

CALL FOR PAPERS

Special Issue on: Interoperability Enablers for Cyber-Physical Enterprise Systems

Guest Editors:

*Ricardo Jardim-Goncalves, UNINOVA, Universidade Nova de Lisboa, Portugal
{rg@uninova.pt}

David Romero, Tecnológico de Monterrey, Mexico
{dromero@itesm.mx}

João Pedro Mendonça da Silva, Departamento de Mecânica, Universidade do Minho, Portugal
{jpmas@dem.uminho.pt}

According to telecom giant CISCO, the Internet of Everything (IoE) is “bringing together people, process, data, and things to make networked connections more relevant and valuable than ever before, turning information into actions that create new capabilities, richer experiences, and unprecedented socio-economic and environmental opportunities for businesses and individuals”. In this context, the Future Internet-based Enterprise Information Systems can be defined as “a enterprise-centric network integrating and interoperating with proprietary and non-proprietary advanced technologies, computers, communication systems, control strategies as well as cognitive agents (both humans and/or advanced intelligent systems) able not only to manage people, processes and things, but also to generate new behaviors for adapting themselves to a dynamic market” (adapted from Davis et al, 2007) (Panetto et al, 2015). State-of-the-Art technology has empowered a systematical deployment of Cyber-Physical Systems (CPS) to the Enterprise Systems, enabling information from heterogeneous physical and virtual sources to be closely monitored and synchronized between the *physical* and the *cyber-computational* spaces, providing mechanisms for advanced information analytics with networked capabilities able to perform collaboratively, resiliently and more efficiently towards the visionary Enterprise of the Future (EoF).

Actually, the IoE is more than different Internets. It is a network of networks that aims to bring all together people, process, data, things (e.g. machines), and even services (e.g. virtual resources) in several possible combinations such as (Panetto et al, 2015): person-to-person (Pr2Pr) in social networks; person-to-process (Pr2Pc) with processes visualization in models, simulators, dashboards, widgets and/or cockpits; person-to-data (Pr2D) with semantic search accuracy; person-to-machine (Pr2M) with intelligent human-machine interfaces; person-to-service (Pr2S) with accessibility to digital services; process-to-process (Pc2Pc) with processes mashups; process-to-data (Pc2D) with enriched datasets for data analytics; process-to-machine (Pc2M) with improved automation and control of machines; process-to-service (Pc2S) with better virtual resources availability and utilization; data-to-data (D2D) for value-added metadata; data-to-machine (D2M) with higher performance of machines due to real-time and precise data streaming; data-to-service (D2S) for better (mass-)customization of digital services; machine-to-machine (M2M) aiming a totally integrated automation and control of equipment; machine-to-service (M2S) with complementary virtual resources available on the cloud on-demand; and service-to-service (S2S) with scalable resources also available in the cloud through their virtual resources integration.

In the advent of the CPS paradigm, the Future Internet-based Enterprise aims to manage and leverage on all possible networked connections among people, process, data, things and services to achieve its strategic goals with enhanced sensing physical and virtual capabilities. Such internet ecosystem depicts the emergence of new enhanced and holistic collaborative forms between people, process, data, things, and services and calls for new “systems of systems interoperability” (SOSI) solutions for novel Enterprise Information Systems with the IoE (adapted from Panetto et al, 2015). As enterprise systems evolve and become more complex, with more and enriched sensing capabilities, the need for novel strategies for interoperable operations, automated data interchange and coordinated seamless knowledge and behavior of large-scale enterprise systems becomes highly critical, depending clearly on the interoperability of its information systems, applications and interconnected Things. To achieve such holistic, adaptive and seamless intelligent enterprise environment there is a need to devise strategies that leverage applied research and technological developments on a more solid and rigorous science base.

This special issue seeks to bring together novel contributions from researchers and practitioners who are exploring the definition and applicability of Cyber-Physical Enterprise Systems Interoperability in a global perspective to contribute to reach the visionary Enterprise of the Future, putting focus on **novel strategies, methods and tools** in a scientific-based standpoint. **Conceptual, theoretical, empirical and technological contributions** are foreseen, illustrated by **applied examples and convincingly demonstrating noteworthy novelty in comparison with previously reported results**.

1. CISCO (2013). “Internet of Everything At-A-Glance”, <http://www.cisco.com/web/about/ac79/docs/IoE/IoE-AAG.pdf>
2. Davis, J. P., Eisenhardt, K., Bingham, B. C. (2007). “Complexity Theory, Market Dynamism and the Strategy of Simple Rules”, In Proceedings of DRUID Summer Conference 2007 on Appropriability, Proximity Routines and Innovation, Copenhagen, CBS, Denmark, June 18-20.
3. Panetto, H.; Zdravkovic, M.; Jardim-Goncalves, R.; Romero, D.; Cecil, J. And Mezgár, I. (2015). “New Perspectives for the Future Interoperable Enterprise Systems”, Computers in Industry (Journal), Special Issue: Future Perspectives on Next Generation Enterprise Information Systems: Emerging Domains and Application Environments, Vol. 79, pp. 47-63, DOI: 10.1016/j.compind.2015. 08.001

Publication Schedule:

Full Papers Due for Review: 30, Sep, 2017

Notification of Review Decision: Jan, 2018

Revised Manuscript Submission: Mar, 2018

Expected Final Decision: May, 2018

Expected Final Manuscripts: Jul, 2018

Expected Date of e-Publication: Aug-Sep, 2018

Note: Submissions reviewed according to the *Enterprise Information Systems* Journal standards.