



Grant Agreement N° 215483

Title: **Definition of Strategy for Community Outreach**

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Identifier *Deliverable # CD-SoE-1.2.3*

Type: *Deliverable*

Version: *1*

Date: *15 March 2009*

Status: *Final*

Class: *External*

Management Summary

In this deliverable CD-SoE-1.2.3 (“Definition of strategy for community outreach” [Month 12]) we specify the targeted communities for outreach, strategic partners, Special Interest Groups and describe the policy for effectively spreading excellence to these communities. We identify strategic partners not only within the EU but also outside, in China, USA and Australia.

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The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n° 215483 (S-Cube).

File name: S-Cube_CD-SoE-1.2.3.doc

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Published S-Cube documents

These documents are all available from the project website located at <http://www.s-cube-network.eu/>

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 worldwide 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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1 Introduction

Community outreach addresses the spread of research outcomes, innovation and knowledge orientation across the wider scientific community, special subsections of the industry, and user communities, while considering opportunities of applying S-Cube to novel or emerging application fields. It entails a full-blown programme of dissemination activities designed to spread excellence both inside and outside the network of excellence and discuss innovation and work in progress. The four main target groups for dissemination activities are; scientists, industry, policy makers, and end-user communities.

This strategy will consider required resources, including specialised capabilities and expertise, as well as the beneficiaries who may particularly benefit from community outreach. In particular, potential collaborative linkages –including joint ventures- between researchers involved in S-Cube and other special interest groups, research schools, institutes, and research projects, will be assessed and outlined in this strategy document. In this way, S-Cube aims at contributing to the visibility of European research activities in the area of service ecosystems on a worldwide scale, fostering closer collaboration and scientific exchanges with similar networks in other countries.

This main objective of this deliverable is to propose a policy plan for community outreach actions. In particular this deliverable aims to:

- Identify potential links between diverse communities and related projects that would benefit from close collaboration with S-Cube,
- Structure these links and implement procedures for establishing long term community collaboration,
- Establish the means for effective transfer and adjustment of knowledge,
- Establish special interest groups (SIGs),
- Stimulate intellectual creativity.

In particular, this deliverable specifies the targeted communities for outreach, special interest groups, strategic partners – including ones within the EU and outside, in China, USA and Australia-, and describes the policy for effectively spreading excellence to these communities.

2 Targeting communities for outreach

The European Union has placed a lot of emphasis in achieving collaboration and durable links between projects in the area of software and services. In particular, projects are collaborating through Collaboration Working Groups that concentrate on a topic of common interest, which leads to an improved sharing and understanding and ultimately to an improved impact of the results of participating projects. The overarching aim of the collaborative working groups is to accommodate collaboration between projects and leverage knowledge sharing and joint learning, apply each other's (intermediate) research results, and increase awareness of novel developments beyond projects to harmonize and adjust their goals accordingly. This is an ideal vehicle for spreading S-Cube research results to other communities.

2.1 *Establishing collaborative links with ICT SSAI&E Projects*

In the Description of Work of S-Cube we have proposed the creation of the PLAB (Project Liaison Advisory Board):

“Section B2.1.3: The Project Liaison Advisory Board is composed of members of the boards of projects associated with S-Cube (for example, SeCSE – Service Centric Systems Engineering,

CoreGRID – European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed GRID and Peer-to-Peer Technologies; NESSI-GRID – Networked European Software and Service Initiative – GRID, NESSI-SOFT – Networked European Software and Service Initiative Support Office Team) as well as S-Cube beneficiaries. The Project Liaison Advisory Board advises the Steering Committee on strategic orientation in its association with related national and international projects, as well the special user interest groups funded within S-Cube. It will therefore play a central role in the achievement of synergies between different projects and networks. It will give advice on how to ensure optimal synergy effects between all these various entities. The Board will meet once or twice a year and it will be chaired by the Scientific Director.”

The goal of the Project Liaison Advisory Board has been superseded by the Collaborative Working Groups set up by the SSAIE unit of IST where S-Cube plays a leading role. In deliverable CD-SoE-1.2.2, we have defined the areas of collaboration in line with the SSAI&E CWGs, in order to ensure that our activities can be aligned with the other projects in the FP7 Call 1 activities. In particular, these CWGs work on a topic of interest that results into increased understanding and sharing of project results, including new knowledge and experimental toolsets, leveraging the impact of participating projects on the services science research community.

