Guest Editorial: Adaptive and reconfigurable service-oriented, cloud and virtualized architectures
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Guest Editorial: Adaptive and reconfigurable service-oriented, cloud and virtualized architectures

The concept of adaptive and reconfigurable Service Oriented Architecture (SOA) has been introduced in order to describe architectures that exhibit emerging functional and non-functional properties in changing contexts. An adaptive and reconfigurable SOA can repair itself if any execution problem occurs, in order to successfully complete its own execution, while respecting functional and non-functional agreements. In the design of an adaptive and reconfigurable SOA, several aspects have to be considered. For instance, the architecture components should be able to predict and to detect degradations and failures as soon as possible and to enact suitable recovery actions such as scaling-up and scaling-out of virtual execution resources. Moreover, different non-functional service-level requirements might be considered in order to complete the execution in case of a predicted imminent or observed occurring failure. Contributions are devoted to the design and the implementation of adaptive and reconfigurable SOA and related Cloud applications.

The issue contains five papers related to the foundations of “SOA and Cloud Computing” and the tools and applications for “Smart and Cyber-Physical environments”.

Service Oriented Architecture and Cloud Computing

Smart and Cyber-Physical environments
“Modeling and Verifying Time-aware Processes for Cyber-Physical Environments” by Imen Graja et al. proposes to extend Business Process Modeling Notation to support the various Cyber-physical system concepts and properties. The paper entitled “Smart and Safe Self-Adaption of Connected Devices Based on Discrete Controllers” by Arthur Gatouillat et al. proposes a self-adaptation framework to deal with changes and takes into account storage, computational and communication constraints.

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He received the Ph.D degree in Computer Science from the National School of Engineering of Sfax-Tunisia and National Institute of Applied Sciences of Toulouse-France, in 2011. He is since September 2012 an associate Professor at Higher Institute of Computer Science and Multimedia of Sfax-Tunisia. His research interests include graphs grammars and software engineering of distributed systems. He has co-organized the following tracks: AROSA IEEE-WETICE 2013, 2014, 2015, 2017, 2018; ASOCA ICSOC 2017-2018. He has served in the Program Committee of international conferences, including recently: ECSA 2017, AICCSA 2017. He has been guest editor of Special Issues in international journals including recently: Future Generation Computer Systems 2017, Journal of Systems and Software 2016. He is or has been involved in different European and Tunisian projects (ENI CBC MED, Erasmus+, DAAD, PRF). He has been guest editor of different journal special issued including JSS, FGCS.

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Mohamed JMAIEL obtained his diploma of engineer in Computer Science from Kiel (Germany) University in 1992 and his Ph.D. from the Technical University of Berlin in 1996. He joined the National School of Engineers of Sfax (Tunisia) as Assistant Professor of Computer Science in 1995. He became an Associate Professor in 1997 and full Professor in January 2009. He participated to the initiation of many graduate courses at the University of Sfax. His current research areas include software engineering of distributed systems, formal methods in model-driven architecture, self-adaptive and pervasive systems, autonomic middleware. He conducted many research projects and published more than 220 regular and invited papers in international conferences and journals, and has co-edited six conferences proceedings and five journals special issues on these subjects. He organized and co-chaired the program committees of many international conferences, like MCSEAI’2004, CRISIS’2009, NOTERE’2010, OPODIS’2010, WETICE’2013, VECOS’2016, ESBM’2017, and ICTAC’2019. He was director of the National Engineering School of Sfax (ENIS), from 2011 to 2014. Currently, he is director of the digital research center at the Technopark of Sfax. More details are available on his home page: http://www.redcad.org/members/jmaiel/.