3rd International Conference on Self-Organization and Autonomous Systems in Computing and Communications (SOAS'2007)

As a part of

the SABRE event
(Software Agents and Services for Business, Research, and E-Sciences)

Technical Co-Sponsored by

SIWN - the Systemics and Informatics World Network
IEEE Systems, Man, and Cybernetics Society
SMCS Technical Committee on Self-Organization and Cybernetics for Informatics

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Introduction

Today's IT systems with its ever-growing communication infrastructures and computing applications are becoming more and more large in scale, which results in exponential complexity in their engineering, operation, and maintenance. Conventional paradigms for run-time deployment, management, maintenance, and evolution are particularly challenged in tackling these immense complexities. Recently, it has widely been recognized that self-organization and self-management/regulation offer the most promising approach to addressing such challenges. Consequently, a number of autonomic/adaptive computing initiatives have been launched by major IT companies, like IBM, HP, and others.

Self-organization and adaptation are concepts stemming from the nature and have been adopted in systems theory. Since computing and communication systems are basically artificial systems, this prevents conventional self-organization and adaptation principles and approaches from being directly applicable. Complexity attributes in terms of openness, scalability, uncertainty, discrete-event dynamics, etc. have varied contexts in large-scale complex IT systems, and are too prominent to be solved by the procedures pre-defined at design-time. Rather, they have to be tackled by means of run-time perception of the complexity patterns and the run-time enforcement of self-organization and adaptation policies. The current knowledge about large-scale complex IT systems is still very limited, and a framework has yet to be established for their self-organization and adaptation.

The methodology of multi-agent systems and the technology of Grid computing have shed lights for the exploration into the self-organization and adaptation of large-scale complex IT systems. Essentially, multi-agent systems provide a generic model for large-scale complex IT systems. Exploring and understanding the self-organization and adaptation of multi-agent systems is of profound significance for engineering the self-organization and self-management/regulation of large-scale complex IT systems comprised of communication infrastructures and computing applications. A Grid computing system exposes all the complexity attributes typical of large-scale complex IT systems. Investigating the self-organization and autonomic systems for Grid computing has remained a huge challenge.

To respond to the challenge above, apparently there is the urgency to have a focal forum to exchange and disseminate the state-of-the art developments from different disciplines.

The SOAS'2007 conference right aims to provide a timely forum to present the latest theoretical and practical results on Self-Organization and Autonomous Systems in Computing and Communications that have been arising in recent years in the areas.

General Chair
Rainer Unland

Program Co-Chairs
Jordi Torres and Hong Zhu

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http://www.siwn.org/SOAS2007/

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SOAS 2007 Technical Programme

Monday September 24th

<u>14:00- 15:00: Session 1: Agents and Multi-Agent Systems</u>
Chair: Prof. Dr. Joerg Mueller, Technische Universitat Clausthal – Germany

On Expressing and Validating Requirements for the Adaptivity of Self-Organizing Multi-Agent Systems
Jan Sudeikat and Wolfgang Renz
Hamburg University of Applied Sciences, Germany

Stable Collaboration Patterns of Self-Interested Agents in Iterative Request for Proposal Coalition Formation Environments
Carlos Merida-Campos and Steven Willmott
Universitat Politecnica de Catalunya, Spain

Market-based Coordination Strategies for Large-scale Multi-Agent Systems
MyungJoo Ham and Gul Agha
University of Illinois at Urbana-Champaign, USA

Tuesday September 25th

<u>10:00- 11:30 Session 2: Self-Configuration</u>
Chair: Prof. Dr. Hans Czap, Universität Trier - Germany

Towards Policy-Based Self-Configuration of Embedded Systems
Mariusz Pelc and Richard Anthony
University of Greenwich, United Kingdom

Semantic Interoperability in Self-Configuring Service Networks for Context-Driven Decision Making
Alexander Smirnov, Mikhail Pashkin, Nikolay Shilov and Tatiana Levashova
St.Petersburg Institute for Informatics and Automation, the Russian Academy of Sciences, Russia

Self-Adaptive Execution Mechanisms in ARMS
Daniele Cammareri and Claudia Raibulet
University of Milano-Bicocca, Milan, Italy

<u>12:00- 13:30: Session 3: Grid and Context Awareness</u>
Chair: Prof. Dr. Gul Agha, University of Illinois at Urbana – USA

