



*Title:* *Report on Dissemination of Network Results, Collaboration with ICT SSAI&E Projects and Thematic Workshops Targeting Industry*

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### **Management Summary**

This deliverable is a report on how the research results produced by the network have been disseminated and used. It reports on the specific activities performed individually, jointly and with other projects and ICT SSAIE projects. It also includes details of specialised workshops, held to target diverse scientific communities and to spread awareness of S-Cube and its scientific results to the widest possible audience.

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<http://www.s-cube-network.eu/results/deliverables/>

## The S-Cube Deliverable Series

### Vision and Objectives of S-Cube

The Software Services and Systems Network (S-Cube) will establish a unified, multidisciplinary, vibrant research community which will enable Europe to lead the software-services revolution, helping shape the software-service based Internet which is the backbone of our future interactive society.

By integrating diverse research communities, S-Cube intends to achieve world-wide scientific excellence in a field that is critical for European competitiveness. S-Cube will accomplish its aims by meeting the following objectives:

- Re-aligning, re-shaping and integrating research agendas of key European players from diverse research areas and by synthesizing and integrating diversified knowledge, thereby establishing a long-lasting foundation for steering research and for achieving innovation at the highest level.
- Inaugurating a Europe-wide common program of education and training for researchers and industry thereby creating a common culture that will have a profound impact on the future of the field.
- Establishing a pro-active mobility plan to enable cross-fertilisation and thereby fostering the integration of research communities and the establishment of a common software services research culture.
- Establishing trust relationships with industry via European Technology Platforms (specifically NESSI) to achieve a catalytic effect in shaping European research, strengthening industrial competitiveness and addressing main societal challenges.
- Defining a broader research vision and perspective that will shape the software-service based Internet of the future and will accelerate economic growth and improve the living conditions of European citizens.

S-Cube will produce an integrated research community of international reputation and acclaim that will help define the future shape of the field of software services which is of critical for European competitiveness. S-Cube will provide service engineering methodologies which facilitate the development, deployment and adjustment of sophisticated hybrid service-based systems that cannot be addressed with today's limited software engineering approaches. S-Cube will further introduce an advanced training program for researchers and practitioners. Finally, S-Cube intends to bring strategic added value to European industry by using industry best-practice models and by implementing research results into pilot business cases and prototype systems.

S-Cube materials are available from URL: <http://www.s-cube-network.eu/>

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# Chapter 1

## Introduction

### 1.1 The Spread of Excellence (SoE) Workpackage

The subject of service-based systems is vast and enormously complex and spans an immense and diverse spectrum of concepts, literature and technologies that find their origins in different disciplines but which are woven together in an intricate manner. This constitutes a serious challenge for the development of new generation service technologies and engineering methods for service-based systems as it presents two main problems that require integration of research expertise and intense collaboration of researchers: the fragmentation of research and the identification and finding solutions to gaps in current approaches.

Within S-Cube, the Spread of Excellence workpackage (WP-SoE-1.2) seeks to contribute to the solution of these two problems through focusing on the spread of results, research outcomes and innovation in the area of service-based systems across the wider scientific community, special subsections of the industry and user communities. Specifically, the four main target groups of S-Cube for dissemination activities are: scientists, industry, policy makers and end-user communities.

As described in the S-Cube strategy for community outreach [8], this workpackage has been designed with a program of dissemination activities to spread excellence both inside and outside the NoE and present and disseminate the innovative work carried out by the project. Particular attention has been devoted to a description of necessary resources, including specialized expertise, and the target audience, or beneficiaries who will derive benefit from the community outreach task. To achieve this, joint ventures between researchers involved in S-Cube have been undertaken ensuring that outputs are generated that target each of these groups individually. This workpackage has concentrated on a shared S-Cube dissemination plan including, among other things, coordinated publications in scientific journals, special issues in scientific journals, publication of a series of books and scientific anthologies on Software Services and Systems, organization of and participation in topic-related workshops/seminars, knowledge orientation through the re-use of Knowledge Model and exhibitions and by presenting best-practice models for capturing and implementing research results.

Currently, this workpackage has the following active tasks:

- T-SoE-1.2.2: Electronic Dissemination: S-Cube Web Portal [Month 1-48]
- T-SoE-1.2.3: Dissemination of S-Cube Results [Month 7-48]
- T-SoE-1.2.4: Collaboration with ICT SSAIE Projects [Month 1-48]

This deliverable reports on the progress of all these tasks by describing the publications, presentations, meetings and other activities designed to promote the results of the network to the targeted audiences described above.

## 1.2 This Document

### Scope

This document is the third in an annual series of deliverables that reports on the progress and status of the dissemination activities by the S-Cube Network of Excellence. The previous deliverables reported on Years 1 and 2 of the network, and this deliverable continues by presenting the results of Year 3. The outcomes presented have been gathered from a number of sources: the quarterly management reports were used to collate information on publications, presentations made and workshops, conferences and meetings organized. The quarterly reports used were those from Q8–Q11 of the Network (i.e., covering the period 1 December 2009 to 30 November 2010)<sup>1</sup>. Results from the S-Cube mobility program, which could also be considered as part of the spread of excellence as it promotes the dissemination of S-Cube results through internal collaboration, have not been reported here as there is a separate deliverable (PO-IA-2.1.6, “Intermediate Assessment of mobility program for researchers and students”) describing the achievements of that workpackage. Finally, although some description of electronic dissemination through the web portal is described in this document there is a related deliverable, CD-SoE-1.2.9 [5], which reports on details of updates and extensions to the S-Cube website.

### Workpackage Changes & Merge of Deliverables

Following the successful second-year review of the Network, this workpackage took the opportunity to reorganize and streamline its contracted deliverables in the light of the experiences gained. As a result, this document differs from the previous editions by including the descriptions of thematic workshops to target industry and specialized communities, previously contained in a separate deliverable, and now described here because, in terms of content, it presented much of the same information contained in this series of deliverables. The information on thematic workshops targeting industry can be found in Sections 1.3, with a description of the workshops themselves in Section 2.2. A full description of the changes to the workpackage following the M24 review can be found in the deliverable CD-Mgt-1.3.1 [9].

### Organization of this Document

The remainder of this deliverable is organized as follows: in Section 1.3 we provide a summary of S-Cube’s Spread of Excellence activities in Year 3; Section 2 describes individually the conferences and workshops organized by network members; Section 2.3 outlines the presentations made by network members in the last 12 months; Section 2.4 provides a report on the annual Summer School organized by S-Cube; Section 2.5 provides a description of the internal meetings organized for the dissemination of results; Section 2.6 reports the other events and meetings (i.e., anything other than conferences, workshops and internal meetings) organized by the network; Section 3 summarizes the joint and single institution publications of the network; Section 3.3 describes achievements in the area of books; Section 4 will describe our collaboration within the EC’s SSAIE Collaboration Working Groups and NESSI ETP; Section 5 describes our dissemination through the web portal and social media; and, finally, Section 6.2 describes the progress made in the integration of education, including the first-year of the International Masters in Service Engineering (IMSE).

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<sup>1</sup>The Q12 report could not be used in the production of this deliverable as the deadline for that report comes after this deliverable is due

## 1.3 Overview of Results

This year's results build on the successful results of the second year of the project and include:

- **Two conferences** — ServiceWave 2010 and BPSC 2010 — were arranged and held (see Section 2.1).
- Members of the network organized and held **nine workshops**, including thematic workshops to target industry and specialized communities (see Section 2.2).
- **Ten internal meetings** were arranged for researchers to collaborate on research (see Section 2.5).
- The **SSIAE Summer School** brought together students from 17 countries to receive high-quality training (see Section 2.4).
- **46 presentations** were given world-wide (see Section 2.3).
- There were **21 joint- and 44 single-institution publications** (see Section 3).
- **Two books** were published (Section 3.3).
- Members of the network led **three of the seven SSAIE CWGs** (see Section 4).
- The use of **social networking technologies** for the dissemination of research results was also promoted: a Twitter was established, a Facebook group was formed and a LinkedIn group was created (see Section 5).
- The Web portal was 'opened up' to allow the frequent posting of small news items (approximately 60 in the last year) and **the number of registered users of the web portal increased by over 250%** (see Section 5.1).
- The **IMSE program** admitted its first intake of students, a demonstration of the integration of education with S-Cube's existing research infrastructure (see Section 6.2).

### Thematic Workshops

As mentioned above, this deliverable also includes a description of the thematic workshops previously reported in a separate deliverable. This year, three workshops with themes have been organized and have taken place. With reference to the sections of the document where further descriptions can be found, these workshops were:

- International Workshop on Emergency Management through Service Oriented Architectures (EM-SOA 2010). Further details are in Section 2.2.2
- The first International Workshop on Business Systems Management & Engineering (BMSE 2010). See Section 2.2.6 for further details.
- The first International Workshop on Services, Energy & Ecosystem (SEE 2010). Further details can be found in Section 2.2.5.



## Chapter 2

# Conferences, Workshops, Summer Schools & Other Events

This section describes the conferences, workshops and other events organized by the S-Cube Network of Excellence in the third year of the network.

### 2.1 Conferences

#### 2.1.1 ServiceWave 2010

ServiceWave 2010 took place in the city of Ghent, Belgium, from the 13–15 December 2010. It was hosted by IBBt<sup>1</sup> and the conference built upon the highly-successful, previous editions of ServiceWave in 2008 in Madrid and 2009 in Stockholm. The conference was an event co-ordinated to be part of the Future Internet week<sup>2</sup> and was co-located with the Future Internet Assembly<sup>3</sup> which took place between 16–17 December 2010.

The ServiceWave conference series is a unique opportunity for academic researchers and industry practitioners to report on ground breaking research work, present industrial trends, strengthen the cross-community excellence in service oriented computing related domains, is a place for sharing knowledge and provides a networking opportunity for experts working on software services today.

The agenda was a pick and mix of activities including the scientific track with high quality paper presentations, keynote speeches, an extended demonstration evening, exhibition space and a new format for industrial panels, to make them livelier and “more controversial”. In addition, days were dedicated to workshops, including a thematic workshop for industry organized by S-Cube (see Section 2.2.2). As usual, there was also a comprehensive social program for each evening, to provide ServiceWave attendees with the opportunity to network.

At the conference, there were five keynote speakers:

- Schahram Dustdar: *Socially enhanced Services Computing*
- Mário Campolargo: *Future Internet services: a European perspective*
- Rainer Zimmermann
- Carlo Ghezzi: *Towards self-adaptation via Quality of Service-aware dynamic binding*
- Orestis Terzidis: *Taking the Internet of Services to the Next Level*

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<sup>1</sup><http://www.ibbt.be/en>

<sup>2</sup><http://www.fi-week.eu/>

<sup>3</sup><http://fi-ghent.fi-week.eu/>

- Martine Lapierre

The conference proceedings have been published by Springer in the 6481 volume of Lecture Notes in Computer Science [3] <sup>4</sup>. The proceedings are also available online <sup>5</sup>.

### Co-located Workshops

As part of the conference, the following technical workshops were also organized:

- OCS 2010: 1st Workshop on Optimizing Cloud Services, organized by Rosa M. Badia (Barcelona Supercomputing Center, Spain) and Wolfgang Ziegler (Fraunhofer Institute SCAI, Germany).
- EMSOA 2010: International Workshop on Emergency Management through Service Oriented Architectures. Organised by Massimo Mecella (SAPIENZA Università di Roma, Italy) and Pierluigi Plebani (Politecnico di Milano, Italy). Further details can be found in Section 2.2.2.
- SMART 2010: 1st International Workshop on Service Modeling and Representation Techniques. Organised by Yannis Charalabidis (National Tech. Univ. of Athens, Greece), Christos Georgousopoulos and Antonis Ramfos (INTRASOFT International S.A., Luxembourg), Alan Hartman and Anshu N. Jain (IBM India Research, India), Willem-Jan van den Heuvel (University of Tilburg, Netherlands) and Christian Zirpins (Karlsruhe Institute of Technology, Germany). Further details can be found in Section 2.2.3.
- EDBPM 2010: From Event-Driven Business Process Management to Ubiquitous Complex Event Processing. Organised by Rainer von Ammon (CITT Regensburg, Germany), Pedro Bizarro (University of Coimbra, Portugal), Mani Chandy (Caltech Pasadena, USA), Opher Etzion (IBM Research Lab in Haifa, Israel), Rüdiger Klein (Fraunhofer IAIS, Germany), Bernhard Seeger (Philipps-Universität Marburg, Germany) and Rudi Studer (FZI — Research Center for Information Technologies at the University of Karlsruhe, Germany)

### Service Wave 2011

Service Wave 2011 will take place at the Department of Information Systems at the Poznan University of Economics in Poznan, Poland <sup>6</sup> between 26–28 October 2011. Similar to last year's conference, it will be co-located with FIA 2011. The deadline for paper submissions will be around the middle of May 2011.

#### 2.1.2 BPSC 2010

The International Conference on Business Process & Services Computing (BPSC <sup>7</sup>) is a prime international forum to discuss and publish research findings and IT industry experiences with relation to process-centric service-oriented paradigm. The purpose of the BPSC is to identify most hopeful trends in large-scale software development and integration and to propose new directions for research by academics and practitioners.

S-Cube members were program and workshop chairs and members of the program committee, as shown in Table 2.1. The third conference in this series was held between 27–28 September 2010 in Leipzig, Germany, and accepted papers are in the process of being published as proceedings in Springer's Lecture Notes in Informatics (LNI) series. Following the conference, the authors of selected research papers were asked to consider the conference findings and prepare improved and/or extended versions of their papers for a special issue of an appropriate journal (details to be confirmed).

