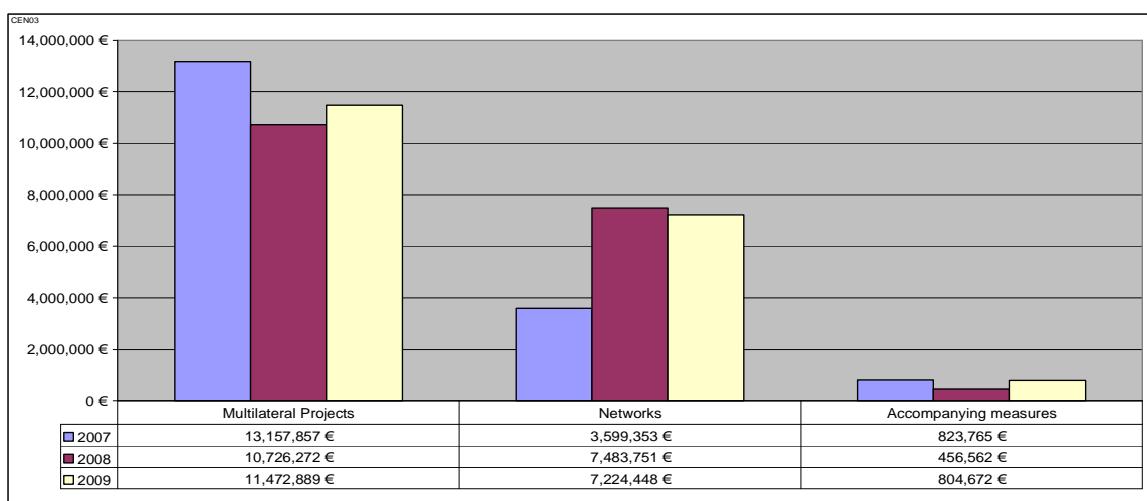
Chart 87: Number of applications selected in different centralised actions 2007 – 2009



The highest number of applications in the period 2007-2009 were within the curriculum development action, or 60. While the total number of selected Virtual Campuses' projects decreased from 14 in 2007 down to only four in 2009, there was a very slight increase in the number of selected applications on the Modernisation of Higher Education from nine in 2007 to 11 in 2009. The number of selected applications within the Erasmus network actions (academic and structural networks together) increased from eight 2007 to 14 in 2009. The number of selected accompanying measures projects was relatively stable during the period with six successful applications in 2007 and 2009 and four in 2008.

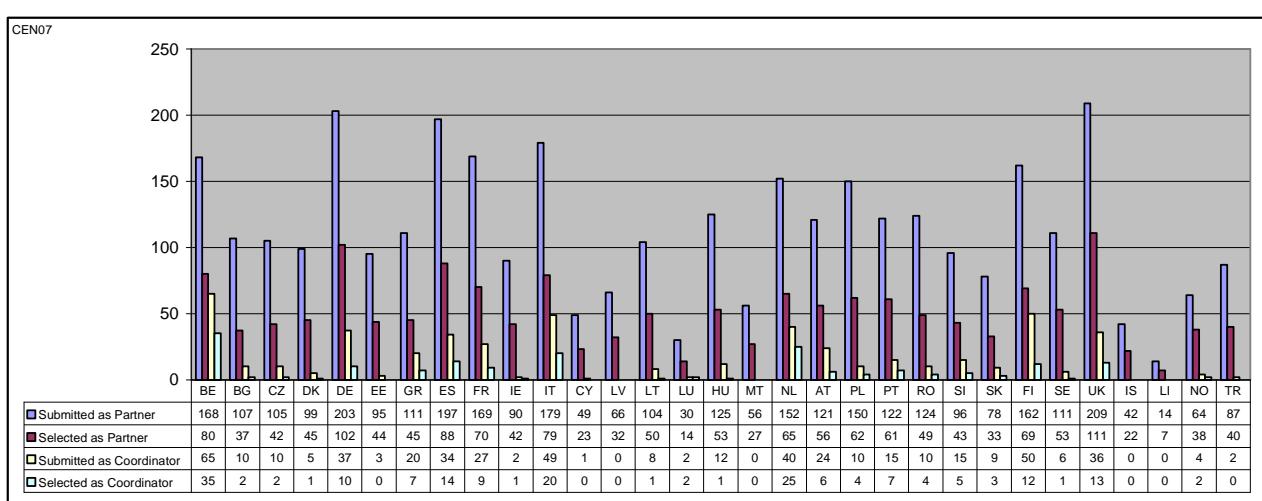
The differences between the different actions are also reflected in the budget available for each of them. Chart 88 shows the amount of awarded grants per action per year. During this three year there was a slight decrease in the budget granted to multilateral projects. Yet, this action still receives the highest budget each year. Most of the different project types belong to this action (Curriculum Development, Virtual Campuses, Modernisation of Higher Education and Cooperation of Higher Education Institutions and Enterprises). The increase in the number of network applications selected is also reflected in the increase in the amount of awarded grants, which more than doubled from 2007 to 2008 and then slightly decreased in 2009. Likewise this trend is visible with regard to the Accompanying Measures. The rather low number of selected proposals for Accompanying Measures is reflected in the constant relatively low amount of money granted to them.