Meta-models and Grid-services for Management of Clinical Practice Data for Evidence-Based Pharmacology (Short)
Alexey Zhuchkov, Nikolay Tverdokhlebov, Boris Alperovich and Alexander Kravchenko
Institute of Chemical Physics RAS, Sechenov Moscow Medical Academy, Russia, Telecommunication Centre "UMOS", Russia

Context-Aware Adaptation for Group Communication Support Applications With Dynamic Architecture (Short)
Ismael Bouassida Rodriguez, Khalil Drira, Christophe Chassot and Mohamed Jmaiel
LAAS-CNRS, University of Toulouse, INSA, France, Redcad, Tunisia

An Initial Study on Grid Scheduling (Short)
Petros Papadopoulos, Huaglory Tianfield and Mike Mannion
Glasgow Caledonian University, UK

Flexible Application and Context Aware Adaptation in a Pervasive File System (Short)
Gustavo C. Frainer, Luciano da Silva, Iara Augustin, Adenauer Yamin and Cláudio Geyer
Federal University of Rio Grande do Sul, Federal University of Santa Maria
Catholic University of Pelotas, Brazil

15:55- 17:25   Session 4: Collaboration, Cooperation and Coordination
Chair: Dr. Michael Cebulla, Technische Universitat Berlin – Germany

Economic Coordination in Kanban-based Production Systems with Ubiquitous Computing
Titus Faupel and Stefan Sackmann
University of Freiburg, Germany

Exploiting MAS Self-Organization for Distributed Constraint Satisfaction Problems
Giovanni Pezzulo
Institute of Cognitive Science and Technology - CNR, Italy

Self-Organization and Adaptation in Socio-Cognitive Systems: A Computational Model (short)
Christina Klüver and Jürgen Klüver
University of Duisburg-Essen

Protein Secondary Structure Prediction through a Cooperative MultiAgent Learning Approach (Short)
Andrea Addis, Giuliano Armano, Francesco Mascia and Eloisa Vargiu
University of Cagliari, Italy

Wednesday September 26th

10:00- 11:30: Session 5: Quality of Services
Chair: Dr. Eloisa Vargiu, University of Cagliari – Italy

The Role of Reliability, Availability and Serviceability (RAS) Models in the Design and Evaluation of Self-Healing Systems
Rean Griffith, Ritika Virmani and Gail Kaiser
Columbia University, USA

Beyond Selection: A Case for Fine-Grained Complex Systems Modelling

Mariusz Nowostawski
University of Otago, New Zealand
An Agent Based Component for QoS Management in A Grid-PP Architecture (Short)
Antonella Di Stefano, Giovanni Morana and Daniele Zito
Universit`a di Catania, Italy

12:00- 13:30: Session 6: Autonomic Computing and Emergence
Chair: Dr. Azzelarabe Taleb-Bendiab, Liverpool John Moores University - UK

The Emergence of Order in Goods Distribution Using Information and Competition (short)
David Cabanillas and Steven Willmott
Universitat Politecnica de Catalunya, Spain

Software Engineering Concerns in Observing Networks of Autonomic Systems (Short)
David Lamb, Martin Randles and A. Taleb-Bendiab
Liverpool John Moores University , UK

An Agent Based Simulation for Testing the Emergence of Meaning (Short)
Toomas Kirt
Tallinn University of Technology, Estonia

Towards Collaborative Coping with IT Complexity by Combining SOA and Organic Computing (Short)
Stefan Thanheiser, Lei Liu and Hartmut Schmeck
University of Karlsruhe, Germany

15:55- 17:25: Session 7: Scheduling and Optimization
Chair: Prof. Dr. Alexander V. Smirnov, Russian Academy of Sciences – Russia

An Optimal Approach to Determine the Minimum Architecture for Real-Time Embedded Systems Scheduled By EDF (Short)
Jean-Franc¸ois Hermant and Laurent George
ECE, LACSC, France

ASSL Specification of Self-Scheduling Mechanism in Team-Robotics Modelled with AS-TRM (Short)
Olga Ormandjieva and Emil Vassev
Concordia University, Canada

Reactive Common Sense Reasoning for Knowledge-based Self-Optimization (Short)
Michael Cebulla
Technische Universitat Berlin, Germany

Engineering Self-Management into Legacy Systems (Short)
Jens Steiner Ursula Goltz
University of Braunschweig, Germany