S-Cube has established close collaboration with the following working groups:

- Service Architectures,
- Service Engineering,
- Collecting of Use Cases,
- Software and knowledge Repositories,
- Joint Dissemination Activities, and,
- Participation in Standardization activities.

2.2 Candidate SSAIE Projects for Outreach

In what follows, we will list FP6 and FP7 projects of the SSAIE unit with which the S-Cube community has already established links.

2.2.1 FP6 projects

The **TRACEBACK** project is developing service-oriented systems and reference architectures for food information traceability in Europe. (Neil Maiden, City University). In addition, City University has been involved with **SeCSE and GREDIA**.

FBK is involved in the FP6 project **ONE** (<http://one-project.eu/>), which aims at defining a negotiation framework for virtual enterprises (Marco Pistore, FBK).

2.2.2 FP7 projects

NEXOF-RA

U. of Duisburg-Essen (Klaus Pohl, Andreas Metzger) is involved in the FP7 project NEXOF-RA (<http://www.nexof-ra.eu/>) and can provide links with the partners involved there. In fact, the U. of Duisburg-Essen group is responsible for the NEXOF-RA WP, which deals with defining and maintaining the NEXOF-RA reference model and glossary. Thus, we can foster a stronger interaction between S-Cube and NEXOF-RA for what concerns the S-Cube Knowledge Map.

To leverage the S-Cube Knowledge Map, Tilburg University agreed to collaborate with NEXOF-RA on a tighter interlinking between S-Cube and NEXOF-RA after the month 12 Knowledge Map has

been created. There will soon be a "vision" and roadmap document for the Knowledge Map (produced by Tilburg University).

SOA4ALL (Neil Maiden, City University, Elisabetta di Nitto, Polimi, Manuel Carro, TUM),

SLA@SOI, (Elisabetta di Nitto, Manuel Carro, Marco Pistore, FBK is the **SLA@SOI** partner, responsible for the contacts with S-Cube),

QImpress (Elisabetta di Nitto),

EzWeb, **RESERVOIR** (Manuel Carro), are all FP7 projects with which the S-Cube community has already established links, which it intends to strengthen through interactions with the SSAIE Summer School.

MASTER (Manuel Carro, Frank Leymann), collaboration potentials with MASTER in the area of monitoring: the MASTER project deals with the definition of Compliance and a runtime infrastructure for enforcing compliance. Of course, monitoring is one aspect of this.

COMPAS (Schahram Dustdar- Coordinator, Frank Leymann, Mike Papazoglou) COMPAS pursues an MDD approach to compliance of software service systems. Linkages between COMPAS and S-Cube may be established to reinforce software engineering aspects of this approach.

ALLOW FET project ALLOW (<http://www.allow-project.eu>) on the adoption of adaptable workflows for programming pervasive applications. This link can help reaching the pervasive systems community. ALLOW strives towards processes that are adaptive based on context information. S-Cube investigates adaptability with regard to various dimensions; the process dimension is one of them (USTutt is coordinator, FBK (Marco Pistore) is partner), making up a research potential through which linkages can be created.

HATS FBK is the end user panel of the FP7 project HATS (<http://www.hats-project.eu/>), which is about the usage of Formal Methods for achieving high adaptability combined with trustworthiness. This project can provide the jumping board for creating linkages with the Formal Methods community (Marco Pistore, Manuel Carro).

Grid Projects

SZTAKI (Zsolt Nemeth) can reach out to the following EU Grid projects:

- See-Grid
- Etics-2
- Edges
- Cancergrid

The above projects are predominantly oriented towards developing and improving grid-related concepts and technologies, and at best indirectly consider software service-systems. SZTAKI will give presentations about S-Cube at various project events and generally, keep researchers in these grid projects informed about the research progress of S-Cube opening up potential interests and linkages between researchers in these projects and S-Cube.

2.3 Policy for effective spreading of excellence

The policy for effective spreading of excellence to the SSAIE including the FP6/7 research communities assessed in the above, comprises the following items:

- Critically assess the six collaboration areas listed above and evaluate relevant projects,
- Actively participating and leading upcoming SSAIE events, and contribute accordingly;
- Consolidate the existing and future lists of candidate project links through several bilateral meetings and brainstorming sessions;
- Use of the S-Cube Summer School, ICSOC and ServiceWave to intensify joint work and mutual understanding between the identified projects and communities. These events provide the opportunity for these projects to present their research results, interact with members of

the S-Cube community and strengthen existing links and forging new collaborations for the future.

