

T – AREA - SOS



Key innovation

T-AREA-SoS aims to increase European competitiveness in, and improve the societal impact of, the development and management of large complex systems in a range of sectors through the creation of a commonly agreed EU-US System of Systems (SoS) research agenda that will be used to support collaborative EU and joint EU-US research initiatives to be embedded in future FP7/Horizon2020 and other programmes that will be open to US participation where appropriate.

T-AREA-SOS is a support action that has the following main objectives:

- Create a strategic research agenda in SoS engineering.
- Create research themes in SoS engineering that target priority sectors for societal needs .
- Provide the EU Commission with a detailed report on the state of the art and gap analysis for research in SoS .
- Create an Expert Community drawn from industry, Government, NGOs, academia, and end-users to transfer cross-sector knowledge about SoS. The Expert Community will be long-lasting, and provide a distributed nexus of wisdom and expertise for the wider SoS community of researchers and practitioners.
- Identify the skills required for both system developers and system users, and make recommendations on training and education for their development to support research initiatives.
- Foster and promote a common language and expression of the concepts of SoS that will enable communication and cross-fertilisation of systems knowledge, tools, techniques and system approaches across industrial sectors and contributing disciplines.

Technical approach

The T-AREA-SoS project will use sector specific SoS exemplars from a range of sectors (eg transport, energy or manufacturing systems) to inform generic challenges in the engineering of SoS. The state of the art in SoS research and operations will be evaluated and a gap analysis will provide requirements for future research and education in Europe. To enable communication across industrial sectors, a Rosetta Stone or common language for SoS will be created to provide a mechanism through which the Commission and respondent researchers can achieve greater clarity in future calls and research proposals concerning SoS

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Project website

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Community contribution to the project

489,000 Euro

Project start date

1st September 2011

Duration

24 months

Engineering. Analysis of the research agendas in EU and US will lead to the identification of collaborative opportunities between programmes



Key Features

- Cross fertilisation with USA SoS knowledge / capability
- Strategic Research Agenda for EU
- Common SoS language
- Expert Community in SoS

and thence it will create an environment in which concrete research priorities and initiatives required by the call will flourish. A workshop-based research initiative building activity will be conducted using system modelling techniques to explore value-adding research questions and themes that will identify the priority challenges, with respect to societal/commercial needs, and the most likely routes to address them effectively through research. By bringing together researchers, experts, and end-users the complex nature of the SoS challenges will be documented using a systems architecture approach. From these architectures the general and sector specific research themes and priorities will evolve to provide the commission with clear guidance on research areas that should be funded to achieve particular benefits, together with timescales for benefit realisation.

Demonstration and Use

SoS engineering represents not so much a new discipline but a new opportunity. Dissemination is key to T-AREA-SoS both to encourage SoS thinking within existing projects and the development and deployment of new techniques to create and sustain SoS that work. The creation of the expert community will play a major role here and will facilitate links to the major systems engineering bodies, such as IEEE and INCOSE to enhance European engagement in SoS. T-AREA-SoS will also support a website, publication in conventional publications and conferences and collaborative design workshops. Furthermore, T-AREA-SoS will address the training and education needs through links to the Systems Engineering Body of Knowledge (BKCASE) and the creation of a lecture series.

Scientific, Economic and societal Impact

The long-term impact of the project will be:

- Global leadership by Europe in SoS Engineering
- New business environments enabled through more agile delivery of systems to participate in SoS and enhanced performance of legacy systems within their SoS environment.
- Reinforced European scientific excellence and technological leadership in the design and operation of large-scale complex systems.

Project partners

Country

Bournemouth University

UK

University of Texas, San Antonio

USA

Purdue University

USA