Chart 88: Total amount of awarded grants per category of action from 2007 – 2009



Differences in activity and performance related to the Erasmus centralised actions, as well as trends over the years, are also visible with regard to the participation of individual countries as it is shown by the following charts.

Chart 89: Total number of Erasmus proposals per country, as coordinator and partner, submitted vs. selected proposals in 2007-2009



From 2007 to 2009, the UK submitted the highest number of proposals or 245 (36 as coordinator and 209 as partner). The UK also had the highest number of partners in centralised proposals. UK's participation was followed by Germany with 240 submitted proposals, Belgium with 233, Spain with 231 and Finland with 212 submitted proposals. Liechtenstein submitted the lowest total number of proposals or 14.

Regarding the total number of selected proposals, the UK is the best performing country with 124 selected proposals, followed by Germany with 112 and Spain with 102, while Liechtenstein had the lowest number of selected proposals with only 7 in total.

Belgium is the country which submitted the most proposals as coordinator (65) and was in total numbers also the most successful applicant as coordinator with 35 selected proposals.

Although this gives already some hints about the activity of a country regarding Erasmus centralised actions, the total number of submitted and selected proposals per country have to be put into perspective. The success rate, in the following chart 90 is shown as the percentage of selected applications per coordinating country.

The average success rate for proposals of coordinating countries was 37% from 2007 to 2009. When compared with the number of proposals submitted the performance of the UK as a coordinating country is less overwhelming (see chart 90 below), as its success rate as coordinator was 36 %, slightly below the average (13 selected proposals out of 36 submitted). The same applies for Germany, which performance rate was 10% lower than the average success rate. Although Luxemburg had a success rate of 100% as coordinating country, it should be noted that Luxemburg only submitted and coordinated two projects during the whole period. The Netherlands has the second highest success rate with 63%, followed by Belgium with 54%. As noted before, Belgium is the best performer as a coordinating country in total numbers (see chart 91). Overall, 10 countries out of the 31 had a success rate above average: Belgium, Spain, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal and Romania.

