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*Authors:* POLIMI, Tilburg

*Editors:* Elisabetta Di Nitto (POLIMI)

*Reviewers:* Dimka Karastoyanova (USTUTT) and Christos Nikolaou (UOC)

  

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### **Management Summary**

In this deliverable, we present the organization of the IMSE Erasmus Mundus Joint Master that is offered by three of the S-Cube partners and is supported by the S-Cube network

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**Members of the S-CUBE consortium:**

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Tilburg University	Netherlands
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# Chapter 1

## Introduction

One of the objectives of S-Cube is to set up high quality education programs focusing on the various aspects of service engineering. A first step toward the accomplishment of this objective has been taken by three of the S-Cube partners, namely, Tilburg University as coordinator, the University of Stuttgart and the University of Crete, through the establishment the International Master in Service Engineering (IMSE, <http://www.erasmusmundus-imse.eu/>). The master has been funded in 2009 by the European Commission under the EUs Erasmus Mundus initiative for stronger European co-operation and international ties in higher education.

The need for IMSE has come about due to the growth in the global service economy and the need for innovation in this area to ensure the businesses operating the services remain profitable, efficient and market leaders. Research and education in this field are therefore in high demand. The course has received its first intake of students in 2010. Graduations of the first students with IMSE honors will take place in summer 2012.

In this report we provide more detailed information about the master. In particular, in Chapter 2 we describe the main objectives of the program, in Chapter 3 we provide some general information about the master, in Chapter 4 we describe the structure of the program, in Chapter 5 we report about the advertisements initiatives carried out to promote the master. Finally, Chapter 6 provide information about the level of participation in the program and Chapter 7 draws some conclusion.

## Chapter 2

# Purpose of the Master Course

Many experts see the explosive growth in services as the next major revolution in the world economy. As service economies continue to expand and powerful digital communications networks - such as the Internet - evolve rapidly, companies are transforming from regional businesses to globally integrated enterprises. The fast growing discipline of service engineering is related to service economy growth and the global need for service innovation. Research and education in this field are therefore in high demand. This is why Tilburg University (The Netherlands) has established cooperation with the University of Stuttgart (Germany) and the University of Crete (Greece) in offering highly-motivated students the International Master in Service Engineering (IMSE).

The multi-disciplinary IMSE programme has been carefully designed at the interface of software service systems and new globe-spanning business processes to prepare students with a background in either business or information technology to become the new generation of service engineers. Applications from students with previous working experiences are solicited and highly appreciated.

IMSE is delivered in close cooperation with a number of top quality research institutes and universities. This not only guarantees a curriculum that incorporates the latest developments in the field of service science and service engineering, but also stresses the global orientation of the programme.

IMSE offers to students:

- highly innovative programme;
- outstanding academic quality;
- strong international orientation;
- internship (that can be seen as a fast track career opportunity);
- exposure to cutting edge research and education in a fast growing discipline;
- coherent and well-structured programme.

IMSE will be delivered in cooperation with associated members, or partners. Through this cooperation IMSE is able to offer a multinational consortium with a variety of expertise, from the academic foundations through to the development of software technologies and new applications and the understanding of current and future needs of the service industry. The industrial partners are the following:

- Forthnet, Greece
- IBM Germany Research & Development GmbH
- Software AG, Germany
- PriceWaterhouseCoopers

- Accenture

The research partners are the following:

- Tsinghua University, China
- School of Information, University of California at Berkeley
- The University of New South Wales, Australia
- S-Cube Network of Excellence

## Chapter 3

# General Information on the Course

The IMSE programme (120 ECTS) is organised in four successive phases over two years. Each phase is taking place in a different location:

1. *Phase 1, University of Stuttgart*: Development and monitoring of software services.
2. *Phase 2, University of Crete*: Analysis of service enabled business processes.
3. *Phase 3, Tilburg University*: Design of software services.
4. *Phase 4, any location inside/outside Europe* Thesis focusing on a Services Science Topic.

The first year comprises the first two phases: during the first phase students learn about middleware platforms and programming models to realise software services, while during the second phase they are trained in analysis and design of software services that realise global business processes.

In the second year, the emphasis shifts towards socio-economic analysis of service-enabled processes in service networks, and optimizing service network performance in terms of business-level key performance indicators (KPIs). The second semester of year two is devoted to thesis work.

Cooperation with both industry and research institutes, links the IMSE programme in a controlled and sustainable manner with the industry sector. IMSE students are exposed to knowledge and expertise not only from top quality research institutes but also from leading companies located in different continents. This, again, underlines the global orientation of the programme.

## Chapter 4

# Structure of the Program

### 4.1 Course overview

The IMSE programme consists of courses amounting to 120 Credits (ECTS), equivalent to 3360 hours of study, offered over four semesters (30 credits per semester). The programme progresses from service middleware, through service compositions and business processes and up to the layer of service networks, where courses in higher-level layers build on prerequisite courses in lower levels. The first semester, which starts at the University of Stuttgart in August, contains 5 core courses of 6 ECTS each. In the second semester the students move to Crete, in the third one they are hosted at Tilburg University, while their location in the fourth semester is defined depending on their thesis topic and internship. Principally, IMSE allows two types of graduation projects: research internships and industry internships. Research internships are performed at one of the partner universities and are aligned with ongoing research projects. Industry internships take place in an external organization and study how a practical problem in the area of service engineering can be solved in an academic way. Note that placements for industry internships are facilitated by IMSEs industry associate members; if needed, additional external placement options may be pursued.