<sup>4</sup><http://www.springer.com/computer/communication+networks/book/978-3-642-17693-7>

<sup>5</sup><http://www.springerlink.com/content/978-3-642-17693-7#section=828127&page=1>

<sup>6</sup>See <http://servicewave.eu/2011/>

<sup>7</sup>[www.bpsc-conf.org/](http://www.bpsc-conf.org/)

Name	S-Cube Partners & Associate Members	Role in BPSC2010
Salima Benbernou Mike Papazoglou	Paris University Tilburg University	Organizing Committee
Schahram Dustdar	TU Vienna	Workshop Chair
Manuel Carro Mohand Said Hacid	Universidad Politécnica de Madrid Université de Lyon, UCBL	Program Committee

Table 2.1: S-Cube participants involved in BPSC 2010

The fourth International Conference on Business Process and Services Computing (BPSC 2011) will be held in conjunction with the fourteenth International Conference on Business Information Systems (BIS 2011<sup>8</sup>). BIS is a highly-respected conference and the theme of next year's BIS is "towards flexible, personalized and adaptive business applications", which will promote synergies between the main conference and the conference on BPSC.

## 2.2 Workshops

### 2.2.1 MONA+ 2010

The MONA+ series of workshops is sponsored by S-Cube and organized entirely by S-Cube partners. The series aims to bring together researchers and practitioners from different disciplines with various research backgrounds to discuss relevant and immediate research challenges and solutions in the area of the monitoring and adaptation of Web Services and Service-based Applications.

MONA+ 2010 is the third workshop in a series of successful workshops: MONA+ 2008 was co-located with ServiceWave 2008 attracted over 20 participants; MONA+ 2009 was co-located with IC-SOC/ServiceWave 2009, attracted over 50 participants and received 25 paper submissions 7 of which were accepted and presented. This year, MONA+ was co-located with the eighth IEEE European Conference on Web Services (ECOWS 2010<sup>9</sup>). The S-Cube members, including associate members participating in the program committee for the first time, who organized and participated in this year's workshop are shown in Table 2.2.

The workshop took place on 1 December 2010 in Ayia Napa, Cyprus and had around 20 participants. The keynote speech, "People-driven On-Demand Services", was given by Nikolay Mehandjiev, senior lecturer at Manchester Business School, an S-cube associate member. The following 7 papers were presented in two sessions:

- Monitoring Session
  - Andre Lage Freitas, Nikos Parlavantzas, Jean-Louis Pazat: *A QoS assurance framework for distributed infrastructures.*
  - Konstantinos Bratanis, Dimitris Dranidis, Anthony Simons: *An extensible architecture for run-time monitoring of conversational web Services.*
  - Srdjan Komazec, Davide Cerri: *Enhancing Event Processing Networks with Semantics to Enable Self-Managed SEE Federations.*
- Adaptation Session
  - Cristian Ruz, Françoise Baude, Bastien Sauvan: *Component-based generic approach for reconfigurable management of component-based SOA applications.*

<sup>8</sup>[http://bis.kie.ae.poznan.pl/14th\\_bis/](http://bis.kie.ae.poznan.pl/14th_bis/)

<sup>9</sup><http://www.cs.ucy.ac.cy/ecows10/index.php>

Name	S-Cube Partners & Associate Members	Role in MONA+2010
Dimka Karastoyanova Raman Kazhamiakina Andreas Metzger	University of Stuttgart Fondazione Bruno Kessler University of Duisburg-Essen	PC Chairs
Alexander Nowak Eric Schmieders Asli Zengin	University of Stuttgart University of Duisburg-Essen Fondazione Bruno Kessler	Organizing Committee
Matthias Book Antonio Bucchiarone Manuel Carro Elisabetta di Nitto Schahram Dustdar Sam Guinea Kim Lauenroth Andras Micsik Ralph Mietzner Michael Parkin Ita Richardson Paolo Tonella Andrea Zisman Xavier Franch Freddy Lecue Barry Norton Cesare Pautasso Claudia Raibulet	University of Duisburg-Essen Fondazione Bruno Kessler Universidad Politécnica de Madrid Politecnico di Milano Vienna University of Technology Politecnico di Milano University of Duisburg-Essen MTA SZTAKI University of Stuttgart Tilburg University Lero Fondazione Bruno Kessler City University London Universitat Politècnica de Catalunya The University of Manchester Institute AIFB, University of Karlsruhe University of Lugano University of Milano-Bicocca	Program Committee

Table 2.2: S-Cube participants involved in the MONA+ 2010 Workshop

- Mario Henrique Cruz Torres, Victor Noel, Tom Holvoet Jean-Paul Arcangeli: *MAS organisations to adapt your composite service.*
- Laura Gonzalez and Raúl Ruggia: *Towards dynamic adaptation within an ESB-based service infrastructure layer.*
- Giancarlo Tretola Eugenio Zimeo: *Autonomic internet-scale workflows.*

The workshop proceedings will be published in the International Conference Proceedings Series (ICPS) in the ACM Digital Library and have an ISBN.

## 2.2.2 EMSOA 2010

EMSOA 2010 — the International Workshop on Emergency Management through Service Oriented Architectures — was held on the 13 December 2010 during the ServiceWave 2010 conference described in Section 2.1.1. It was organized and co-chaired by Pierluigi Plebani (Polimi).

The goal of this workshop was to bring together researchers and practitioners in the area of emergency management in order to improve these current approaches. In particular, crisis and risk management requires a flexible Emergency Management Information Systems (EMIS) architecture, easily customizable, to support people on the field by considering the actual characteristics of the disruptive event that has occurred. This architecture needs to involve the adoption of emergent technologies, such as lightweight and highly configurable multi-agent systems, service oriented solutions in mobile environments, or ad-hoc sensor networks. In addition, it is fundamental to have an enriched information management that allows the collection, the classification and the extraction of data throughout the overall amount of information inflowing into the process. Such information regards data not only coming from sensor networks and connected EMIS, but also gathered from external and not-supervised data sources as Web sites and Social Networks.

Name	S-Cube Partner	Role in PESOS 2010
Andreas Metzger Marco Pistore Andrea Zisman	University of Duisburg-Essen Fondazione Bruno Kessler City University London	Organizing Committee
Carlo Ghezzi Frank Leymann Mike Papazoglou Klaus Pohl	Politecnico di Milano University of Stuttgart Tilburg University University of Duisburg-Essen	Steering Committee
Luciano Baresi Manuel Carro Schahram Dustdar Barbara Pernici George Spanoudakis	Politecnico di Milano Universidad Politécnica de Madrid TU Vienna Politecnico di Milano City University London	Program Committee

Table 2.3: S-Cube participants involved in the PESOS 2010 Workshop

Further information can be found on-line <sup>10</sup>.

### 2.2.3 SMART 2010

The SMART workshop — co-organized by S-Cube member Willem-Jan van den Heuvel of Tilburg University — addressed pressing issues related to the holistic modeling of service-based systems and took place on the 13 December 2010 as part of the ServiceWave 2010 conference described in Section 2.1.1. Going beyond Web services or SOA, the workshop aims to contribute to a holistic approach of designing, building and managing IT-enabled real-world services. A major focus is on service specific aspects like co-creation mechanics, service network structure and dynamics, service value exchange, service interaction processes as well as service flexibility, variation and customization to name just a few. It is still unclear how these aspects a) are to be represented in models e.g. by means of appropriate languages and b) how they influence the modeling process itself and thus require specific methodologies and tool support in the service development life cycle.

SMART will also focus on the integration of modeling approaches from multiple disciplines and consider high-level frameworks, ontologies, meta-models, standardization approaches and their respective technologies in order to cope with these issues.

Finally, SMART encourages the exploration of service modeling for specific domains. While SMART will not constrain the choice of domains, a particular focus will be on modeling services in the public sector as such services exhibit exceptional characteristics like social dynamics, magnitude of scale, diversity of stakeholders, complex value models, and customer participation which we consider seminal for future service systems.

Further information can be found on-line <sup>11</sup>.

### 2.2.4 PESOS 2010

The second edition of the International Workshop on Principles of Service Oriented Systems (PESOS 2010) was held on two days, 1–2 May 2010, in Cape Town, South Africa, as part of the 32nd ACM/IEEE International Conference on Service Engineering (ICSE 2010). The members of S-Cube involved in the organization and direction of the workshop are shown in Table 2.3.

There were around 30 attendees and 12 papers were accepted from 25 submitted papers and 11 were presented at the workshop (one paper was withdrawn). These papers were presented in four paper

<sup>10</sup><http://emsoa2010.ws.dei.polimi.it/>

<sup>11</sup><http://www.cockpit-project.eu/smart2010>

Name	S-Cube Partner	Role in BMSE 2010
Schahram Dustdar	Technical University of Vienna	Organizing Committee
Patricia Lago	VU University Amsterdam	
Barbara Pernici	Politecnico di Milano	
Pierluigi Plebani	Politecnico di Milano	Program Committee

Table 2.4: S-Cube participants involved in the SEE 2010 Workshop

sessions with the themes of: Service Development, Testing and Evolution of Service-Oriented Systems, Service Adaptation and Quality of Service (QoS) and Service-Level Agreements (SLAs) in Service-Oriented Environments. Open discussion sessions were held at the end of each day. There were two keynote speakers: Mauro Pezzè, from University of Lugano, Switzerland and Università degli Studi di Milano Bicocca, Italy, gave a talk titled “Towards Self-adaptive Service-oriented Systems” and Paolo Tonella, from Fondazione Bruno Kessler, Italy, presented forthcoming “Research Challenges in Service Testing”.

Regarding the outcomes of the workshop, they were published as a journal article (ref. [6]), which concludes “*the discussions indicated a maturing of the field in which research challenges are discussed, potential solutions are brought forward and debated, and longer term research programs are addressing the issues. The organizers plan on continuing the discussions that will lead to continued maturation of the field*” [6, Sec. 5].

## 2.2.5 ICSOC 2010 Workshops: SEE 2010 & WESOA'10

### SEE 2010

The first International Workshop on Services, Energy & Ecosystem (SEE 2010<sup>12</sup>) was organized as part of ICSOC 2010<sup>13</sup> and took place on 7 December 2010 in San Francisco, USA.

The workshop was organized by the S-Cube participants shown in Table 2.4. The motivation of the workshop is due to the net impact of improvements in energy efficiency being more than offset by increasing demand for computing power and capacity, driven by new digitized business processes and services. Demand is increasing even though significant progress has been made in the recent years in making computing greener, more energy-efficient and environmentally sustainable. To address the issue of increasing demand holistically, there is now call to make software applications and services themselves energy-aware and -efficient. New innovative ICT-based tools for monitoring and managing energy consumption in several application have emerged and novel approaches for creating energy-aware systems and applications are being developed to create a better and sustainable ecosystem.

SEE 2010 focussed on creating sustainable (green) energy-efficient services that can foster the growth towards a new eco-friendly world of services. It brought together researchers and practitioners from multidisciplinary fields working on energy-aware and energy-efficient systems and applications shared contributions in this area and stimulated a interactive discussion that set an agenda for further work in this important new area.

The workshop presented 10 submissions and papers will be published as a joint ICSOC workshops post-proceedings in the Springer LNCS Services Science Subline (see Section 3.3).

<sup>12</sup><http://see.ws.dei.polimi.it/>

<sup>13</sup><http://icsoc10.disi.unitn.it/>

Name	S-Cube Partner	Role in WESOA 2010
Winfried Lamersdorf	University of Hamburg	Organizing Committee
Dimka Karastoyanova	University of Stuttgart	Program Committee
Cesare Pautasso	Universitz of Lugano	
Pierluigi Plebani	Politecnico di Milano	
Willem-Jan van den Heuvel	Tilburg University	

Table 2.5: S-Cube participants involved in organising WESOA 2010

## WESOA'10

The sixth Workshop on Engineering Service-Oriented Applications (WESOA'10<sup>14</sup>) was held in conjunction with ICSOC 2010 in San Francisco, USA, also on the 7 December 2010. S-Cube participants were members of the organizing and program committee, as shown in Table 2.5.

The main objective of the conference is to provide a forum for the presentation of work on the development of comprehensive engineering principles, methodologies and tools to support the entire software development lifecycle of service-oriented applications. WESOA 2010 is the sixth in a series of workshops that focus on the specific aspects of Software Service Engineering (SSE) and draws on experiences gained in large-scale software projects in the area of distributed systems and especially enterprise IT service-oriented software architecture and technologies. For such projects, availability of sound software engineering principles, methodology and tool support is of utmost importance. However, traditional software engineering approaches are not fully appropriate for the development of service-oriented applications. The limitations of traditional methods in the context of service-oriented computing have led to the emergence of SSE as a specialist discipline, but research in this area is still immature and many open issues remain.

The aim of the WESOA forum is to facilitate exchange and evolution of ideas on SSE topics across multiple disciplines as well as to encourage participation of researchers and practitioners from academia and industry in a highly interactive and fast-paced workshop format.

This year the keynote speaker was Greg Pavlik, Vice President of Product Development at Oracle, who gave an overview of the current situation with platforms, standards, and applications that promote service oriented architectures and design. In his talk he explored what is working in practice, as well as efforts that have failed to provide real value to industrial users. Mr. Pavlik considered current trends in SOA development, especially in languages and platforms and discussed their potential implications.

### 2.2.6 BSME 2010

The inaugural International Workshop on Business Systems Management & Engineering (BSME 2010<sup>15</sup>) took place on the 28 June 2010 in Malaga, Spain, as part of TOOLS Europe 2010<sup>16</sup>. The workshop was conceived to provide a forum for researchers and practitioners to present and discuss research towards this next generation of Business Process Management for service networks which require a unification of concepts, methods and techniques from the field of service-oriented architecture, 'traditional' BPM, transaction management, business activity monitoring and cloud computing. The members of S-Cube involved in the organization and management of the workshop are shown in Table 2.6.

At the workshop itself, there were around 20 attendees and 11 papers were presented by members of other EC projects, including SLA@SOI, industry practitioners (Ericsson) and international researchers from Canada and Australia.