Chart 90: Success rate per coordinating country from 2007 – 2009

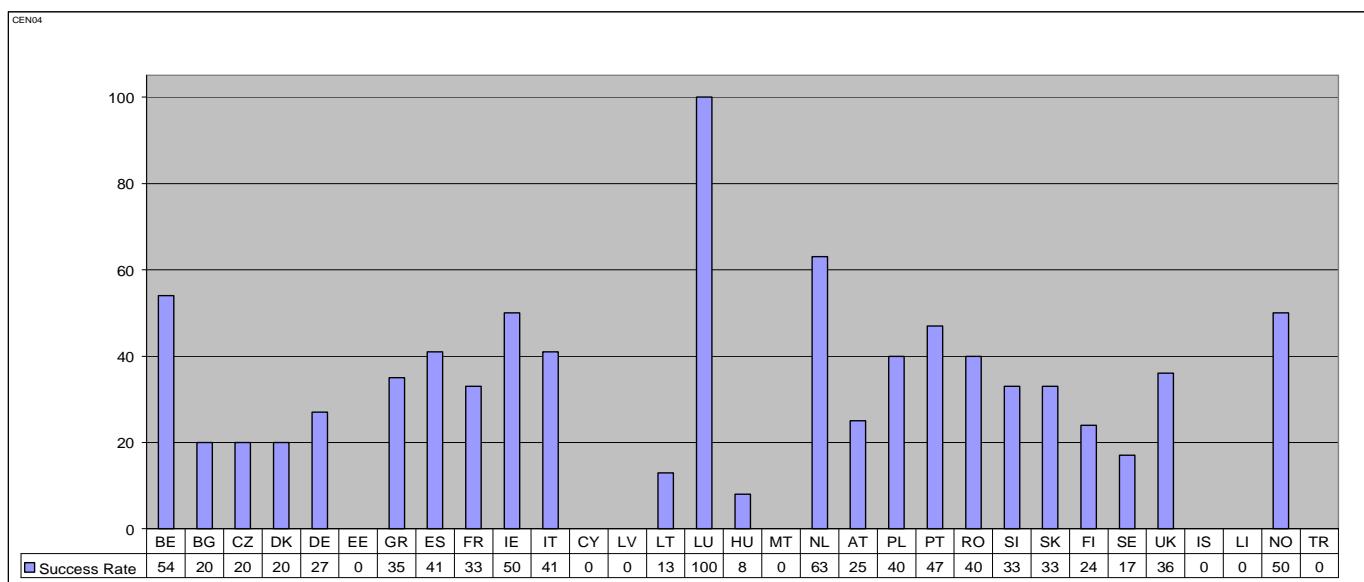
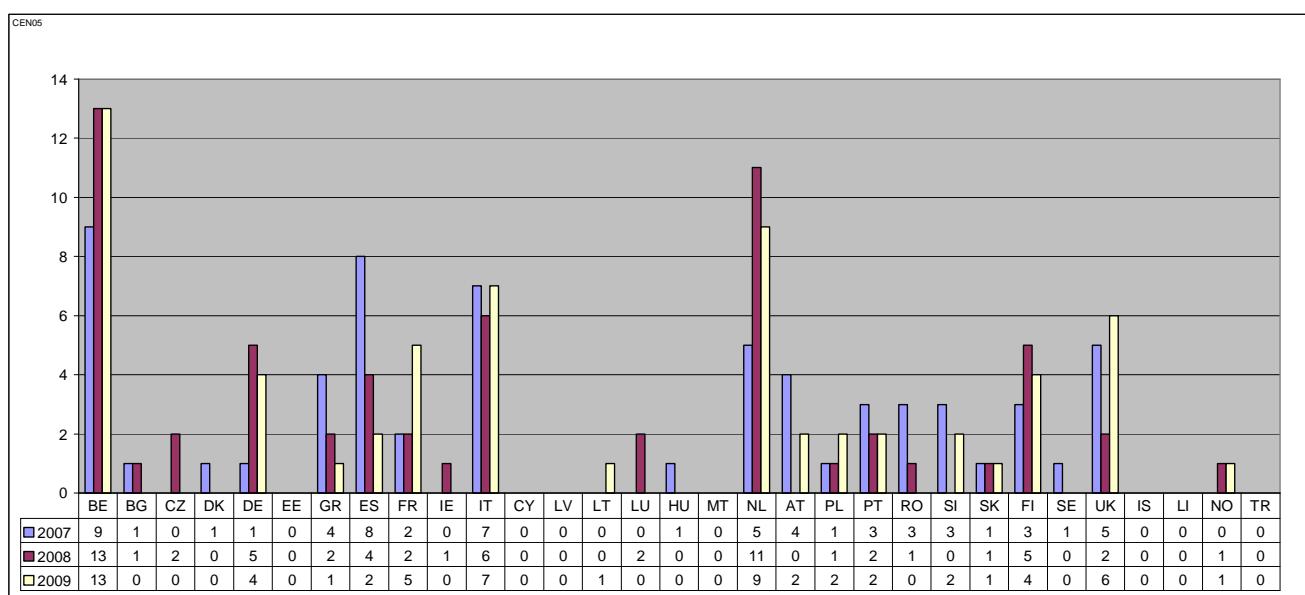


Chart 91: Selected Erasmus proposals by coordinating country from 2007 – 2009



If we look at the trends regarding the number of selected proposals per coordinating country from 2007 to 2009, we can classify them roughly into three categories. While four countries: Belgium, France, Poland and the UK, showed an upwards trend towards a higher number of successful applications, seven countries: Austria, Spain, Greece, Hungary, Portugal, Romania and Sweden, followed a downwards trend towards a lower number of successful applications. The only country with a stable, but low number of successful applications, was Slovakia (one proposal approved each year). For the rest of the 17 countries no stable trend in one or the other direction can be identified over the three years.

