# S-Cube

# The Software Services and Systems Network

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

## At a Glance

### Type of Project:
Network of Excellence

### Project coordination:
Prof. Dr. Klaus Pohl (Project Coordinator)
University of Duisburg-Essen, Germany

Prof. Dr. Mike Papazoglou (Scientific Director)
Tilburg University, The Netherlands

### Partners:
Univ. of Duisburg-Essen (DE), Tilburg Univ. (NL), City Univ. London (UK), CNR (IT), FBK (IT), INRIA (FR), Lero (IE), PJIIT (PL), Politecnico di Milano (IT), MTA SZTAKI (HU), Vienna Univ. of Technology (AT), Univ. Claude Bernard Lyon (FR), Univ. of Crete (GR), Univ. Politécnica de Madrid (ES), Univ. of Stuttgart (DE)

### Duration: 01.03.2008 – 29.02.2012

### Total cost: approx. 11.050.000,– EUR

### Programme: Service and Software Architectures, Infrastructures and Engineering

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## Motivation

An integration of research expertise and an intense collaboration of researchers in the field of software services and systems are needed to address the following key problems:

- *Research fragmentation:* Current research activities are fragmented and each research community (e.g., grid computing or software engineering) concentrates mostly on its own specific techniques, mechanisms and methodologies. As a result the proposed solutions are not aligned with or influenced by activities in related research fields.

- *Future Challenges:* One challenge, as an example, is to build service-based systems in such a way that they can self-adapt while guaranteeing the expected level of service quality. Such an adaptation can be required due to changes in a system's environment or in response to predicted and unpredicted problems.

## Expected Impact

S-Cube will pursue the following objectives which will have a long-lasting impact on European research:

- *Re-aligning, re-shaping and integrating research agendas of key European players from diverse research areas.* By synthesizing and integrating diversified knowledge, a long-lasting foundation for steering research and for achieving innovation at the highest level will be achieved.

- *Inaugurating a Europe-wide common program of education and training for researchers and industry*. This will create 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*, which will foster 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) a catalytic effect in shaping European research, strengthening industrial competitiveness and addressing main societal challenges will be accomplished.

- *Defining a broader research vision and perspective*. This will shape the software-service based Internet of the future and will accelerate economic growth and improve the living conditions of European citizens.

## Technical Approach

To reach the above objectives, S-Cube brings together over 70 researchers and over 50 Ph.D. students from 15 institutions, which jointly carry out the following three types of activities:

- *Integration Activities:* Integration activities tackle fragmentation and isolation of research by different means: First, a knowledge model will be developed that captures terminology and competences of S-Cube partners and their research. This will support eliminating the duplication of research efforts, better adjusting research activities of beneficiary institutions and restructuring already existing research agendas. Further, a Pan-European Distributed Service Laboratory will be established as a high-quality research infrastructure to provide access to state-of-the-art collaboration facilities. Finally, by providing a diverse and vigorous program of education, training and specialist courses for researchers as well as an intensive mobility plan within the network, a cross-fertilisation of knowledge and durable research integration will be achieved.
- *Joint Research Activities:* Work in S-Cube will be guided by the S-Cube research framework (see Figure 1), which clearly distinguishes between principles and methods for engineering and adapting service-based systems and the technology which is used to realize those systems while taking into account cross-cutting issues like Quality of Service (QoS) and SLA compliance.

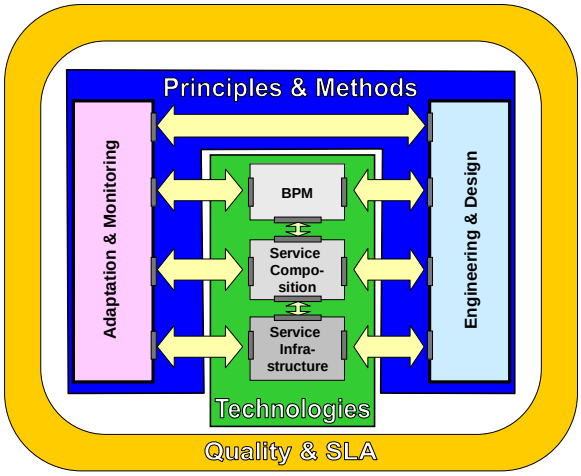

Fig. 1: S-Cube's Research Framework

- *Spreading of Excellence Activity:* This activity will ensure a broad dissemination of research results, stimulate industrial and commercial interest, and enhance the public visibility of the research conducted within the network. This includes – besides other means – the S-Cube Web Portal, the organisation of international conferences and specialised workshops and summer schools, as well as a European Ph.D. programme.

## Openness

S-Cube invites organizations, research groups or researchers to join S-Cube as *associate partners* on the basis of the identified research gaps. Associate partners will be paid travel and subsistence. They will gain access to S-Cube internal information and may participate in S-Cube meetings. The admission process will be published on the S-Cube Web Portal.

## For further information:

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