<sup>14</sup><http://www.wesoa.org/>

<sup>15</sup><http://infolab.uvt.nl/workshops/BSME-2010>

<sup>16</sup><http://malaga2010.lcc.uma.es/>

Name	S-Cube Partner	Role in BMSE 2010
Mike Papazoglou	Tilburg University	Organizing Committee
Willem-Jan van den Heuvel	Tilburg University	
Frank Leymann	University of Stuttgart	
Dimka Karastoyanova	University of Stuttgart	
Christos Nikolaou	Crete University	Program Committee
Michael Parkin	Tilburg University	
Salima Bernernau	Paris University	
Manuel Carro	Universidad Politécnica de Madrid	

Table 2.6: S-Cube participants involved in the BSME 2010 Workshop

Following the success of the first workshop on BMSE a second workshop (BMSE2011) has been announced and is currently open for submissions<sup>17</sup>. BMSE2011 will take place in June 2011 and will again be part of the TOOLS Europe series of conferences<sup>18</sup>.

### 2.2.7 ASOD 2010

Reflecting the wide interests of S-Cube participants, this year INRIA organized the International Conference on Aspect-Oriented Software Development (ASOD 2010<sup>19</sup>), held in St. Malo, France, on 16–19 March 2010. Jean-Marc Jèzèquel (S-Cube member from INRIA) was the General Chair and Benoit Baudry (also an S-Cube participant from INRIA) was the Organizing Chair of “the premier conference on software modularity, with an emphasis on modular structures that cut across traditional abstraction boundaries. The conference offers several tracks, including the Research and Industry Tracks, which bring together leading researchers and practitioners working in such fields as software engineering, programming languages, systems, and others”. It attracted approximately 150 participants.

Three keynotes were given: Rod Johnson, founder of the Spring Framework<sup>20</sup>, an open source application framework for Java, spoke on why AOP is perfect for cloud computing; Martin Odersky, designer of the Scala programming language<sup>21</sup>, gave a presentation on the redesign of Scala Collections through a case study in abstraction and modularity; and Martin Rinard of the MIT Computer Science and Artificial Intelligence Laboratory, highlighted the sociological aspects of aspect-oriented programming.

The link from Aspect-Oriented Software Development to research topics in S-Cube is demonstrated in the content of most innovative student work, titled “Life-cycle support for Passive and Reactive Monitoring” by Wouter De Borger [2], a topic related to S-Cube’s JRA-1.2 workpackage on Adaptation and Monitoring Principles, Techniques and Methodologies for Service-based Applications.

### 2.2.8 SSAIE Collecting Use Cases Working Group

This meeting of the SSAIE Working Group, held at the SSAIE / IoS 2010 collaboration event in Brussels is described in more detail in Section 4.2.2 as it is part of S-Cube’s collaboration with SSAIE projects and initiatives. However, the S-Cube members involved in the organization of this workshop are shown in Table 2.7.

<sup>17</sup><http://businesssystemsmanagement.org/call-for-papers/>

<sup>18</sup><http://tooleurope2011.lcc.uma.es/>

<sup>19</sup><http://aosd.net/2010/>

<sup>20</sup><http://www.springsource.org/>

<sup>21</sup><http://www.scala-lang.org/>



Name	S-Cube Partners	Role
Peirlugi Plebani Barbara Pernici	Polimi	Organizers

Table 2.7: S-Cube participants involved in organizing the Collecting Use Cases WG

## 2.3 Presentations & Invited Talks

This section describes the external presentations and invited talks given by members of the S-Cube network, disseminating the research vision and results of the project. In total there were 46 reported presentations in the reporting period.

Table 2.8: Presentations & Invited Talks given by S-Cube NoE Members

Period	Where	Presenter	Institution	Title	Location	Date
1	Q8 Galaxy Kick-off meeting	Olivier Barais	INRIA	“Home Automation system management using INRIA Galaxy SOA software.”	Airbus Indus- tries	2 Dec 2009
2	Q8 SIKS <sup>22</sup>	Michele Mancioppi	Tilburg	“Modeling Service-Enabled Processes: From Business Processes to Service Compositions.”	Vught, the Nether- lands	10 Dec 2009
3	Q8 IEEE APSCC 2009	Philipp Leitner	TUW	“Selecting Web Services Based on Past User Experiences.”	Singapore	7 Dec 2009
4	Q9 Purdue University	Salima Benbernou	UCBL	“QoS vs Quality of data in database.”	Indiana, USA	
5	Q9 2nd European Network- ing Event	Klaus Pohl	UniDue	“Successful R&D in Europe.”	Düssel- dorf, Ger- many	4 Mar 2010
6	Q9 SAC 2010	Sonja Zaplata	UHH	“Towards Mobile Process as a Service.”	Sierre, Switzer- land	22 Mar 2010
7	Q9 WEBIST 2010	Noel Carroll	Lero	“Applying Social Network Analysis to Monitor Web-enabled Business Processes.”	Valencia, Spain	7 Apr 2010

<sup>22</sup>SIKS is the Dutch research school for Information and Knowledge Systems <http://www.siks.nl/>

8	Q9	NESSI Summit	Manuel Carro	UPM	“Opportunities for industrial associate members”	Valencia, Spain	13 Apr 2010
9	Q9	RCIS Conference	Farhana Islam	Polimi	“Business Analysis of Web Service Repairability.”	Nice, France	May 2010
10	Q9	PESOS Workshop	Paolo Tonella	CNR	“Research challenges in service testing.”	Cape Town, South Africa	1 May 2010
11	Q9	PESOS Workshop	Luca Cavallaro	Polimi	“A Context-driven adaptation process for service-based applications”	Cape Town, South Africa	1 May 2010
12	Q9	PESOS Workshop	Martin Treiber	TUW	“Programming Evolvable Web Services.”	Cape Town, South Africa	1 May 2010
13	Q9	SEAMS 2010	Andreas Metzger	UniDue	“Towards Pro-active Adaptation with Confidence.”	Cape Town, South Africa	3 May 2010
14	Q9	SEAMS 2010	Liliana Pasquale	Polimi	“Live Goals for Adaptive Service Compositions.”	Cape Town, South Africa	3 May 2010
15	Q9	ICIW	Martin Treiber	TUW	“Context-aware Campaigns in Social Networks.”	Barcelona, Spain	9 May 2010
16	Q9	ICSS 2010	Noel Carroll	Lero	“The Discovery of Agile Service Networks through the Use of Social Network Analysis”	Hangzhou, China	13 May 2010
17	Q9	EJCP 2010	Olivier Barais	INRIA	“Model-driven Language Engineering with Kermeta.”	Dianrd, France	18 May 2010

18	Q10	Purdue University	Salima Benbernou	UCBL	“A view based monitoring for privacy agreement.”	Indiana, USA	
19	Q10	SwSTE 2010	Ricardo Contreras	City	“Pattern-based Approach for Monitoring Adaptation”	Herzlia, Israel	Jun 2010
20	Q10	DAIS 2010	Sonja Zaplata	UHH	“Structured Context Prediction: A Generic Approach.”	Amsterdam, Netherlands	7 Jun 2010
21	Q10	CIT 2010	Erwan Daubert	INRIA	“SAFDIS: A Framework to Bring Self-Adaptability to Service-Based Distributed Applications”	Bradford, UK	29 Jun 2010
22	Q10	NEXUS Seminar	Manuel Carro	UPM	“Towards using program analysis for complex systems.”	Stuttgart, Germany	Jul 2010
23	Q10	ICWS	Philipp Leitner	TUW	“Monitoring, Prediction and Prevention of SLA Violations in Composite Services.”	Miami, Florida, USA	5 Jul 2010
23	Q10	ISSSE 2010	Luciano Baresi	Polimi	“Adaptive and Self-Managing (Software) Systems.”	Salerno, Italy	11 Jul 2010
24	Q10	COMPSAC	Harald Psai	TUW	“Monitoring in Self-healing Service-oriented Systems.”	Seoul, South Korea	19 Jul 2010
25	Q10	ICGSE	Elisabetta Di Nitto	Polimi	“On the impact of SOA on GSD: open issues and challenges.”	Princeton NJ, USA	23 Aug 2010

26	Q10	HiBB @ EuroPar 2010	Attila Kertesz	SZTAKI	“Gridifying the TINKER conformer generator application for gLite Grid.”	Ischia, Italy	31 Aug 2010
27	Q10	CoreGRID @ EuroPar 2010	Attila Kertesz	SZTAKI	“Multi-level Brokering Solution for Interoperating Service and Desktop Grids.”	Ischia, Italy	31 Aug 2010
28	Q10	EuroSPI 2010	Sajid Hashmi	Lero	“A CMMI Based Configuration Management Framework to Manage the Quality of SBAs.”	Grenoble, France	1 Sep 2010
29	Q10	SEAA Euromicro	Grégory Nain	INRIA	“Integrating IoT and IoS with a Component-Based approach.”	Lille, France	1 Sep 2010
30	Q11	IBM	Daniel Dubois	Polimi	“Service Engineering for the Future Internet of Services.”	Haifa, Israel	
31	Q11	IBM SSME Seminar	Dimka Karastoyanova	USTUTT	“Workflow Flexibility for Business and Scientific Applications.”	TJ Watson, Hawthorn, USA	20 Sep 2010
32	Q11	BPSC 2010	Noel Carroll	Lero	“Understanding the Value of Business Process Configuration.”	Leipzig, Germany	27 Sep 2010
33	Q11	BPSC 2010	Sonja Zaplata	UHH	“Ad-hoc Management Capabilities for Distributed Business Processes”	Leipzig, Germany	27 Sep 2010

34	Q11	MW4SOC	Florian Skopik	TUW	“A Programming Model for Self-Adaptive Open Enterprise Systems.”	Budapest, Hungary	27 Sep 2010
35	Q11	SSAIE CWG	Michael Parkin	Tilburg	“The S-Cube Knowledge Model.”	Brussels, Belgium	19 Oct 2010
36	Q11	IoS 2010 Collaboration Event	Osama Sammodi	UniDue	“Service Engineering Methodologies.”	Brussels, Belgium	19 Oct 2010
37	Q11	CoopIS 2010	Heorhi Raik	FBK	“Modeling and Automated Composition of User-Centric Services.”	Crete, Greece	27 Oct 2010
38	Q11	Service Computation 2010	Konstantinos Zachos	UoC	“Using QoS for Relevance Feedback in Service Discovery: A Preliminary Empirical Investigation.”	Lisbon, Portugal	Nov 2010
39	Q11	CA Technologies	Neil Maiden	City	“A Framework for Describing Cloud Service Characteristics for Use by Chief Information Officers.”	London, UK	Nov 2010
40	Q11	ER 2010	Dragan Ivanovic	UPM	“Building Dynamic Models of Service Compositions With Simulation of Provision Resources.”	Vancouver, Canada	1 Nov 2010
41	Q11	LAC 2010	Patricia Lago	VUA	“The S-Cube Book.”	Nieuwegein, Netherlands	24 Nov 2010

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42	Q11	Poster Session	Noel Carroll	Lero	“An Exploration of Service Network Performance Analytics.”	Limerick, Ireland	30 Nov 2010
43	Q11	Poster Session	Sajid Hashmi	Lero	“CMMI Based Configuration Management Framework to Manage the Quality of Service Based Systems.”	Limerick, Ireland	30 Nov 2010
44	Q11	Poster Session	Stephen Lane	Lero	“Process Reference Model for Adapting Service-Based Applications.”	Limerick, Ireland	30 Nov 2010
45	Q11	ICSOC WESOA	Barbara Pernici	Polimi	“Adaptation of Web Services based on QoS Satisfaction.”	San Francisco, USA	7 Dec 2010
46	Q11	ECOWS	Harald Psailer	TUW	“Social Formation and Interactions in Evolving Service-oriented Communities.”	Aiya Napa, Cyprus	1 Dec 2010

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## 2.4 SSAIE Summer School, 2010

The Software Service Architectures, Infrastructures and Engineering (SSAIE) unit of the EC <sup>23</sup> has, as one of its aims, the goal of forging a new research and scientific community in Service Science Management and Engineering (SSME <sup>24</sup>). To create this community and realize this vision, the SSAIE summer schools have been created to provide scientists, researchers and students the opportunity to receive high-quality training.

Through the participation of distinguishes experts and professionals from leading academic, research and industrial organizations in the SSAIE summer schools, the summer school promotes the exchange of ideas and helps participants — in particular young researchers and practitioners — to network and start new cooperative research projects.

Continuing the series of summer schools on SSAIE, the 2010 summer school was jointly organized by the Transformation Services Laboratory <sup>25</sup> of the University of Crete, the Institute of Computer Science (ICS) and the European Network of Excellence in Software Services and Systems, S-Cube. It was again held in Heraklion, Greece from 28 June to 2 July 2010.

This edition of the summer school brought together participants from countries all around the world such as Austria, Belgium, China, France, Germany, Greece, Ireland, Israel, Italy, Netherlands, Norway, Poland, Spain, Sri Lanka, Switzerland, United Kingdom and USA. There were approximately 29 speakers who presented their work. The speakers included representatives from industry, such as IBM, Ericsson and BOC, and the Head of the European Commission's Software & Service Architectures and Infrastructures unit also spoke at the summer school. Universities participating include Tshingua University (China), Humboldt University (Germany), City University and Open University (UK), University of Stuttgart (Germany), University of Dortmund (Germany), University of Lugano (Switzerland), HLRS (Germany), University of Duisburg-Essen (Germany), Technical University of Vienna (Austria), University of Crete (Greece) and National Technical University of Athens (Greece).

The agenda of the summer school <sup>26</sup> covered various research and technical areas of interest to Service Science Management and Engineering, such as service and business modeling, service and software engineering, service oriented infrastructures, service composition, semantic services, REST- services, compliance, service trust and security, service level agreements, service monitoring and adaptation and cloud computing.

Many consortiums, including EU projects, presented their research work and results such as S-Cube, SLA@SOI <sup>27</sup> ('Empowering the service industry with SLA-aware infrastructures'), RESERVOIR <sup>28</sup> ('Resources and Services Virtualization without Barriers'), IRMOS <sup>29</sup> (Interactive Realtime Multimedia Applications on Service Oriented Infrastructures) and Q-ImPRESS <sup>30</sup> (Quality impact prediction for evolving service-oriented software) and CHOReOS <sup>31</sup> ('Large Scale Choreographies for the Future Internet').