An overview of courses offered to students can be found in Figure 4.1. More detailed information are available on the course catalogue [1].

### 4.2 Detailed information

The master requires full-time involvement of students and lasts two years. The cost of the program for non-european students is 48000 Euros for the two years. This cost includes also living expenses and travels. The cost for European students is limited to 20000 Euros. The Erasmus Mundus program makes available approximately 16 scholarships per year for the program. Of these, 8 are dedicated to non-european students.

After successful completion of the IMSE programme, students will be awarded one joint degree in Service Science or, in case the joint degree will not be recognized before graduation, they will be awarded with the following three internationally recognized Masters degrees with a concentration in Services Science:

- MSc Information Management from Tilburg University
- MSc Information Technology from University of Stuttgart
- MSc Computer Science from University of Crete

The best preparatory education for taking part in the master is provided by Bachelor courses in Management, Economics, Business Administration, Computer Science or Information Systems. The teaching

Layer	Partner	Course Themes
<b>Service Network</b>	University of Crete	Digital economics; introduction to service networks and engineering; business processes and network simulations; internet knowledge management and innovation.
	University of Stuttgart	Data-warehousing and Analytics
	Tilburg University	Business Process Management (elective)
<b>Business Process Management</b>	University of Crete	Business processes, communities and business transformation; business processes and network simulations
	Tilburg University	Service Oriented Architecture; IT Governance; Business Process Integration; Enterprise Architecture; Workflow Management (elective)
<b>Service Composition</b>	Tilburg University	Service Oriented Architecture
	University of Stuttgart	Workflow Management; Web Services.
<b>Service Middleware</b>	University of Stuttgart	Web services; Message-Based Applications; Service Management and Clouds.
<b>Cross-cutting</b>	Crete University	Greek for Beginners (elective)
	Tilburg University	Business Process Management (elective), Dutch for Beginners (elective), Research Methods (elective)
	University of Stuttgart	German for beginners (elective).
	S-Cube	Summer School

Figure 4.1: Overview of courses given during the IMSE initiative.

methods are based on group work, case discussions, action learning, business simulations, common web-based collaboration platform. The learning outcomes focus on international service engineering, design of software services, analysis and optimisation of service networks.

Students will have one regular exam possibility for each course during the semester. Students will have also one re-sit possibility at the end of the semester, before their transition to the next phase and university. If they fail, they can have a last opportunity for passing the exam in the fourth semester of their study.

## Chapter 5

# Marketing Initiatives

The marketing activities have been started in July 2009 and they consisted in the development of a dedicated website, in participating in recruitment fairs around the world and in daily answering of questions from prospective students by email. These activities have resulted in a sufficient interest from non-European students, while the organization has perceived some difficulties in gathering the attention of European students. For this reason, the IMSE consortium has organized a dedicated online campaign, named Hello World, in collaboration with a Dutch advertising agency. The campaign was designed to create global awareness for the IMSE initiative through a world wide search for top talents. Other initiatives planned to attract students were:

- Put statements of CIOs on IMSE website (You Tube Video), highlighting the excellent career prospects of IMSE graduates.
- Focus on specific European regions, such as Southern and Eastern Europe through contacts with fellow academics and recruitment fairs.
- Create an industry advisory board.

## Chapter 6

# Statistics

The first edition of the Master Programme has been started in August 2010. For this first edition 45 applications have been received from various countries and, of these, 16 have been selected for participation in the master program. Of these, 11 were non-European students. All enrolled students have gained their 30 credits in the first semester. In the second semester they have moved to Crete. Here two students have obtained less than 30 ECTS credits. One student has missed one exam date because of visa issues and has repeated it in Tilburg. The second student has obtained 21 ECTS credits (instead of 30 ECTS), which means he has to re-take two classes in the fourth semester of IMSE.

The second cohort of IMSE started in August 2011, consisting of 11 students. The recruitment of the third cohort will start on 1 October 2011. These students will enroll in August 2012.

## Chapter 7

### Conclusion

IMSE represents an important educational experience for the S-Cube network. It involves directly three of the S-Cube partners, but it also affects other S-Cube participants as they are involved in supporting the research activities developed by the master students during their thesis and in offering courses and talks at the S-Cube summer school that the master students attend together with other participants worldwide.

The natural development of the master initiative is represented by the development of a joint PhD program. The development of an EMJD proposal is currently ongoing in the consortium.

# Bibliography

- [1] W.-J. van den Heuvel, B. Mitschang, F. Leymann, and C. Nikolaou, “Imse course catalogue,” University of Stuttgart, University of Crete, Tilburg University, <http://www.erasmusmundus-imse.eu/wp-content/uploads/2010/04/IMSE-Course-Catalogue-Aug2011-for-website.pdf>, Tech. Rep., August 2011.