7 Erasmus Programme budget

The Erasmus programme experienced a sharp increase in its budget at the onset of the Lifelong Learning Programme in 2007. The funding for the Erasmus programme under the Lifelong Learning programme for the seven year period 2007-2013 is estimated at some 3.1 billion euro.

In 2008 the budget for the Erasmus decentralised actions amounted to €416.36 million, an increase of 11.85% from the previous year (up from €372 million). Increases in annual budget until 2013 are expected at a much more moderate rate. For the period 2011-2013 it is estimated that the increases in the budget will be below the increase of the cost of living index as estimated by Eurostat.

The Erasmus budget is for the most part managed by national agencies in each of the 31 participating countries. Approximately 96% of the total Erasmus budget is used to fund mobility actions (so called "decentralised actions") run by the national agencies in each country. These actions include student and staff mobility as well as Intensive Programmes (IPs) and Erasmus Intensive Language Courses (EILCs). Centralised actions, i.e. multilateral projects, networks and accompanying measures, account for some 4% of the Erasmus budget. These are managed centrally by the Education, Audiovisual and Culture Executive Agency in Brussels (EACEA).

Chart 92 shows the evolution of the budget for Erasmus decentralised actions since 1988. It should be noted that during this period participation of the programme has expanded from eleven countries in 1988 to 31 countries participating in the Erasmus programme in 2008/09²⁴.

²⁴ Evolution in participating countries:

1992/93 participation was opened to EFTA countries

After 1995/96 Switzerland ceased to participate

1995-1997: EU-15 + EFTA states

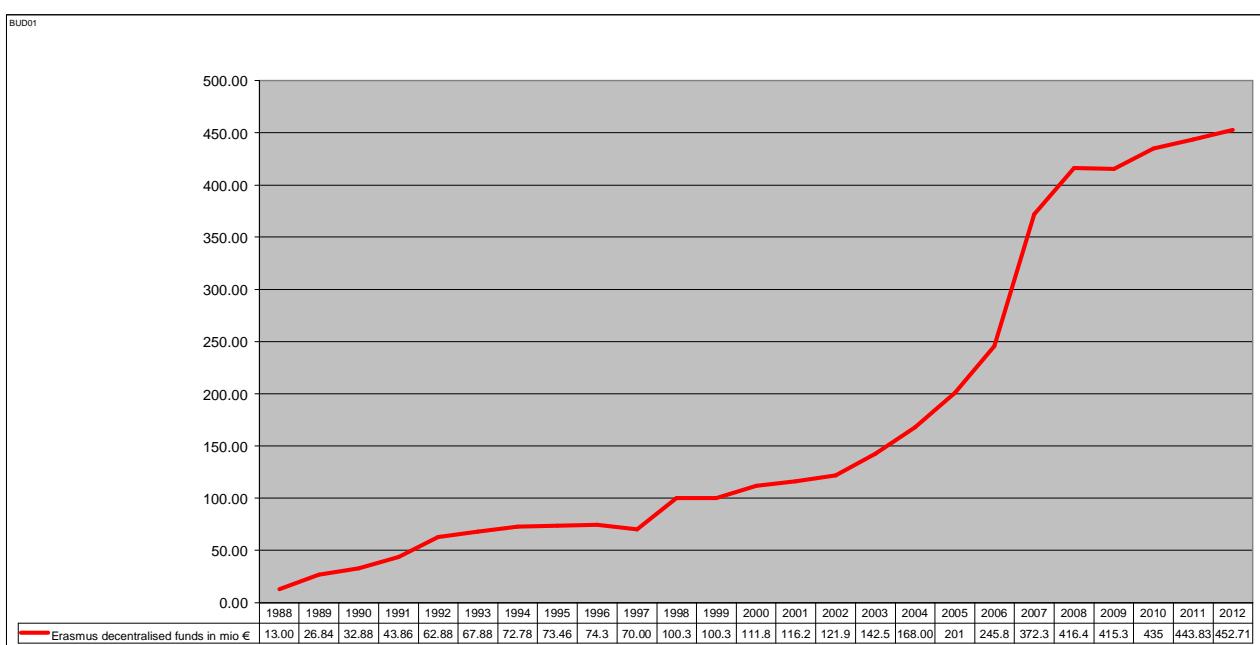
1998: Participation expanded to include also Czech Republic, Romania, Hungary, Poland, Slovak Republic and Cyprus