### 2.4.1 PhD. Symposium

A special session was organized for the PhD students participating in the 2010 summer school, in which each participant presented their topic of research. This session was held on the 1 July 2010 and was found to be valuable to the continuation of students research work as it provided the opportunity to discuss with

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<sup>23</sup><http://cordis.europa.eu/fp7/ict/ssai/>

<sup>24</sup>[http://en.wikipedia.org/wiki/Service\\_Science,\\_Management\\_and\\_Engineering](http://en.wikipedia.org/wiki/Service_Science,_Management_and_Engineering)

<sup>25</sup>[www.tsl.gr](http://www.tsl.gr)

<sup>26</sup>The program of the summer school is available online at <http://www.ssaie.eu/program>.

<sup>27</sup><http://sla-at-soi.eu/>

<sup>28</sup><http://62.149.240.97/>

<sup>29</sup><http://www.irmosproject.eu/>

<sup>30</sup><http://www.q-impress.eu/wordpress/>

<sup>31</sup><http://www.choreos.eu/bin/view/Main/>





Figure 2.1: Group picture of the participants in the SSAIE 2010 Summer School, Heraklion, Greece

professors and industry experts their ideas and methods, who in turn provided students with comments, guidance and ideas for collaboration.

The symposium was organized, co-ordinated and chaired by Dimka Karastoyanova of Universität Stuttgart, Germany, and contained six presentations:

- Jorge Mingues Universität Stuttgart. *Introducing SOA into Production Environments - The Manufacturing Service Bus.*
- Stefan Silcher, Universität Stuttgart. *IT Architecture for SUM 2.0.*
- David Schumm, Universität Stuttgart. *Process Views and their Application in Compliance Management.*
- Axel Tenschert, HLRS. *Distributed Ontology Matching by Usage of Similarity Values.*
- Liwei Liu, Business Systems Division, Manchester Business School, The University of Manchester. *Recommender System for Web Service Selection.*
- Daniel Schleicher, Universität Stuttgart. *CAPE: Compliance Aware Process-Design Environment.*

The symposium also provided an opportunity for the presenters to participate in a poster session, where posters of all presenting PhD Students were shown as well as posters from other PhD Students who had submitted an abstract to the symposium but were selected for poster presentation only. Additional posters were presented by:

- Eric Schmieders, University of Duisburg-Essen. *Detecting end-to-end Requirements Violations of Service-Based Applications based on Assumption.*
- Olha Danylevych, Universität Stuttgart. *Service Networks.*

- Katharina Görlach, Universität Stuttgart. *Modeling of Scientific Workflows*.
- Mirko Sonntag, Universität Stuttgart. *Flexibility of Simulation Workflows*.
- Michael Reiter, Universität Stuttgart. *Runtime for Simulation Workflows*.
- Kostas Katsalis, University of Thessaly. *Throughput Guarantees in Clusters of XML Appliances*.

### 2.4.2 Evaluation Results

At the end of the summer school participants were asked to fill in a questionnaire regarding the quality and the relevance of the presentations to each session topic, the presenters and the organization of the summer school. The results show that most of the participants were satisfied with the presentations as well as the speakers and they suggested additional speakers to attend the next summer school and future topics to be covered. They rated the organization as well prepared and useful. The results also revealed that participants were very enthusiastic and satisfied with the social events organized in this summer school, which included visits to Knossos and Festos archaeological sites as well as a visit to a traditional Cretan village. Overall, the comments were very positive and most of the participants expressed their interest in joining next SSAIE summer schools.

### 2.4.3 The 2011 Summer School

In 2011, the SSAIE Summer School will again open for graduate students and young professionals to provide training and information in the area of Service Oriented Computing. It will take place in Crete, Greece, from 27 June to 3 July 2011. More information on ‘SummerSOC’ can be found at <http://www.summersoc.eu>.

Following the results of the evaluation (described above) and after listening to the participants recommendations, SummerSOC will have much more of a school structure and will focus on a small number of specific topics by providing *tracks* and lectures in these tracks will focus only on these areas. The tracks are:

- Conceptual Foundations
- Computing in the Clouds
- People in Service Oriented Computing Systems (SOCS)
- Emerging Topics

The tracks will be color-coded on the program to be easily recognizable. In addition, as in previous years, we will have a special session where PhD candidates can present their thesis, sessions for presenting running state-of-the-art FP7 projects on Services, System Architectures, Infrastructures and Engineering (SSAIE), a visit to the archaeological sites of Knossos and Festos, and of course for relaxation, a program rich in social events (a new this year beach party, visit to a traditional Cretan village, etc.). A new addition to the program this year will be the addition of a special session which will provide training and orientation for those students and participants who want to get a SOA Certification.

Graduate students can take the Summer School as a graduate-level course and will earn 3 European Credit Transfer and Accumulation System (ECTS) credits for attending, provided they successfully pass a written exam at the end. The course credits are recognized by many Universities, and students are encouraged to contact the organizers, TSL, to establish if the SummerSOC is recognized by their University.

As with previous years, it is hoped the SSAIE SummerSOC 2011 will be a successful combination of knowledge acquisition along with the opening of the mind on all topics related to Service Oriented Computing.

Period	Purpose	Date	Location	Attendees	Organizer
1 Q8	SC/GA Meeting	19–20/02/2010	Tilburg, Netherlands	SC and GA	Tilburg
2 Q9	Global Meeting	2–4/03/2010	Pisa, Italy	All partners	CNR
3 Q9	Second Year Review	27–29/04/2010	Essen, Germany	All partners	UniDue
4 Q9	Process Mining Workshop	04/05/2010	Pisa, Italy	All partners	POLIMI, FBK, CNR
5 Q9	Global Meeting	25–27/05/2010	Stuttgart, Germany	All partners	USTUTT
6 Q9	JRA-2.1 (BPM) Workshop	9–10/06/2010	Paris, France	All partners	Tilburg
7 Q10	Planning Meeting	31/06/2010	Essen, Germany	UniDue, UPC	UniDue, UPC
8 Q10	NWB Meeting	31/08/2010	Weeze, Germany	NWB (Tilburg, UniDue)	UniDue
9 Q11	JRA-1.2 (AM) Meeting	14–15/10/2010	Milan, Italy	All partners	POLIMI, FBK, City, Inria, Sz-taki
10 Q11	Global Meeting	3–5/11/2010	London, UK	All partners	City

Table 2.9: Internal dissemination Meetings organized in Year 3

## 2.5 Internal Project Meetings & Workshops

During the reporting period, S-Cube held several internal project meetings and workshops. The purpose of these events is to foster collaboration through the presentation of research to other network members and through the planning of future research and co-operation. The meetings held in the third year of the network are shown in Table 2.10. Items of interest are the Process Mining workshop held in Pisa, organized by JRA-1.2 members, and the BPM workshop which took place in Paris to coordinate research in the JRA-2.1 workpackage.

## 2.6 Other Events & Meetings

### 2.6.1 IFIP Digital Services Working Group Meeting

The International Federation for Information Processing (IFIP<sup>32</sup>) is the leading multinational, apolitical organization in information and communications technologies and sciences. It is recognized by United Nations and other world bodies, represents IT societies from 56 countries or regions, covering all 5 continents, has a total membership of over 500,000, links more than 3,500 scientists from Academia and Industry and annually sponsors over 100 conferences to provide an unparalleled coverage of information systems from theoretical informatics to the relationship between informatics and society including hardware and software technologies and networked information systems.

The IFIP is organized in more than 101 Working Groups reporting to 13 Technical Committees, however there is none specializing in Software Services. Thus, to provide a scientific forum for Software Services within IFIP, members of the S-Cube NoE are planning to propose a new working group (WG) as a joint WG of the the Technical committee on Software: Theory and Practice (IFIP TC2) and Technical Committee on Information Systems (TC8).

To progress this idea, an initial business meeting for the proposed working group was held within the Tools 2010 Federated Conference Malaga on 29 June 2010. The meeting was arranged by the initial proposers of the WG — Professor Barbara Pernici of Politecnico di Milano, also the chair of the IFIP's TC8 Information Systems, and Professor Klaus Pohl, of University of Duisburg-Essen and the co-ordinator of the S-Cube NoE.

#### Aims & Scope of the WG

Service-orientation provides the means to access software as a service (software systems) and service as software (business services based on ICT) in a way that allows services to be provided to other systems and users on the basis of specified and agreed interfaces and conditions of use. However, this approach poses research challenges for many communities. Therefore, the aim of this working group is to study the theoretical foundations and methodologies to support the software service life cycle, including service discovery, development, deployment, adaptation, monitoring, management and evolution in the areas of software-intensive systems, information systems, and business process management.

The Working Group is proposed as a joint initiative with TC2 Software: Theory and Practice and TC8 Information Systems Working Group within IFIP (International Federation for Information Processing<sup>33</sup>) and will have connections to other TCs (e.g., TC6, TC10, TC12) through cooperation and collaborations on specific topics. The main focus of the working group will be to research and support the software services life-cycle, using the experiences gained during the definition, development and evolution of the S-Cube service engineering life-cycle described in [4].

Therefore, the aim of the working group is to start an international discussion forum on software services, defining concepts, reference material, and future research directions, with an active participation of involved researchers both from academia and industry.

It is anticipated that this new WG will attract membership from industry, related academic disciplines, the S-Cube NoE and form other WGs of the IFIP, such as TC8 Information Systems and IFIP TC2 Software: Theory and Practice.

#### Initial Event

The meeting in Malaga was the second meeting to prepare for the formation of this new WG; a discussion of the initiative was held at the TC8 Business Meeting in Budapest, 31 October 2009. This discussion

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<sup>32</sup><http://www.ifip.org/>

<sup>33</sup><http://www.ifip.org/homeintro.html>

Name	S-Cube Partners & Assoc. Members	Role
Barbara Pernici	Polimi	Organizers
Luciano Baresi	Polimi	
Klaus Pohl	UniDue	
Peirlugi Plebani	Polimi	Members / Supporters
Carlo Ghezzi	Polimi	
Elisabetta Di Nitto	Polimi	
Frank Leymann	USTUTT	
Paolo Traverso	FBK	
Manuel Carro	UPM	
Schahram Dudstar	TUW	
Patricia Lago	VUA	
Winfried Lamersdorf	UHH	
Neil Maiden	City	
George Spanoudakis	City	
Andrea Zisman	City	
Andreas Metzger	UniDue	
Michael Parkin	Tilburg	
Chi Hung Chi	Tsinghua University	
Cesare Pautasso	University of Lugano	

Table 2.10: S-Cube participants involved in organizing the Collecting Use Cases WG

led to the planning of the more formal event in June 2010. The meeting helped to clarify the nature and objectives of the WG and led to the production of the WG proposal to be submitted to the IFIP.

At the meeting, the initial members of the WG were also confirmed. The members of the WG who are also members of S-Cube are shown in Table 2.11.

At the meeting it was agreed that the WG should attempt to provide at least the following:

- The identification of the pillars of service-oriented systems through the drafting, editing and publishing of a vision paper. This paper should have the purpose of raising awareness of the foundations of service-oriented systems;
- Organization of a Dagstuhl seminar every two years (commencing 2012) to provide researchers with a dedicated venue to discuss ideas and identify a concrete and sustainable research agenda;
- Create a dedicated forum for the supervisors of PhD students in the field to compare research results, discuss possible plans and identify opportunities for cooperation;
- An active and visible WG through the regular publication of current practice and future trends in the field.

## Progress & Future

Following the event the members of the working group collaborated on a longer proposal document, which will be evaluated by the IFIP in due course.

### 2.6.2 FP7 Collaboration Meetings

In addition to the SSAIE CWG meetings described in Section 4, several ad-hoc meetings also took place between members of the S-Cube NoE and other FP7 projects. These meetings were to discuss project synergies, strategies for future research and to share research results and experiences. For example, the meeting with the Hola! project<sup>34</sup> shown in Table 2.12 took place to discuss how work currently being

<sup>34</sup>[http://cordis.europa.eu/fetch?CALLER=PROJ\\_ICT&ACTION=D&CAT=PROJ&RCN=95742](http://cordis.europa.eu/fetch?CALLER=PROJ_ICT&ACTION=D&CAT=PROJ&RCN=95742)

Period	Purpose	Date	Location	S-Cube Attendees
1	Q11 ICT2010 / SLA@SOI Information Day	28–29/09/2010	Brussels, Belgium	Tilburg, UPM
2	Q11 SSAIE / IoS 2010 Collaboration Event	19–20/10/2010	Brussels, Belgium	Tilburg, UniDue, Polimi
3	Q11 S-Cube / Hola! Planning Meeting	1/12/2010	Brussels, Belgium	Tilburg

Table 2.11: Other Collaboration Meetings

carried out on the S-Cube Knowledge model [1] could be tailored towards the requirements of the Hola! project to ensure the sustainability of the KM.

## 2.7 Future Events

Having described the conferences, workshops and other meetings organized for this reporting period, this section briefly describes the future events that will contribute towards the dissemination of S-Cube's results.

In addition to the next editions of the 2011 Summer School (SummerSOC), the Business Systems Management & Engineering (BMSE) workshop and ServiceWave 2010 described previously in Sections 2.4, 2.2.6 and 2.1.1, the following events organized by S-Cube have also been announced.

### MoSE 2011

The MoSE workshop aims to provide a forum to discuss different issues related to Service Engineering in conjunction with Model-driven engineering and to share open research problems in this area as well as practical experiences. Particular interests include methods, modeling languages, development methodologies and techniques in the field of service-oriented design.

This year's MoSE workshop<sup>35</sup> is being organized by a committee that includes Mike Papazoglou and Willem-Jan Van den Heuvel of Tilburg University. At the time of writing, the venue and data of the conference are to be arranged.

