

# VRTUOSI

## STEP BY STEP, BUILDING A VIRTUAL EXCHANGE PROGRAM BETWEEN FIVE EUROPEAN UNIVERSITIES

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## 1. Introduction

- **ERASMUS** is regarded as one of the biggest successes of the EU educational policy, with more than 3,000,000 students and teachers since 1987.
- However, the majority of the participants has been **undergraduate** students.
- One of the main reason for this may be that **postgraduate** students might have more restrictive family, professional and/or work ties being more mature.
- With this motivation in mind, we have proposed the EU our **VRTUOSI** program, <http://www.vrtuosi.com>, within the Virtual Campus framework of the EU **Lifelong Learning Programme** (LLP), which was **one of the five proposals chosen by the EU in the 2009 call.**

## 2. General description of VRTUOSI

- VRTUOSI allows the **exchange of virtual courses** between **five European universities**. The company **Habber Tec** also participates in the program as a partner.
- VRTUOSI focuses on the **exchange of courses** at **postgraduate level** (Master and PhD degrees) for students original from these five universities in Decision Sciences.
- It provides **open access** to **part** of the **material**, being the rest of the material restricted to the students taking the courses, who will get credits after completing the proposed tasks.

## 2. General description of VRTUOSI

- **Óbuda University** (Budapest Tech)  
<http://www.vrtuosi.com/members/obuda-university>
- **Tampereen Teknillinen Yliopisto** (Tampere Technological Inst.)  
<http://www.vrtuosi.com/members/tampereen-teknillinen-yliopisto>
- **Universidade de Coimbra**  
<http://www.vrtuosi.com/members/universidade-de-coimbra>
- **Université Paris Dauphine**  
<http://www.vrtuosi.com/members/universite-paris-dauphine>
- **Habber Tec S.L.**  
<http://www.habber.com>



## 2. General description of VRTUOSI

The courses are taught in English, including the following courses, all of them of 3 ECTS:

### **Rey Juan Carlos University**

- Simulation
- Quality Control: Six Sigma

### **Öbuda University**

- Operational Research Methods
- Computational Intelligence

### **Universidade de Coimbra**

- Multiobjective Meta-Heuristics
- Multicriteria Decision Analysis

### **Université Paris-Dauphine**

- Tools for public policy evaluation
- Game Theory and Practice

### **Tampereen Teknillinen Yliopisto**

- Many valued similarities
- Data Mining

Right choice of subjects  
Validation/equivalence policy

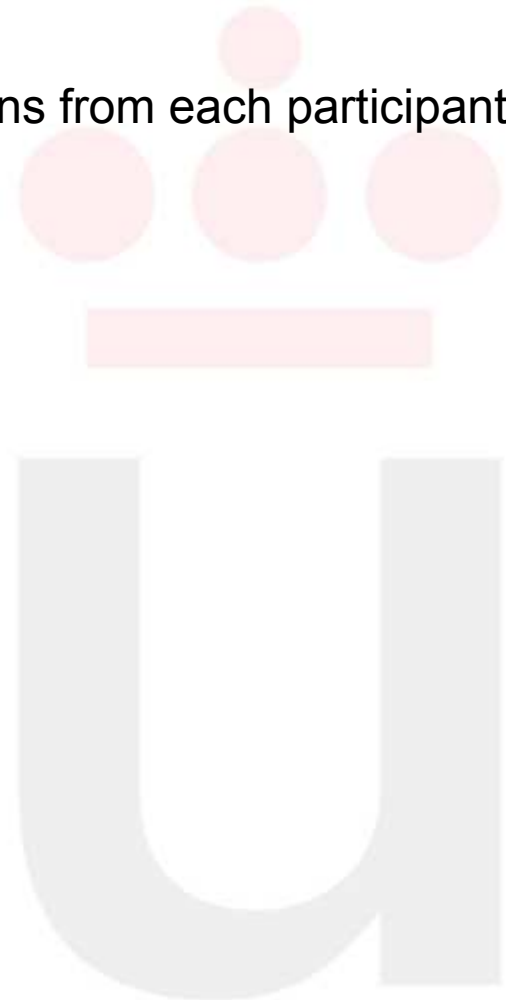
## 2. General description of VRTUOSI

- In this way, each **university**:
  - Teaches **two courses**, and
  - Sends **six students** to each course.
  - Then, each **course** is undertaken by **30 students**, and
  - The whole **master** is attended by **300 students** in this first edition 2010–11, which covers 30 ECTS.
- Each **student**:
  - Is allowed to register in a maximum of **6 ECTS**
  - (the usual academic load is **60 ECTS** per year for postgraduate students).