2.4 Cooperating with European Research Organizations

S-Cube members have identified several European research institutes and organisations with which they intend to collaborate in the future. These research organizations include:

KSRI

The Karlsruhe Service Research Institute (KSRI) was founded in 2008. It develops concepts, methods and technologies for innovators and decision makers, to generate and utilize economic value in a more and more "services-led economy".

They are employing a holistic, interdisciplinary approach to solve business relevant problems along the dimensions "people", "organization", "information" and "technology".

KSRI organized the first Karlsruhe Service Summit¹ where Frank Leymann participated as a speaker and Christos Nikolaou as a panellist.

SimTech

At University of Stuttgart, DFG funded center of excellence called SimTech was recently created- it's a big and prestigious thing that U. Of Stuttgart has won in course of the German excellence initiative. This center is focusing on creating techniques for multi-scale, hybrid simulations and works cross-faculty. About 150 researchers will work on these subjects (the final number is planned to be employed 1Q2009; as of now about 90 people work in SimTech). The contribution of the CS folks (Frank Leymann' Institute is part of that) in SimTech is to create an IT infrastructure that allows other researchers to perform these kinds of simulations. The focus is on ease-of-use, exploitation of Grid technologies, adaptability, robustness, support of large data sets, and visualization. Of course, this is all centered on services and processes/workflows.

NWO – the Netherland's Organisation for Scientific Research

The Netherlands Organisation for Scientific Research (NOW) is responsible for enhancing the quality and innovative nature of scientific research as equally initiating and stimulating new developments in scientific research by allocating resources to research groups, while facilitating, for the benefit of society, the dissemination of knowledge from the results of research that it has initiated and stimulated. Recently, NWO has started to explore and coordinate research possibilities on the international level. To do this NWO participates in international networks and programmes and promotes international knowledge exchange and mobility. In addition, NWO has established JACQUARD as the Netherlands premier funding programme to stimulate software engineering research and collaboration in Dutch academia and industry. JACQUARD aims to promote co-operation amongst professionals from both industry and academia who are working in various areas of software engineering, for example software architecture, configuration of software components, alignment of business processes and quality aspects of software. Particular emphasis has been given in the past few years in the concept of software as a service.

Members of the S-Cube consortium are actively involved in advisory capacities in various programs of NWO, including program boards, review boards and advisory boards. In addition, members of S-Cube advise NWO in pursuing and advancing internationalization of research in the field of software services and systems.

BMBF – Bundes Ministerium fuer Bildung und Forschung

The German government aims to duplicate throughout the individual services sectors the same level of high quality in innovation management that Germany has already achieved in the manufacturing sector. It is working to improve both investment and development conditions for new types of services

¹ <http://www.ksri.uni-karlsruhe.de/Default.aspx?PageId=491&lang=en>

arising from the increased interplay between service advances and technological advances. The BMBF plays a leading role in achieving this vision.

In particular, BMBF has identified the software services sector as one of its strategic instruments for future research and development. There is a big tendency in the German market to move towards the service sector in the future, and this raises opportunities for interesting research in the areas of service-oriented architecture and service engineering in particular.

S-Cube members are closely associated with the BMBF activities in the area of services and are able to form close partnerships with the BMBF and local industries, which want to expand in the services market.

2.5 Policy for cooperation with European research organizations

The policy for effective spreading of excellence to the (national) research groups exploiting linkages with research institutes and funding agencies is defined as follows:

- Consolidate and possibly extend linkages with European research agencies in general, and European research institutes and funding agencies,
- Actively participating in program boards, advisory boards and evaluation committees of European funding agencies;
- Consolidate links with European research institutes through bilateral meetings and brainstorming sessions;
- Establish durable linkages between beneficiaries in S-Cube and European research institutes through combined funding of several national funding bodies;
- Use of the S-Cube Summer School to intensify joint work and mutual understanding between research institutes and funding agencies.

3 International cooperation

Center for Information Technology Research in the Interest of Society (CITRIS), U. Of California, Berkeley, USA

The Centre for Information Technology Research in the Interest of Society -CITRIS- creates information technology solutions for many of the most pressing social, environmental, and health care problems.