### ICSOC 2011

This year's ICSOC — the Ninth International Conference on Service Oriented Computing<sup>36</sup> — returns to Europe and will be jointly-organized by S-Cube members: two of the three general chairs are S-Cube participants, Mohand-Said Hacid of UCBL (honorary general chair) and Winfried Lamersdorf of UHH. Sam Guinea of Polimi will be a demonstration chair, Cesare Pautasso of the S-Cube associate institution University of Lugano is a PhD symposium chair and Mike Papazoglou of Tilburg is the acting chair of the steering committee.

The conference will take place between the 5–8 December 2011 in Paphos, Cyprus. Abstracts for the conference are due on 27 May and full papers should be submitted by 3 June 2011.

### Future Internet Assembly Budapest

The next future internet Assembly event will take place between 17–19 May 2011 in Budapest, Hungary. The Assembly is a collaboration between projects that have recognized the need to strengthen European activities on the Future Internet to maintain European competitiveness in the global marketplace. It meets regularly to promote these interests and brings together around 150 research projects that are part of Challenge 1 of the ICT programme of FP7<sup>37</sup>.

<sup>35</sup><http://kybele.escet.urjc.es/mose2011/index.htm>

<sup>36</sup>See <http://www.icsoc.org/>

<sup>37</sup>Source: <http://www.future-internet.eu/home/future-internet-assembly.html>

To ensure a focussed and well-balanced event, the EC recently asked for proposals of ideas for cross-cutting Future Internet related topics to be discussed at the FIA event<sup>38</sup>. The S-Cube network submitted a session idea for FIA Budapest for *Dynamically adaptive applications in the Future Internet: beyond adaptive services: (i) application scenarios, (ii) key research and technology challenges (iii) promises and impact on society and economy*.

Overall, there were 69 session proposals submitted to the assembly's organizing committee and the general public were asked to vote for them. The S-Cube proposal received enough votes to make it onto the FIA 2011 program and will be a significant event in the S-Cube dissemination calendar.

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<sup>38</sup>See <http://www.future-internet.eu/home/shape-fia.html>.

## Chapter 3

# Publications

### 3.1 Joint Publications

Table 3.1 shows the articles, book chapters and papers published in collaborations between S-Cube Partners. In total there were 21 joint publications.

Table 3.1: Joint Publications in Year 3 of the S-Cube Network

Period	Authors	Institution	Title	Reference
1 Q8	Claudia Di Napoli, Maurizio Giordano, Zsolt Néemeth, Nicola Tonello	SZTAKI, CNR	<i>A chemical metaphor to model service selection for composition of services</i>	Proceedings of the Second International Workshop on Parallel, Architectures and Bioinspired Algorithms (held in conjunction with PACT09), pages 1119, 2009. ISBN 978-84-692-3675-8
2 Q8	Vasilios Andrikopoulos, Salima Benbernou, Mike P. Papazoglou	Tilburg, UCBL	<i>Evolving services from a contractual perspective</i>	The 21st International Conference on Advanced Information Systems Engineering (CAiSE09), pages 290304, 2009
3 Q8	Hassina Meziane, Salima Benbernou, Mohand-Said Hacid, Mike Papazoglou	Tilburg, UCBL	<i>A view-based monitoring for privacy-aware web services</i>	26th IEEE International Conference on Data Engineering, Long Beach, California, USA, 1-6 March 2010



4	Q8	Hassina Meziane, Salima Benbernou, Frank Leymann, Mike Papazoglou	Tilburg, UCBL, USTUTT	<i>Monitoring-based approach for privacy data management</i>	volume 223 of Advances in Data Management Series, Chapter 1. Springer Berlin / Heidelberg, 2009
5	Q8	Martin Treiber, Vasilios Andrikopoulos, Schahram Dustdar	Tilburg, TUW	<i>Calculating service fitness in service networks</i>	Workshop on Monitoring, Adaptation and Beyond (MONA+09). Springer, November 2009
6	Q9	Antonio Bucchiarone, Raman Kazhamiakin, Cinzia Cappiello, Elisabetta Di Nitto, Valentina Mazza	FBK, Polimi	<i>A context-driven adaptation process for service-based applications</i>	PESOS 2010 - 2nd International Workshop on Principles of Engineering Service- Oriented Systems. CapeTown, South Africa, 1-2 May 2010
7	Q9	Maryam Razavian, Dinh Khoa Nguyen, Patricia Lago, Willem-Jan van den Heuvel	VUA, Tilburg	<i>The sapiensa approach for service-enabling pre-existing enterprise assets</i>	In International Workshop on SOA Migration and Evolution (SOAME), page 10. OFFIS, March 2010.
8	Q9	Elisabetta Di Nitto, Schahram Dustdar	Polimi, TUW	<i>Principles of engineering service oriented systems</i>	In ICSE'09 COMPANION: Proceedings of the 2009 31st International Conference on Software Engineering, pages 461462, Washington, DC, USA, 2009. IEEE Computer Society. ISBN 978-1-4244-3495-4
9	Q9	Daniel Dubois, Christos Nikolaou, Manolis Voskakis	Polimi, UoC	<i>A model transformation for increasing value in service networks through intangible value exchanges</i>	Proceedings of 2010 International Conference on Service Science (ICSS 2010), Hangzhou, China, 13- 14 May 2010

10	Q9	Andreas Gehlert, Antonio Bucchiarone, Raman Kazhamiakin, Andreas Metzger, Marco Pistore, Klaus Pohl	FBK, UniDue	<i>Exploiting assumption-based verification for the adaptation of service-based applications</i>	SAC 10: Proceedings of the 2010 ACM Symposium on Applied Computing, pages 24302437, New York, NY, USA, 2010. ACM. ISBN 978-1-60558-639-7
11	Q10	Vasilios Andrikopoulos, Mariagrazia Fugini, Mike Papazoglou, Michael Parkin, Barbara Pernici, Seyed Hossein Siadat	Tilburg, Polimi, UCBL	<i>QoS contract formation and evolution</i>	In 11th International Conference on Electronic Commerce and Web Technologies (EC-Web 2010), 2010
12	Q10	Claudia Di Napoli, Maurizio Giordano, Zsolt Németh, Nicola Tonello	CNR, SZ- TAKI	<i>Using chemical reactions to model service composition</i>	In Proceedings of the Second International Workshop on Self-Organizing Architectures. ACM, 2010. Workshop held in conjunction to ICAC 2010 - Washington, DC (USA) June 7th, 2010
13	Q10	Dragan Ivanović, Martin Treiber, Manuel Carro, Schahram Dustdar	TUW, UPM	<i>Building dynamic models of service compositions with simulation of provision resources</i>	In Proceedings of the 29th International Conference on Conceptual Modeling (ER 2010) 1-5 November 2010. Springer, 2010
14	Q10	Philip Leitner, Branimir Wetzstein, Dimka Karastoyanova, W. Hummer, Schahram Dustdar, Frank Leymann	TUW, US- TUTT	<i>Preventing SLA violations in service compositions using aspect-based fragment substitution</i>	In International Conference on Service-Oriented Computing (ICSOC), 2010

15	Q10	Andreas Metzger, Eric Schmieders, Cinza Cappiello, Elisabetta Di Nitto, Raman Kazhamiakina, Barbara Pernici, Marco Pistore	UniDue, Polimi, FBK	<i>Towards proactive adaptation: A journey along the s-cube service life-cycle</i>	MESOA: 4th International Workshop on Maintenance and Evolution of Service-Oriented Systems, 2010
16	Q11	Ivona Brandic, V.C. Emeakaroha, M. Maurer, Schahram Dustdar, S. Acs, A. Kertész, Gabor Kecskeméki	TUW, SZ-TAKI	<i>A layered approach for SLA-violation propagation in self-manageable cloud infrastructures</i>	Pages 365370. IEEE International Workshop on Emerging Applications for Cloud Computing, 2010
17	Q11	S.I. Hashmi, Steven Lane, Dimka Karastoyanova, Ita Richardson	Lero, US-TUTT	<i>A CMMI based configuration management framework to manage the quality of service based applications</i>	In EuroSPI: Industrial Proceedings of the 17th European conference on Software Process Improvement 2010
18	Q11	M.A. Zemni, Salima Benbernou, Manuel Carro	UCBL, UPM	<i>A soft constraint-based approach to qos-aware service selection</i>	In M. Weske, J. Yang, P. Maglio, M. Fantinato, editors, Service-Oriented Computing ICSOC 2010, Lecture Notes in Computer Science. Springer Verlag, 2010
19	Q11	Jorge Ejarque, Andreas Micsik, Raul Sirvent, P. Pallinger, L. Kovacs, Rosa M. Badia	SZTAKI, UPC	<i>Job scheduling with license reservation: a semantic approach</i>	PDP 2011 The 19th Euromicro International Conference on Parallel, Distributed and Network-Based Computing, 2011
20	Q11	Michele Mancioffi, Olha Danylevych, Frank Leymann, Mike P. Papazoglou	USTUTT, Tilburg	<i>A language-agnostic framework for the analysis of the syntactic structure of process fragments</i>	Universität Stuttgart, Fakultät Informatik, Elektrotechnik und Informationstechnik, Technischer Bericht Informatik Nr. 2010/07, 2010

21	Q11	Jorge Ejarque, Andreas Micsik, Raul Sirvent, P. Pallinger, L. Kovacs, Rosa M. Badia	UPC, SZ- TAKI	<i>Semantic resource allocation with historical data based predictions</i>	In The First International Conference on Cloud Computing, GRIDs, and Virtualization, CLOUD COMPUTING 2010, 2010.
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### 3.2 Individual Publications

Table 3.2: Single-Institution Publications in Year 3 of the S-Cube Network

Period	Authors	Institution	Title	Reference	
1	Q8	Dragan Ivanović, Manuel Carro, Manuel Hermenegildo	UPM	<i>Sharing-based independence-driven fragment identification for service orchestrations</i>	Technical Report CLIP7/2009.0, Technical University of Madrid (UPM) December 2009
2	Q8	Gerhard Friedrich, Mariagrazia Fugini, Enrico Mussi, Barbara Pernici, Gaston Tagni	Polimi	<i>Exception handling for repair in service-based processes</i>	IEEE Trans. on Software Engineering, special issue on Exception Handling 2010
3	Q8	Farhana Islam, Meherun Nesa Lucky, Barbara Pernici	Polimi	<i>Business analysis of web service repairability</i>	Fourth International Conference on RESEARCH CHALLENGES IN INFORMATION SCIENCE (RCIS' 10) May 2010
4	Q8	Domenico Bianculli, Walter Binder, Mauro Luigi Drago	Polimi	<i>Automated performance assessment for service-oriented middleware: a case study on BPEL engines</i>	Proceedings of the 19th International Conference on World Wide Web (WWW 2010), Raleigh, NC, USA. ACM. April 2010

5	Q8	Noel Carroll, Ita Richardson, Eoin Whelan	Lero	<i>Applying social network analysis to monitor web-enabled business processes</i>	Proceedings of the 6th International Conference on Web Information Systems and Technologies (WEBIST 10) 7-10 April 2010
6	Q8	Noel Carroll, Eoin Whelan, Ita Richardson	Lero	<i>The discovery of agile service networks through the use of social network analysis</i>	Proceedings of the International Conference of Service Science (ICSS2010) 13-14 May 2010
7	Q8	Andreas Metzger, Osama Sammodi, Klaus Pohl, Mark Rzepka.	UniDue	<i>Towards pro-active adaptation with confidence - augmenting service monitoring with online testing</i>	Proceedings of the ICSE 2010 Workshop SEAMS 2-8 May 2010
8	Q8	Anton Michlmayr, Florian Rosenberg, Philipp Leitner, Schahram Dustdar	TUW	<i>End-to-end support for qos-aware service selection, binding and mediation in vresco</i>	IEEE Transactions on Services Computing (TSC) 2010
9	Q8	Anton Michlmayr, Florian Rosenberg, Philipp Leitner, Schahram Dustdar	TUW	<i>Selective service provenance in the vresco runtime</i>	International Journal on Web Services Research (JWSR) 2010
10	Q9	Luciano Baresi, Liliana Pasquale.	Polimi	<i>Live goals for adaptive service compositions</i>	Proceedings of the 5th Workshop on Software Engineering for Self-Adaptive and Self-Managing Systems 2010
11	Q9	József Dániel Dombi, Attila Kertész	SZTAKI	<i>Scheduling solution for grid meta-brokering using the pliant system</i>	In ICAART (2), pages 46–53 2010
12	Q9	Attila Kertész, Peter Kacsuk	SZTAKI	<i>Gmbs: A new middleware service for making grids interoperable</i>	Future Generation Computer Systems, 26(4):542–553, 2010. ISSN 0167-739X

13	Q9	Branimir Wetzstein, Dimka Karastoyanova, Oliver Kopp, Frank Leymann, Daniel Zwink	USTUTT	<i>Cross-organizational process monitoring based on service choreographies</i>	Proceedings of the 25th Annual ACM Symposium on Applied Computing (SAC 2010); Sierre, Switzerland, 21–26 March, 2010. ACM, March 2010
14	Q9	Domenico Bianculli, Walter Binder, Mauro Luigi Drago	Polimi	<i>Soabench: Performance evaluation of service-oriented middleware made easy</i>	Proceedings (Volume 2) of the 32nd International Conference on Software Engineering (ICSE 2010), Cape Town, South Africa, pages 301-302. ACM, May 2010. Informal Research Demo
15	Q9	Lukasz Juszczuk, Schahram Dustdar	TUW	<i>Script-based generation of dynamic testbeds for soa</i>	Proceedings of the 2010 IEEE International Conference on Web Services (ICWS 2010). IEEE Computer Society, 2010
16	Q9	Lukasz Juszczuk, Schahram Dustdar	TUW	<i>Testbeds for emulating dependability issues of mobile web services</i>	International Workshop on Engineering Mobile Service Oriented Systems (EMSOS). IEEE Computer Society, 2010
17	Q9	H. Psailer, F. Skopik, D. Schall, S. Dustdar	TUW	<i>Behavior monitoring in self-healing service-oriented systems</i>	COMPSAC. IEEE, 2010
18	Q10	Noel Carroll, Eoin Whelan, Ita Richardson	Lero	<i>Applying social network analysis to discover service innovation within agile service networks</i>	Service Science Journal, 2(3), 2010. forthcoming