### 3. Implementation

The implementation of VRTUOSI has required specific actions from each participant university, and a common coordinated action, in matters as

- **Legal Framework**
- **A First Insight on the Virtual Campus**
- **Virtual Campus E-learning Tool**
- **Training**
- **Diffusion and Registering**
- **Courses**



## 3. Implementation

### I. Legal Framework

- **Initial agreement** signed by the coordinating university (**URJC**), and the **EU**.
- An **ad hoc FP7-type agreement** issued by the **six members** of VRTUOSI
- Useful for future similar programs, see the VRTUOSI webpage for specific details.

### II. A First insight on the Virtual Campus

- First idea: to launch a **Metacampus** over the virtual campuses of all universities.
- However, due to the **different maturity** of these virtual campuses, we created a **new website** offering **information** about VRTUOSI, containing **open-access material** and facilitating **access** to the URJC Virtual Campus.
- All the VRTUOSI courses are then hosted at the URJC Virtual Campus, <http://www.campusvirtual.urjc.es>, supported by a **WebCT** platform, [www.blackboard.com](http://www.blackboard.com), <http://courses3.webct.com/webct/public/home.pl>
- Unique domain, homogenization
- Common structure and tools, videos and interactive sessions using Adobe Connect.



## 3. Implementation

### III. Virtual Campus E-learning tool

- Through the **VRTUOSI webpage**, and once identified by the system after introducing his/her unique login and password, a **student** can **access** his/her assigned **courses**.
- The Virtual Campus is the **main tool for e-learning purposes**. It hosts basic **information, materials** and rules about the courses. It also allows participants to **communicate** within a **secure environment**.
- The main modules from within Campus Virtual are: Control Panel, Guide, Materials, Calendar, Teachers, Students, Marks, Progress, Resources, Assignments, Exams, Communications and e-Talk

## 3. Implementation

### IV. Training

- Given the **different maturity degrees** in the development of the virtual campuses of the five universities, we undertook **three training courses**.
- The first session took place in Madrid. Two others were online sessions using Adobe Connect®. Sixteen teachers attended the courses.

### V. Diffusion and Registering

- VRTUOSI **program** was advertized through its **website**, and in the **areas of influence** of the five universities. Besides, additional diffusion was achieved by publicizing it in different **seminars, conferences, websites, distribution lists**, etc
- Registration process is done through VRTUOSI website. After validating the origin of the applicant students, we grant them an **accreditation, username and password** to gain **access** to the selected **courses**.

## 3. Implementation

### VI. Courses

- Within the Virtual Campus, the ten courses follow the same methodology, based on that of the URJC Virtual Campus, acknowledged with the **quality certificate EFQUEL** (<http://www.qualityfoundation.org/>).
- The main part of the teaching material, except the tests and the exams, are **available** in the **open-access** area of the Virtual Campus.
- **Courses** are taught **sequentially**, in **three-weeks slots** (plus the time needed by the students to accomplish and deliver the tasks).
- Time length needed to implement VRTUOSI is **36 weeks**, being the overall time length of the program **two years**.

## 4. Improving Quality using Six-Sigma

- To ensure satisfactory **quality** levels in the rendered service to the potential users of VRTUOSI, we have developed and implemented a **Six-Sigma based quality management system**, which allows us to identify the weaknesses of our program or its courses.
- Six-Sigma is a **flexible methodology** whose stages are, in addition, based on the principles of the **scientific paradigm**.
- The key point is to use the **scientific method** for the **design** and **implementation** of the VRTUOSI project.
- In this way, the whole project can be afforded as a **scientific problem** and, as a consequence, the **scientific method** can be used to **solve** it.

## 4. Improving Quality using Six-Sigma

- Therefore, we have used characteristic techniques of the Six-Sigma methodology on the design and development of the processes within VRTUOSI
  - DMAIC cycle;
  - Failure Mode and Effects Analysis (FMEA) (Stamatis, 2003);
  - Anti-error and Fool Proof techniques, like Poka-Yoke (Shimbun, 1988), <http://www.poka-yoke.org.uk> for further details;
  - Processes Mapping, like the Suppliers, Inputs, Process, Outputs, Customers (SIPOC) standard (Damelio, 1996);
  - Advanced Data Analysis, like multivariate statistics, Multivariate Analysis of the Variance (MANOVA), and others (Spicer, 2005)

## 5. Conclusions

- VRTUOSI is a **pioneer online program** for the **international exchange of virtual courses**.
- Our university favors the **internationalization** of our **postgraduate programs**, allowing our students to access high quality courses of other European universities.
- The interaction between teachers from different universities is facilitating the launching of new **similar joint programs**. In this way, apart from various research programs we have in mind, we are planning to launch a joint Virtual Master based on the VRTUOSI courses.
- 2010-11 is the first academic course in which VRTUOSI is being implemented, and we are **currently recording our first empirical results**, which will be included in future works

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**Questions ?**

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