CITRIS facilitates partnerships and collaborations among more than 300 faculty members and thousands of students from numerous departments at four UC campuses (Berkeley, Davis, Merced and Santa Cruz) with industrial researchers from over 60 corporations. Together the groups are thinking about IT in ways that have not been thought of before. They see solutions to many of the concerns that face all of us today, from monitoring the environment and finding viable, sustainable energy alternatives to simplifying health care delivery and developing secure systems for electronic medical records and remote diagnosis, all of which will ultimately boost economic productivity. CITRIS represents a bold and exciting vision that leverages one of the top university systems in the world with highly successful corporate partners and government resources.

Several S-Cube partners (and in particular, U. of Tilburg, U. of Crete and U. of Stuttgart) are currently in discussions with the CITRIS management and researchers about possible collaborative projects in the area of services, e.g. services for a more effective water resource management, etc.

CSIRO (in discussion with CSIRO for possible partnership)

CSIRO, the Commonwealth Scientific and Industrial Research Organisation, is Australia's national science agency and one of the largest and most diverse research agencies in the world. Several S-Cube partners are in discussions with CSIRO executives to define possible collaboration areas, such as

services for water resource management. The CSIRO Water for a Healthy Country National Research Flagship (WfHC) is the largest research partnership focussing on water in Australia, involving CSIRO with leading Australian scientists, research institutions, private enterprise, community groups, government, non-government organisations. This Flagship aims to achieve a tenfold increase in the social, economic and environmental benefits from water by 2025.

The ICT Centre is CSIRO's hub for innovative information and communication technologies. These technologies are now being applied across the breadth of CSIRO's engagement with industry and society within the WfHC. In particular, the ICT Centre is providing the technologies and architectures to support the growing services sector with the aim to provide a seamless user experience when using broadband, wireless edge or sensor network; deliver useful (actionable) information based on users' needs and context, and manipulate their deliverables in much the way data is manipulated in a database management system. CSIRO through the ICT Centre is also developing novel sensors and sensor network technologies to increase the quality and reduce the cost of collecting environmental data, particularly from ecological systems supporting Australia's agricultural, resource and process-based industries.

Service Innovation and Engineering Center (SINEI) – SUZHOU, China

The Service Innovation and Engineering Centre (SINEI) has been recently initiated and is hosted at Suzhou University in China, stimulating multi-disciplinary research on service-oriented systems, bringing together faculty from their school of business and department of computer science.

As a S-Cube partner, Tilburg University is in discussion with the management of the research institute about establishing long-lasting research links, including a joint research program and exchange program around service design and engineering.

4 Summary of activities and epilogue

S-Cube is committed to spreading of excellence developed by the network's beneficiaries through dissemination activities with the scientific and other communities. In fact, it regards dissemination as an important leverage for exploiting of research results at a global scale, while establishing enduring European excellence in research on the next generation of software services and systems.

Community outreach aims at identifying potential collaboration links between diverse communities, assessing them, and establishing long-lasting inter-community collaboration links with them. This will allow for effective transfer, sharing and enhancement of knowledge created in the S-Cube network.

In this document, we have described S-Cube's ambitious and sound strategy for Community Outreach. This strategy has several complementary dimensions: intensive collaboration with other EU FP-6/7 projects through SSAI&E, and, establishing enduring and active linkages with several European and International research centers, funding agencies and research communities with related interests and activities.

It can be concluded that –despite the fact that the network is only in its first year- already some very promising initial links with academic and industrial research bodies have been identified, and either under negotiation or in the process of being established. For example, we have identified and are setting up intensive collaborative links with research organizations such as NWO, CIRO, CITRIS, and project and initiatives such as COMPAS and NEXOF-RA.

In addition to the above achievements, it should be noted here that S-Cube has also undertaken some dissemination efforts that are closely related to community outreach. In particular, S-Cube has organized international workshops, conferences and research seminars bringing together researchers from various scientific disciplines. For a detailed overview of these related dissemination activities we refer to deliverable CD-SoE-1.2.4.

Lastly, we wish to point out that this strategy is a first effort of shaping S-Cube's strategy for community outreach. We plan to extend, refine and report on follow-ups to this strategy each year in CD-SoE-1.2.4 as more research results can be shared with the wider community.