1999: Participation expanded to include also Bulgaria, Estonia, Lithuania, Latvia and Slovenia

2000: Participation also of Malta

2004: Participation also of Turkey

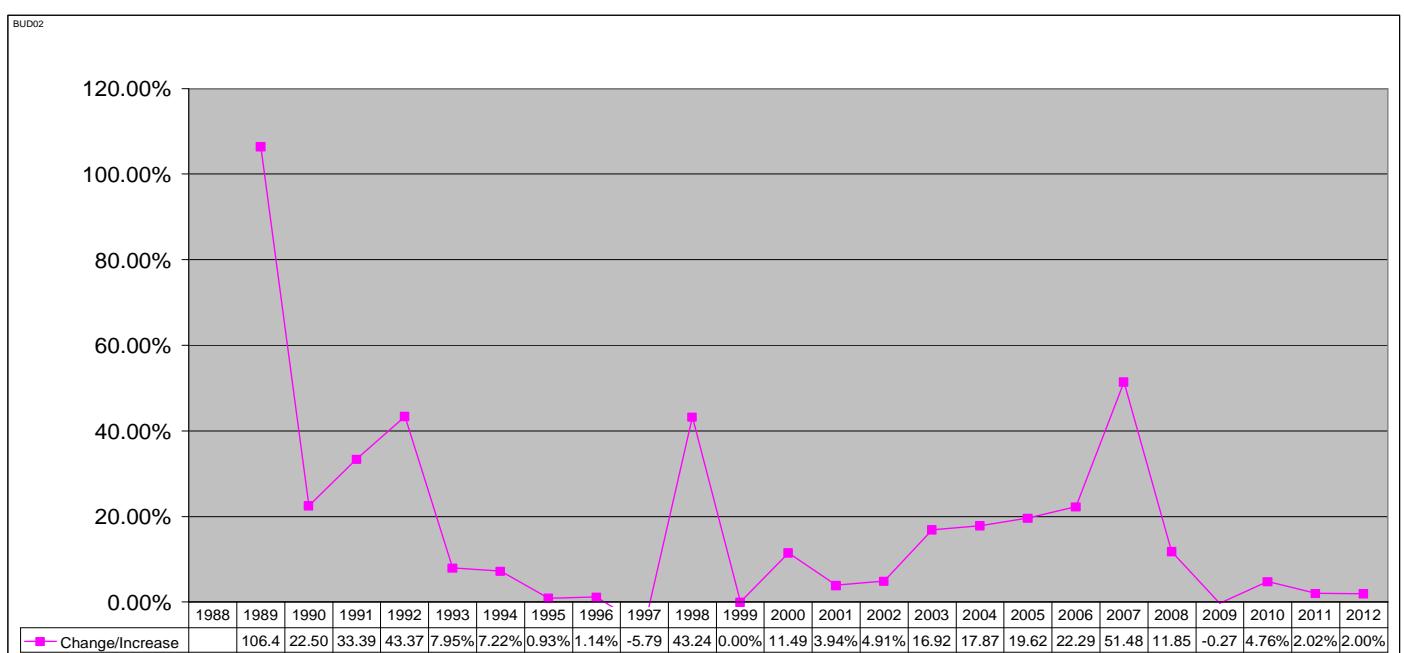
Chart 92: Budget for Erasmus decentralised actions from 1988-2010



* The budget from 2010 onwards is provisional

Chart 93 below shows the expected year-on-year percentage increase in the Erasmus decentralised budget until 2012.

Chart 93: Expected percentage change/increase in the Erasmus decentralised budget until 2012

