

# Call for Papers IET Software

**Editor-in-Chief:** Alessandra Russo, Imperial College London, UK

## Special Issue: Software Architectures for Decentralized Adaptive Systems

Contemporary and future software systems are composed of large-scale ensembles of widely distributed, largely autonomous and heterogeneous entities situated in both the physical world and in back-end computer systems. Those ensembles are often open-boundary and multi-ownership, resulting in the lack of a viable central point of command and control. Moreover, human interaction via ubiquitous computing devices is often deeply embedded and must be considered an integral part of these kind of systems. We are therefore increasingly looking at, and building, collective socio-technical applications built on top of large-scale decentralized distributed computing systems. These systems can be effectively managed only via decentralized adaptation. Such adaptation must be itself collective, that is, multiple entities must adapt simultaneously in a way that, on the one hand, properly addresses a critical runtime condition, while, on the other hand, does not break the working consistency of the ensemble, but rather preserves the collaboration and its benefits.

There have been many recent theoretical and methodological solutions in the field of dynamic software adaptation, which can deal with large-scale distributed and heterogeneous software systems. However, most of the proposed solutions work under an architectural model in which the knowledge necessary to adapt a system is logically centralized, and, the control of adaptation is exerted centrally. There is still a lack of understanding on how to engineer Decentralized Adaptive Systems (DAS), in which a central control is not possible. The aim of this Special Issue is to bring together researchers, engineers and practitioners interested in architecting Decentralized Adaptive Systems; a special emphasis will be put on practical engineering concerns, experiences in tools development, and advancements and applications of Software Architecture to the DAS domain.

### Specific topics include, but are not limited to:

- Architectural principles and styles for DAS
- Models and Methods for designing DAS
- Architecture-based reasoning and support tool for DAS design
- Industrial best practices and case studies
- Applications of DAS architecture
- Mechanisms and Patterns for decentralized decision making and control
- Surveys and Comparative studies

All submissions are subject to the journal's peer-review procedures. The authors should follow the journal's Author Guide at <http://digital-library.theiet.org/journals/author-guide> when preparing papers for submission to the Special Issue.

### Important dates:

**Submission deadline:**  
15 Jul 2016

**Print publication date:**  
Dec 2016

### For enquiries regarding this Special Issue please contact the Guest Editors:

**Antonio Bucchiarone**  
FBK-DAS, Trento, Italy,  
E: [bucchiarone@fbk.eu](mailto:bucchiarone@fbk.eu)

**Giuseppe (Peppo) Valetto**  
FBK-DAS, Trento, Italy

**Patrizia Scandurra**  
University of Bergamo (Italy),  
Dep. of Management, Information  
and Production Engineering

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### **IET Software**

IET Research Journals Dept.  
Michael Faraday House  
Six Hills Way  
Stevenage  
SG1 2AY  
United Kingdom

Kruna Vukmirovic, Executive Editor (IET Research Journals)

**T:** +44 (0)1438 765504

**E:** [iet\\_sen@theiet.org](mailto:iet_sen@theiet.org)

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