19	Q10	Ricardo Contreras, Andrea Zisman	City	<i>A pattern-based approach for monitor adaptation</i>	In Sw-STE10 IEEE International Conference on Software - Science, Technology & Engineering, Herzlia, Israel, June 15-16, 2010
20	Q10	Waldemar Hummer, Philipp Leitner, Anton Michlmayr, Florian Rosenberg, Schahram Dustdar	TUW	<i>VRESCo Vienna Runtime Environment for Service-oriented Computing</i>	In Schahram Dustar and Fei Li (editors): Service Engineering. European Research Results, Springer, 2010
21	Q10	Philipp Leitner, Anton Michlmayr, Florian Rosenberg, Schahram Dustdar	TUW	<i>Monitoring, prediction and prevention of sla violations in composite services</i>	IEEE International Conference on Web Services (ICWS) Industry and Applications Track, 2010
22	Q10	Khaled Mahbub, George Spanoudakis	City	<i>A framework for proactive sla negotiation</i>	5th International Conference on Software and Data Technologies (ICSOFT 2010), 22–24 July, Athens, Greece, 2010
23	Q10	Khaled Mahbub, George Spanoudakis	City	<i>Proactive sla negotiation for service based systems</i>	Proceedings of the 2010 IEEE World Congress on Services (SERVICES 2010), Miami, Florida, USA, 5–10 July, 2010
24	Q10	Matthias Meiners, Sonja Zaplata, Winfried Lamersdorf	UniHH	<i>Structured context prediction: A generic approach</i>	Frank Eliassen and Rudiger Kapitza, editors, Distributed Applications and Interoperable Systems, volume 6115 of Lecture Notes in Computer Science, pages 8497, Heidelberg, 2010. Springer. ISBN 978-3-642-13644-3

25	Q10	Barbara Pernici	Polimi	<i>Methodologies for Design of Service-Based Systems</i>	Chapter 17. Springer, 2010
26	Q10	Sonja Zaplata, Winfried Lamersdorf	UniHH	<i>Towards mobile process as a service</i>	In 25th ACM Symposium On Applied Computing (SAC 2010), pages 372–379. ACM, 2010
27	Q10	Qing Gu, Patricia Lago, Hans van Vliet	VUA	<i>A template for soa design decision making in an educational setting</i>	In 36th EUROMICRO Conference on Software Engineering and Advanced Applications, page 8. IEEE, 2010
28	Q10	Dragan Ivanović, Manuel Carro, Manuel Hermenegildo	UPM	<i>Towards data-aware qos-driven adaptation for service orchestrations</i>	In Proceedings of the 2010 IEEE International Conference on Web Services (ICWS 2010), Miami, FL, USA, 5–10 July 2010. IEEE, 2010
29	Q10	Nigel Carroll, Eoin Whelan, Ita Richardson	Lero	<i>Understanding the value of business process configuration</i>	In Business Process and Services Computing (BPSC 2010), 2010
30	Q10	Claudia Di Napoli, Maurizio Giordano	CNR	<i>Experimenting scheduling policies with continuation-based services</i>	In Proceedings of CIT2010. IEEE Computer Society, 2010
31	Q11	Olha Danylevych, Dimka Karastoyanova, Frank Leymann	USTUTT	<i>Service networks modeling: An soa &amp; bpm standpoint</i>	Journal of Universal Computer Science, 16(13):16681693, 2010
32	Q11	Dimitris Dranidis, Andreas Metzger, Dimitrios Kourtesis	UniDue	<i>Enabling proactive adaptation through just-in-time testing of conversational services</i>	In Third European Conference, ServiceWave 2010. Springer, 2010



33	Q11	Dragan Ivanović, Manuel Carro, Manuel Hermenegildo	USTUTT	<i>Automatic fragment identification in workflows based on sharing analysis</i>	In M. Weske, J. Yang, P. Maglio, and M. Fantinato, editors, Service- Oriented Computing ICSOC 2010, Lecture Notes in Computer Science. Springer Verlag, 2010
34	Q11	Dragan Ivanović, Manuel Carro, Manuel Hermenegildo	UPM	<i>An initial proposal for data-aware resource analysis of orchestrations with applications to predictive monitoring</i>	In A. Dan, F. Gittler, F. Toumani, editors, International Workshops, ICSOC/ServiceWave 2009, Revised Selected Papers, number 6275 in Lecture Notes in Computer Science, Vol. 6275. Springer, 2010. Revised Selected Papers
35	Q11	Sonja Zaplata, Kristof Hamann, Kristian Kottke, Winfried Lamersdorf	UniHH	<i>Flexible execution of distributed business processes based on process instance migration</i>	Journal of Systems Integration (JSI), 1(3):3–16, 2010
36	Q11	Sonja Zaplata, Daniel Straßenburg, Benjamin Wunderlich, Dirk Bade, Kristof Hamann, Winfried Lamersdorf	UniHH	<i>Ad-hoc management capabilities for distributed business processes</i>	In 3rd International Conference on Business Process and Services Computing (BPSC 2010). GI-Edition, Lecture Notes in Informatics, 2010
37	Q11	Chahrazed Bouhini, Freddy Lecue, Nikolay Mehandjiev, Olivier Boissier	UoM	<i>Discovery and selection of web services fragments for re-composition</i>	In IEEE International Conference on Service-Oriented Computing and Applications, 2010
38	Q11	Qing Gu, Patricia ago	VUA	<i>Service identification methods: a systematic literature review</i>	In ServiceWave, page 12. Springer, 2010

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39	Q11	Harald Psailer, Lukasz Juszczuk, Florian Skopik, Daniel Schall, Schahram Dustdar	TUW	<i>Runtime behavior monitoring and self-adaptation in service-oriented systems</i>	In SASO 2010: Fourth IEEE International Conference on Self-Adaptive and Self-Organizing Systems, pages 164-174. IEEE, 2010
40	Q11	Maryam Razavian, Patricia Lago	VUA	<i>Families of soa migration</i>	In International Conference on Service Oriented Computing, ICSOC, 2010
41	Q11	Maryam Razavian, Patricia Lago	VUA	<i>A frame of reference for legacy to soa migration</i>	In ServiceWave 2010 Conference, 2010
42	Q11	Maryam Razavian, Patricia Lago	VUA	<i>Understanding soa migration using a conceptual framework</i>	Journal of Systems Integration, Vol 1, No 3, 1, 2010
43	Q11	Maha Driss, Naouel Moha, Yassine Jamoussi, Jean-Marc Jézéquel, Henda Hajjami Ben Ghézala	INRIA	<i>A requirement-centric approach to web service modeling, discovery, and selection</i>	In ICSOC10, The 8th International Conference On Service Oriented Computing, 2010
44	Q11	Yassine Jamoussi, Maha Driss, Jean-Marc Jézéquel, Henda Hajjami Ben Ghézala	INRIA	<i>Qos assurance for service-based applications using discrete-event simulation</i>	IJCSI International Journal of Computer Science Issues, 7(4), 2010

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### 3.3 Books & Book Series

This section presents the book series and books produced by the members of the S-Cube network. Details on individual book chapters are given in Sections 3.1 and 3.2 on pages 29 and 33.

#### 3.3.1 Service Science Subline

To promote the discipline of Service Science, Management & Engineering, the S-Cube Network of Excellence together with Springer has created a LNCS subline to provide a shared dissemination channel for the results of the EC's FP7 research and development projects. The subline is an integral part of the LNCS series and exploits the quick and reliable publishing infrastructure in place for LNCS to achieve timely worldwide dissemination of the latest research results both in printed and electronic form.

This subline has the scientific coordinator of the S-Cube Network, Professor Mike P. Papazoglou of Tilburg University, as an editor-in-charge together with Robert J.T. Morris, IBM Almaden Research Centre, and Darrell Williams of CSIRO, Australia. Since the subline was conceived at the start of the S-Cube project, it has been responsible for 8 publications<sup>1</sup>, which are shown in Table 3.3.

	LNCS	Title	Editors	Date Published
1	5900	Proceedings of the 7th International Joint Conference, ICSOC-ServiceWave 2009, Stockholm, Sweden, November 24-27, 2009	L. Baresi, C.-H. Chi, J. Suzuki	September 2009
2	6152	Second Future Internet Symposium, FIS 2009, Berlin, Germany, September 1-3, 2009, Revised Selected Papers	T. Zseby, R. Savola, M. Pistore	April 2010
3	6275	Service-Oriented Computing. ICSOC/ServiceWave 2009 Workshops	A. Dan, F. Gittler, F. Toumani	June 2010
4	6369	Proceedings of the Third Future Internet Symposium, Berlin, Germany, September 20-22, 2010	A.J. Berre, A. Gómez-Pérez, K. Tutschku	September 2010
5	6470	Proceedings of the 8th International Conference, ICSOC 2010, San Francisco, CA, USA, December 7-10, 2010	P.P. Maglio, M. Weske, J. Yang, M. Fantinato	December 2010
6	6481	Proceedings of the Third European Conference, ServiceWave 2010, Ghent, Belgium, December 13-15, 2010	E. Di Nitto, R. Yahyapour	October 2010
7	6500	S-Cube — Towards Engineering, Managing and Adapting Service-Based Systems Series	M. Papazoglou, K. Pohl, M. Parkin, A. Metzger	October 2010
8	6568	ICSOC 2010 International Workshops PAASC, WESOA, SEE, and SC-LOG San Francisco, CA, USA, December 7-10, 2010, Revised Selected Papers	E.M. Maximilien, G. Rossi, S.-T. Yuan, H. Ludwig, M. Fantinato	March 2011

Table 3.3: Publications of the Service Science LNCS Subline

<sup>1</sup>Source: <http://www.springer.com/series/8680>

### 3.3.2 S-Cube Book

As reported in the previous edition of this deliverable, in the second year the S-Cube partners were working on the realization of a book containing a series of surveys on the state of the art in each research area of S-Cube: Business Process Management, Service Composition & Coordination, Service Infrastructures, Engineering & Design, Monitoring & Adaptation and Quality Definition, Negotiation & Assurance.

The book was devised in response to the evolution of the Internet from a source of information to a critical infrastructure that underpins economies and everyday life. As the demand for more multimedia content, interconnected devices, greater connectivity and richer user experiences increases, software services must be available at any time and from anywhere and this is increasing the pressure on existing networks and platforms. In the ubiquitous Internet, the number and scope of services available globally are predicted to grow exponentially leading to the 'Internet of Services'. However, in order for these services to be used and re-used in the construction and evolution of service-based systems, significant research effort is required into the broader aspects of services and particularly into the multidisciplinary problems that cut across diverse scientific disciplines.

The S-Cube Network of Excellence focuses on the fundamental principles, techniques and methods for the service-based systems of the future, combining knowledge from experts in the areas of grid computing, service-oriented computing, business process management, software engineering and human-computer interaction. This book presents the foundations, vision, first results and future work in the area of software services as addressed by S-Cube in response to the challenges presented by the Internet of Services. The book starts with a presentation of the S-Cube research framework, developed to assist in unifying research communities and agendas across Europe, and provides an introduction to the vision of S-Cube, where the anticipated growth in services and service-based systems will have a profound effect on business and society. The remainder of the book follows the building blocks of the research framework and addresses technologies required for realizing future service-based systems and service engineering principles, techniques and methods that use those technologies to ensure robust, manageable and adaptable systems.

The book, shown in Figure 3.1, was published in October 2010 and was presented by Springer on their display at last year's International Conference in Service Oriented Computing (ICSOC) held in San Francisco, California in December 2010. To promote the results of the network, S-Cube member institutions were each asked to nominate five industrial and academic collaborators they would like a copy of the book to be sent to. At the time of writing this report, the distribution of books is well underway and should be completed by the end of March 2011.

Further details about the book can be found on its information page <sup>2</sup>, and sample pages of the book may be read on-line <sup>3</sup>.

### 3.3.3 Service Engineering: European Research Results

Also as reported in last year's deliverable, S-Cube partners were working together on compiling another book to cover the outcomes of the EC's SSAIE Service Engineering Collaborative Working Group (or CWG — see Section 4 for more details on S-Cube's leadership and participation in the CWGs organized by the SSAIE unit of the EC).

The Service Engineering CWG is coordinated by Professor Schahram Dustdar of TUW. The objective of the CWG is the development of a joint research agenda for the area of Service Engineering through collaboration in seven areas: the specification of services, service composition engineering, service engineering methodology, autonomic service adaptation, service testing and simulation, service governance techniques and engineering techniques for human provided services.

<sup>2</sup><http://www.springer.com/computer/database+management+%26+information+retrieval/book/978-3-642-17598-5>

<sup>3</sup><http://www.springerlink.com/content/978-3-642-17598-5#section=831467&page=1>

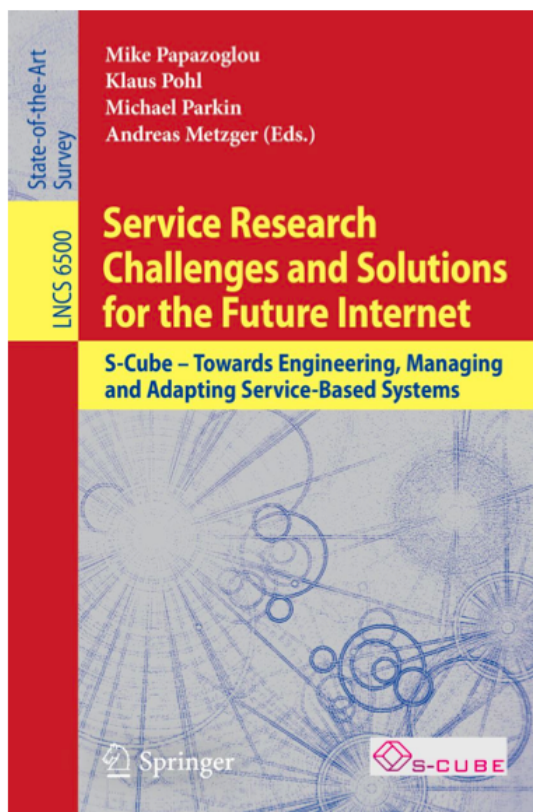


Figure 3.1: 'The S-Cube Book'



Figure 3.2: Service Engineering: European Research Results

In their research in these seven areas, the Service Engineering CWG leverages the latest advancements in software engineering research, especially in the design and implementation of service-oriented systems. Several mutual impacts between service engineering and software engineering could be observed in the last decade, and many research efforts have been devoted to the field. However, in spite of the considerable efforts and significant contributions, few have attempted to summarize the research results systematically.