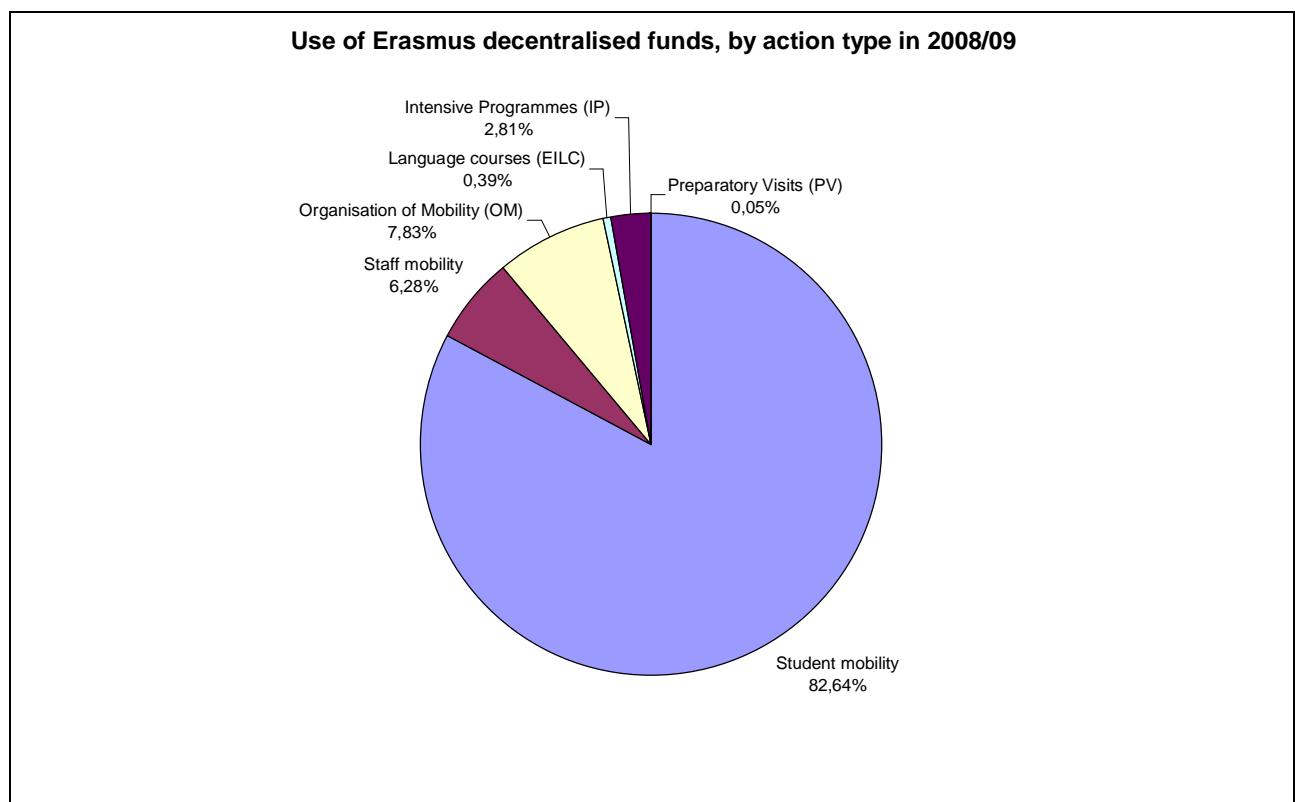


* The budget from 2010 onwards is provisional

Overall, the higher education institutions in the participating countries used around 96.2% of the available funds in 2008/09 (up from 95% in 2007/08).

Out of the total decentralised funds spent, 82.64% went to student mobility (studies and placements) followed by organisation of mobility with 7.83%, and 6.26% went to staff mobility (staff training and teaching assignments). The remainder of the funding went to finance Intensive Programmes using 2.81% of the budget, Erasmus Intensive Language Courses with 0.39% and Preparatory Visits with 0.05%.

Chart 94: Use of Erasmus decentralised funds by type of action in 2008/09



The National Agencies spent 331 million € on student mobility via higher education institutions and placement consortia. 25 million € were spent on staff mobility. 31 million € were spent on organisation of mobility grants.

2744 higher education institutions in Europe sent students and staff on Erasmus mobility activities in the academic year 2008/09 (compared to 2422 in 2007/08). The average EU grant for the organisation of mobility per institution was 11 616€²⁵ The average organisation of mobility grant per mobile student or staff in the 31 participating countries was 133.5€ In addition, 75 placement consortia organising student placements received on average an organisation of mobility grant of 14 407€ in 2008/09.

²⁵ The calculation of the average EU grant for organisation of mobility includes institutions that are part of Placement Consortia and not just organisation of mobility grants receiving higher education institutions.

326 Erasmus Intensive Language Courses spent 1.57 million € in 2008/09 in 22 countries. The average EU grant per course was over 4820€ and the average cost per student 302€. The total EU grant spent on Intensive Programmes in 2008/09 was 11.25 million €. The 319 IPs received on average 35 300€. The total EU grant spent on Preparatory Visits in 2008/09 was 185 400€.

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