As a result, the book produced by the Service Engineering CWG, shown in Figure 3.2, is a summary of research efforts in these domains from the EC's projects in these areas. This book was carefully designed not to be merely an aggregation of project outcomes, but as an integrated view of the European service engineering community through the use of a series of shared use-cases from the telecommunications domain. The reasoning behind this approach is to make it easier for the reader to fully grasp the research contributions as well as make it easier to follow the current state of the art.

The production of this book uses the outcomes of the S-Cube as an integral part of the book as it includes a glossary of terms with definitions taken from the S-Cube Knowledge Model produced by S-Cube's workpackage WP-IA-1.1.

Further details on the book can be found on-line <sup>4</sup>, including sample pages of the book <sup>5</sup>.

<sup>4</sup><http://www.springer.com/computer/communication+networks/book/978-3-7091-0414-9>

<sup>5</sup><http://www.springerlink.com/content/978-3-7091-0414-9>

## Chapter 4

# Collaboration with EC SSAIE Projects & NESSI

### 4.1 Collaboration with NESSI

NESSI is the Networked European Software and Services Initiative and European Technology Platform (ETP) dedicated to Software and Services.

In 2010, NESSI initiated an evolution of its vision, taking into account the advent of an increasingly digital society, in which users are become major actors both in the uptake but also the provisioning of smart services. The updated vision extends to 2020 and its revision goes hand in hand with the on-going SRA update process. A number of initiatives and major trends influence the way in which software and services are used and engineered and they create new requirements to be met by the underlying service infrastructure. Based on these observations and the feedback collected from the NESSI community, this NESSI vision statement identifies the opportunities which will be offered by such a future software and service landscape and the challenges which lay ahead on the path towards the Future Internet, and more generally the path towards smart services supporting citizens in their societal and business needs. Future services will become ‘smart’ in the sense that they will offer enhanced capabilities such as decisionmaking support and will be able to anticipate user needs. The draft vision statement is available on-line <sup>1</sup>.

#### 4.1.1 NESSI Project Summit

During the last 12 months, S-Cube’s involvement in NESSI has been to organize a session during the NESSI Project Summit, which was held on 13 April 2010. The NESSI Project Summit was co-located with the Future Internet Assembly in Valencia, Spain <sup>2</sup>. The session was arranged by Andreas Metzger (UniDue) and the agenda was as follows:

1. Overview of S-Cube: vision, research areas and major outcomes.
  - Presenter: Andreas Metzger (UniDue).
2. Service engineering research in S-Cube and links with industrial use cases. This section presented the research results of the S-Cube NoE from the areas of Service Systems Life-Cycle, Cross-layer Adaptation and End-to-end Quality Provision.
  - Presenters: Barbara Pernici (Polimi) and Andreas Metzger (UniDue)
3. Collaboration opportunities and wrap-up.

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<sup>1</sup>[http://www.nessi-europe.com/files/ResearchPapers/NESSI\\_Vision\\_Draft\\_2010\\_10.pdf](http://www.nessi-europe.com/files/ResearchPapers/NESSI_Vision_Draft_2010_10.pdf)

<sup>2</sup><http://www.s-cube-network.eu/news/s-cube-session-at-nessi-summit/?searchterm=nessi>

CWG Name	Led by S-Cube Member	Described in Section
Collecting Use Cases	Elisabetta Di Nitto (Polimi)	4.2.2
QoS & SLA		4.2.3
Dissemination	Mike Papazoglou (Tilburg)	4.2.4
Repository		4.2.5
Service Architectures		4.2.6
Service Engineering	Schahram Dustdar (TUW)	4.2.7
Standards		4.2.8

Table 4.1: Overview of S-Cube participation in the SSAIE CWGs

- Presenter: Andreas Metzger (UniDue) and Manuel Carro (UPM).

### 4.1.2 NESSI Strategic Agenda Workshop

The NESSI Strategic Research Agenda workshop was held in Ghent, Belgium, on 13 December 2010. The workshop, part of ICT 2010, was held by NESSI to contribute to the update its Strategic Research Agenda (SRA). This update process takes place in different steps, and before the workshop was held an online survey was made available to all NESSI members and researchers (from 11–29 October) to canvas opinion. The workshop presented the results of the online process and the SRA draft, and provided NESSI members an additional opportunity to contribute to the SRA through the workshop’s interactive format.

The update to the Strategic Research Agenda will be published during the first quarter of 2011 and contributes as input to the different SSAIE research programs as well as to the dialog between NESSI and EC Commissioner Neelie Kroes and follows the initial NESSI contribution to the Digital Agenda.

During this workshop, Andreas Metzger (UniDue) organized the sub-session on “Software Engineering” and other members of S-Cube participated in this and other sessions.

## 4.2 SSAIE Collaboration Working Groups

Besides the contributions to the NESSI research agenda described above, collaboration between S-Cube and EC funded projects (i.e., FP-6 and FP-7 projects) is achieved through the EU Information & Communication Technologys (ICT) Collaboration Working Groups (CWGs). CWGs are considered by the European Commission as the main forum for achieving collaboration and durable links between European projects in the area of software and services. The overarching aim of the CWGs is to accommodate collaboration between projects and leverage knowledge sharing and joint learning, to facilitate the reuse of each other’s research results, to increase the awareness of novel developments or approaches by projects, and to harmonize and adjust their goals accordingly [8]. Participation in the CWGs by all projects will lead to an improved sharing and understanding between them and ultimately to a greater impact of the results of participating projects. Therefore, CWGs are an ideal vehicle for spreading S-Cube research results to other communities. The overall plan for collaboration through the CWGs is outlined in a previous S-Cube deliverable [12] and Table 4.1 shows the members of S-Cube who chair/lead Collaboration Working Groups.

### 4.2.1 Internet of Services 2010: Collaboration Meeting for FP6 & FP7 projects

All representatives of FP6 and FP7 projects in the area of Software & Services, Grid and Software and Service Architectures and Infrastructures were invited to participate in this year’s Internet of Services (IoS) meeting, held between 19–20 October 2010 in Brussels, Belgium. S-Cube members attended and provided posters, dissemination material and gave presentations at the meeting. Representatives from

other projects outside the FP6/7 programs were also invited to attend to increase the opportunities for who wish to collaborate with the above projects or wish to contribute to the Future Internet Assembly or NESSI.

The meeting had the following objectives:

- To consolidate the collaboration activities among the projects in order to build an even stronger community.
- To include the newly started projects in Collaboration Working Groups.
- To provide recently-started projects the opportunity to understand key results of the already running projects/collaboration working groups in order to facilitate reuse of these results.
- Give the already running projects/collaboration working groups the opportunity to exploit their results better by finding synergies with the newly started projects.
- To achieve a better understanding of the results of the FP6/7 projects in the “Internet of Services” area.

The remainder of this section provides details of the progress made in the CWGs during the last 12 months, particularly in the IoS 2010 meeting.

#### 4.2.2 Contribution to Collecting Use Cases CWG

Within the S-Cube network, there is a requirement to collect industrial use cases for the purposes of research and investigation. The process developed by the S-Cube NoE to collect these uses cases consists of their collection from users by conducting a survey among companies/businesses to identify those that could be willing to share case studies which have the potential for future development. The approach suggests a way to describe and classify case studies with the objective to make them comparable and reusable in the context of different projects. As described on-line <sup>3</sup>, case studies descriptions can include different material depending on their purposes. For instance, they can include a specific software solution or proof of concept, or they can simply describe an application case without offering a specific implementation solution.

S-Cube participates in this CWG by offering this methodology to other project and interested parties. At the IoS 2010 meeting, the methodology was presented, explained and offered to new Objective 1.2 (Call 5) projects. Barbara Pernici and Pierluigi Plebani (Polimi) organized the event, and Dr. Plebani also moderated the session. Also during the same session Michael Parkin (Tilburg) presented the S-Cube Knowledge Model as a method of classifying the use cases with a common vocabulary.

Futher details on the Collecting Uses Cases CWG can be found on-line <sup>4</sup>.

#### 4.2.3 QoS & SLA CWG

The purpose of the QoS & SLA CWG <sup>5</sup>, lead by members from the IRMOS and SLA@SOI projects, is to share mutual understanding of QoS and SLA terminology, functional and non-functional requirements, relevant standards and technologies. For example, the group seeks to define a common view of “QoS” in Service-Oriented Infrastructures where QoS may be given and agreed for different layers, investigate the issues surrounding QoS aggregation and the specification of SLAs and examine the role of QoS and SLAs in the Future of Internet

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<sup>3</sup><http://scube-casestudies.ws.dei.polimi.it/index.php>

<sup>4</sup><http://www.eu-ecss.eu/contents/private-area/collecting-use-cases/collecting-use-cases>

<sup>5</sup><http://www.eu-ecss.eu/contents/private-area/qos-and-slas/qos-and-slas>



To achieve these goals, the CWG is developing a mediation framework that allows for translation between different QoS perspectives. This framework requires an annotated version of tables, and in the IoS 2010 meeting the S-Cube Quality Reference Model was presented by Osama Sammodi as a means of describing the main technology concepts involved with the description of QoS and SLAs.

#### **4.2.4 Dissemination CWG**

The aim of the Dissemination CWG <sup>6</sup> is to assist the many projects and initiatives in the field of Service and Software Architectures, Infrastructure and Engineering in their dissemination efforts. The group's focus is on establishing a joint platform for the stakeholders in the field of Software & Software Services, where they can not only access information on related projects and events but also disseminate their own activities, knowledge and outcomes.

At the main meeting of the CWGs, held IoS 2010 meeting described above, Christos Nikolaou (Univ. Crete) presented a brief overview of how the summer schools run the previous years and plans for future summer schools. In the same session, the S-Cube book (see Section 3.3.2) was presented to the group to increase its visibility and to promote the research results of the S-Cube network to FP6/7 projects.

#### **4.2.5 Repository CWG**

The repository CWG recently changed leadership due to the end of the Business Experiments in Grid (BEinGRID) project <sup>7</sup>. The Hola! project <sup>8</sup> now leads the group and is seeking to re-use the S-Cube Knowledge Model to build a repository of OSS reference implementations for software emanating from the SSAI Projects. This will maximize the impact of the projects by focusing on innovative research rather than repetitive software development. This Repository could also become a key component for dissemination and exploitation within technology platforms such as NESSI.

As a result of this collaboration, the S-Cube Knowledge Model was presented at the IoS 2010 meeting to familiarize members of the Hola! project with the objectives, design and progress of the KM. Since that meeting, and as described in Section 2.6.2, members of Hola! and S-Cube have met subsequent to the CWG to ensure the sustainability of the S-Cube KM through the Hola! project.

#### **4.2.6 Service Architectures CWG**

At the present time, the collaboration in this working group follows the activities of the NEXOF-RA project. NEXOF-RA has extended invitations to contribute to building the NESSI Open Service Framework Reference Architecture through this CWG in the following areas:

- Core Service Framework Area
- User Interaction Area
- Infrastructure Area
- Security Area
- Quality of Service Area

Further information is available on-line <sup>9</sup>.

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<sup>6</sup><http://www.eu-ecss.eu/contents/private-area/dissemination/dissemination>

<sup>7</sup><http://www.beingrid.eu/>

<sup>8</sup>[http://cordis.europa.eu/fetch?CALLER=PROJ\\_ICT&ACTION=D&CAT=PROJ&RCN=95742](http://cordis.europa.eu/fetch?CALLER=PROJ_ICT&ACTION=D&CAT=PROJ&RCN=95742)

<sup>9</sup>[www.nexofra.eu/open\\_construction\\_process](http://www.nexofra.eu/open_construction_process)

#### **4.2.7 Service Engineering CWG**

The service engineering CWG is lead by Schahram Dustdar from TUW. As described in Section 3.3, this CWG recently published a book on the topic of service engineering to provide a summary of research efforts in these domains from the EC's projects in the specification of services, service composition engineering, service engineering methodology, autonomic service adaptation, service testing and simulation, service governance techniques and engineering techniques for human provided services.

#### **4.2.8 Standards CWG**

As described in the project Description of Work, S-Cube is not pursuing its own standardization initiatives but rather collaborating through NESSI for this purpose. This implies that S-Cube partners involved in standardization efforts will closely work together and align their activities with the industrial members of NESSI. As a result, during period considered for this report, S-Cube partners did not initiate any particular standardization activity based on S-Cube results.

## Chapter 5

# Web Portal & Social Media

This section describes the electronic dissemination methods and mechanisms used to promote the network and provide access to its results, as required by workpackage task T-SoE-1.2.2 “Electronic Dissemination: S-Cube Web Portal” that runs for the duration of the project. As described in Section 5.2 below, following the second year review in April 2010 the network decided to increase the number of electronic dissemination channels through the use of social networking technology and sites, such as RSS, Twitter and Facebook. As we describe, this has resulted in an increase in opportunities for dissemination of S-Cube’s results across a variety of channels.

### 5.1 Web Portal

The S-Cube web portal is a central hub for the Network of Excellence as it provides a common point for the publication of research results, news items, information about the consortium and events organized by the network’s members. The web portal is, therefore, one of the key instruments for external dissemination and communication as it provides a universal platform with global reach.

The changes made to the web portal (described the deliverable CD-SoE-1.2.9 [5]) have led to an increased emphasis on the dissemination of news through the portal rather than through traditional newsletters (more description is provided in Section ).

The data of visits to the website and number of page views, shown in Table 5.1, are interesting as they show a decrease in visits to the website. This could indicate many things, such as the community around S-Cube has forged stronger links and there is more interpersonal communication and sharing rather than through the web portal, that the Twitter stream (see Section 5.2, below) increases the dissemination

Metric	01/03/2008 – 28/02/2009	01/03/2009 – 28/02/2010	1/03/2010 – 31/01/2010	YoY
Visits	11,342	39,168	34,518	-12%
Page Views	76,748	156,787	105,091	-33%
Absolute Unique Visitors	5,962	23,022	34,516	+50%
Page Rank	6/10	7/10	6/10	-1
Registered Users	78	145	365	+251%

Table 5.1: Web Portal usage from Google Analytics during the project

of S-Cube result but also decreases the page views as followers don't need to go to the S-Cube portal to see new news items, or it may reflect the fact that in the last year the network has published less deliverables than the previous year, meaning less traffic arriving at the portal to use the working area where deliverables are prepared, edited, finalized and made available to the general public. However, the number of users registered to use the site increased by over 200% on the year before. This is an indication of the growth of the network, possibly achieved through the recent additions of the associate members.

Finally, the decrease in page rank, the 'measure' of relative importance of a website within the set containing the keyword *S-Cube*, fell one place this year due to the highly popular 2nd International ICST Conference on Sensor Systems and Software, S-Cube 2010 <sup>1</sup>.

### 5.1.1 News Section & RSS Feed

As a result of discussions at the S-Cube global meeting in Stuttgart in July 2010, the S-Cube web portal was provided with new dissemination mechanisms to publish news and the results of the S-Cube NoE. The news page <sup>2</sup> was made available to all participants and interested parties through the following process: news items and associated links and images are now sent to `news@s-cube-network.eu` for publication on the news page. Subscribers to the RSS (*Really Simple Syndication*) feed are then updated automatically <sup>3</sup>.

At the time of writing this report, the news page had published approximately 60 news items since this policy was introduced — a rate of over one per week.

## 5.2 Use of Social Media

The enormous increase in the popularity of social media since the start of the S-Cube network has led the network to consider how it too can best use these mediums for effective dissemination and interaction with the target audiences described in Section 1. Social media has been defined as “the use of web-based and mobile technologies to turn communication into interactive dialog”, and, as this aspect was missing from the original community outreach strategy (described in CD-SoE-1.2.3 [8]), following the second-year review the network decided to make more use of these technologies and platforms to ‘reach out’ to the wider world.

### Twitter

The Twitter website offers a social networking and microblogging service that enables its users to send and read messages called *tweets*. Twitter has gained popularity worldwide and is estimated to have 190 million users, generates 65 million tweets a day, handles over 800,000 search queries per day and is sometimes described as the “SMS of the Internet” due to its convenience, ubiquity and popularity.

In response to the call to use social networking platforms for the dissemination of S-Cube news and research results, the S-Cube Twitter channel (shown in Figures 5.1) was created on 21 June 2010 and, at the time of writing, has tweeted approximately 204 times, has 108 followers, follows 148 other streams and is listed 11 times.

The advantage of using Twitter is its ease-of-use, how it can be used as a social marketing tool and how Twitter allows the cross-posting of news via the *re-tweet* facility. The S-Cube Twitter channel is used to publish a variety of information, from updates on the status of applications to the International Masters in Service Engineering (see Section 6.2) to reports on new innovations in science and technology in the domain of software services and systems. Examples of such tweets are shown in Figures 5.2 and 5.3.

<sup>1</sup><http://www.s-cubeconference.org/2010/>

<sup>2</sup><http://www.s-cube-network.eu/news>

<sup>3</sup>The advantage of the RSS feed over traditional postings to the website is that subscribers do not have to visit the S-Cube web portal to be alerted of updates or new pieces of news.

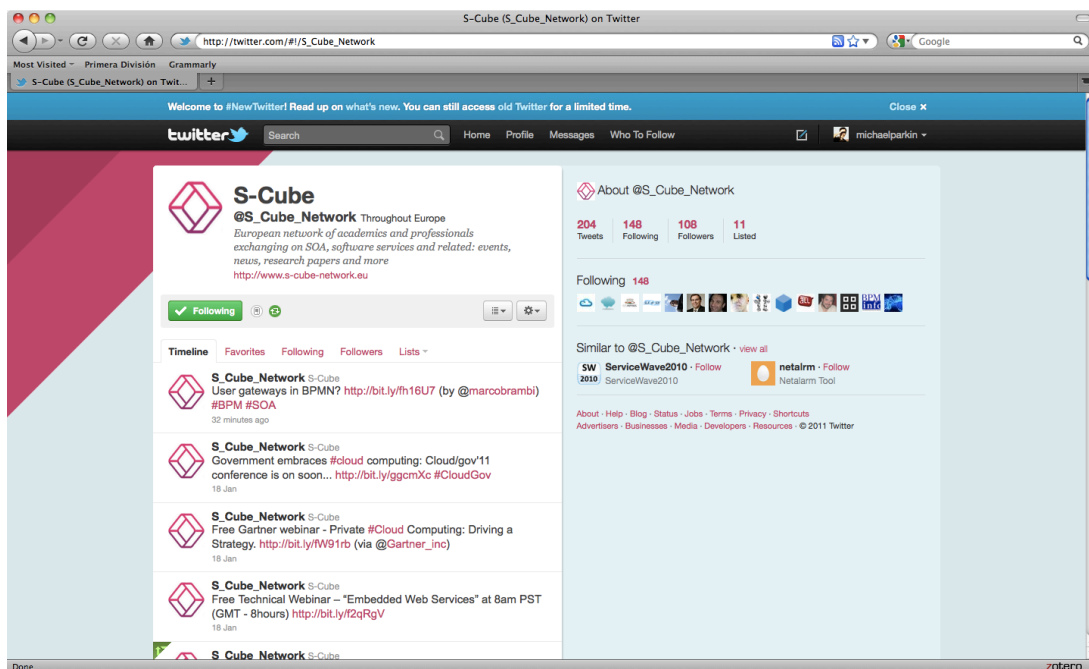


Figure 5.1: The S-Cube Twitter channel



Figure 5.2: S-Cube Tweet Highlighting BPM Deliverable



Figure 5.3: Tweet regarding the S-Cube Summer School

## Facebook

Facebook is the leader in social networking sites as it provides an easy-to-use and single technology platform for digital communication and sharing. Users of the Facebook site can organize themselves into groups and members of the S-Cube network have created a single page for researchers involved in the network to gather (see figure 5.4). The advantage of using a platform such as Facebook is that it allows members of the network to see each other's profile and to access to other personal interests and contacts, thus promoting the collaboration between institutions and the creation of a research network in software services and systems.

The S-Cube group also has a 'wall', or a place to post and share content with other members of the group. As can be seen in Figure 5.5, information is regularly posted on the wall about upcoming events and gatherings and other information about the network.

## LinkedIn.com

LinkedIn<sup>4</sup> is a business-oriented social networking site, mainly used for professional networking. As of 1 January 2011, LinkedIn reports more than 90 million registered users, spanning more than 200

<sup>4</sup><http://www.linkedin.com/>



Figure 5.4: The Facebook S-Cube group introduction page



Figure 5.5: The Facebook S-Cube 'wall'

LinkedIn Account Type: Basic Michael Parkin Add Connections

Home Profile Contacts Groups Jobs Inbox 2 Companies More Groups

### S-Cube Software Services and Systems Network

S-Cube, the European Network of Excellence in Software Services and Systems.

Join Group Forward Report as...

#### Group Members in Your Network

- 1 Patricia Lago, Area Editor for Service Orientation of the Elsevier Journal of Systems and Software  
Amsterdam Area, Netherlands
- 2 Konstantinos Bratanis, Research Associate at South East European Research Centre (SEERC)  
Greece
- 2 Dimitris Dranidis, Senior Lecturer in the Computer Science Department at City College  
Greece
- 2 Winfried Lamersdorf, Professor at Hamburg University  
Hamburg Area, Germany

#### About this Group

Created: January 26, 2009  
Type: Networking Group  
Members: 8  
Owner: Stephen Lane  
Website: <http://www.s-cube-network.eu/>

Figure 5.6: The S-Cube LinkedIn Group

countries and territories worldwide<sup>5</sup>.

Similar to Facebook, LinkedIn also supports the dissemination of news through membership of groups. The S-Cube LinkedIn group was created in January 2009 for the purposes of networking and communication to a wider audience. A screenshot of the group is shown in Figure 5.6.

<sup>5</sup>Source: <http://en.wikipedia.org/wiki/LinkedIn>

## Chapter 6

# Integration of Education

One of the key objectives of S-Cube (objective Obj-3 from the DoW [10, Sec. B.1.1.4]) is to integrate education with S-Cube's existing research infrastructure. The goal in meeting this objective is to inaugurate a common, pan-European program of education and training for students and researchers to foster the alignment and integration of European training competence and knowledge and to ensure the research results of S-Cube have a durable impact.

Part of S-Cube's work in this area has been the creation of the Virtual Campus (in workpackage WP-SoE-1.1) to provide a platform for a *virtual learning centre* on which a *virtual community network* can be established. Details on the progress on the Virtual Campus can be found in deliverable CD-SoE-1.1.6 [11]. The remaining parts of S-Cubes strategy to integrate education and research are the joint supervision of PhD. theses and the network's partnership with the Erasmus Mundus-funded International Masters in Service Engineering (IMSE), both of which are now described.

### 6.1 PhD. Theses with Joint Supervision

In the period this report covers, two jointly-supervised PhD. thesis were completed. These are shown in Table 6.1.

Completion Date	Student	Title	Partners Involved
20/12/10	A. Bertú	<i>Energy-Aware Service Adaptation in Smart Homes</i>	POLIMI, TuW
1/10/10	V. Andrikopoulos	<i>A Theory &amp; Model for the Evolution of Services</i>	Tilburg, UCBL, Polimi

Table 6.1: Jointly-Supervised PhD. Theses

### 6.2 IMSE

As described in last year's report [7], in July 2009 IMSE was selected by the European Commission to be added to the programs available under the EUs Erasmus Mundus initiative for stronger European co-operation and international ties in higher education. Three S-Cube institutions — University of Crete, Universität Stuttgart and Tilburg University — lead the proposal, which includes participation from several high-profile and prestigious international Universities and industrial partners, such as Tsinghua University (China), Forthnet (Greece), IBM Germany Research & Development and The University of New South Wales (Australia) <sup>1</sup>.

<sup>1</sup>The full list can be found at <http://www.erasmusmundus-imse.eu/why-choose-imse/partners/>



S-Cube is also affiliated to the IMSE program through being a partner and this relationship allows the dissemination of research results, experience and expertise from the network to students, as required by the project's objectives. Practically, this is achieved through members of the S-Cube network creating the course content and giving the courses; for example Willem-Jan van den Heuvel, workpackage leader for JRA-2.1 (Business Process Management), and Dimka Karastoyanova, workpackage leader for JRA-2.2 (Service Composition & Coordination), will be two of the people designing and presenting IMSE modules.

The IMSE program is organized in four successive phases over two years, each providing the core knowledge and developing the skills of the incoming students. The phases of the program, together with the locations they are taught in are:

1. Development and monitoring of software services (University of Stuttgart)
2. Analysis of service enabled business processes (University of Crete)
3. Design of software services (Tilburg University)
4. Thesis: Services Science Topics (any location inside/outside Europe)

That is, students begin their IMSE experience at the University of Stuttgart, then move to Crete then Tilburg before writing their thesis, possibly via an internship at one of the partner institutions or businesses.

The multi-disciplinary IMSE program 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. The course content is a thorough introduction to service engineering with opportunities for the deeper investigation of topics covered. The first year is split into two phases: during the first phase students learn about middleware platform- and programming models to realize software services, while during the second phase they are trained in analysis and design of software services that realize 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. After successful completion of the IMSE program, students will be awarded one joint degree in Service Science.

Being sponsored by the Erasmus Mundus program allows IMSE consortium to offer an accredited program (worth 120 ECTS <sup>2</sup>) a number of Erasmus Mundus scholarships to top-ranked students from "third countries" and to "scholars" (academics) to teach or carry out research. For example, in the first year of the program, the EU will grant 18 scholarships for the first IMSE cohort with 10 scholarships for non-EU students and 8 for EU-students.

### **6.2.1 The 2010 Cohort**

The first IMSE cohort were enrolled into the IMSE program in September 2010 in Stuttgart. For this intake of student, there were 45 applications to take part in the course out of which 16 students were selected for participation.

### **Intermediate Review**

At the time of writing, the 2010 cohort are taking classes and studying in Stuttgart and will start the second semester in Crete very soon. Part of the IMSE program includes opportunities for course reviews,

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<sup>2</sup>European Credit Transfer and Accumulation System. The ECTS is a standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries (Source: [http://en.wikipedia.org/wiki/European\\_Credit\\_Transfer\\_and\\_Accumulation\\_System](http://en.wikipedia.org/wiki/European_Credit_Transfer_and_Accumulation_System)).

at regular ‘Sounding Board’ meetings. These meetings help to establish the positive and negative aspects of IMSE in order that it can be continuously improved for future students.

### 6.2.2 The 2011 Cohort

Preparations for the 2011 intake of students is well underway. IMSE have used the dissemination channels of S-Cube as the means to advertise the program to potential students (as shown in Figure 6.1).



Figure 6.1: S-Cube Tweet about IMSE Applications

### 6.2.3 Summary

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. This is why Tilburg University established cooperation with the University of Stuttgart and the University of Crete (Greece) to offer highly-motivated students the opportunity to participate in the International Masters in Service Engineering (IMSE). The course has received its first intake of students and is preparing to receive and assess the applications of the second intake. Graduations of the first students with IMSE honors will take place in summer 2012.

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