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Special Issue on Software and Systems Engineering Lifecycle Processes and the ISO/IEC 29110 Standards and Guides

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This special issue was motivated by the need to promote and disseminate recent advances in the field of Software and Systems Engineering Process Lifecycle Management as applied to Very Small Entities utilizing the Management and Engineering guides of the ISO/IEC 291110 standard, both at academic and industry level. Very Small Entities (VSEs) are enterprises, organizations (e.g. public or non-profit), departments or projects having up to 25 people.

The origins of the ISO/IEC 29110 project date back to a 2004 meeting of the ISO sub-committee (SC7) mandated to develop international Software Engineering standards, where there was a general recognition of the adoption issues presented by SC7 standards for small and very small companies. This lead directly to the subsequent formation in 2005 of a working group (ISO/IEC JCT1/SC7 WG24) whose brief was to develop a software process lifecycle standard specific to meet the needs of VSEs whilst remaining compatible with existing ISO/IEC standards to allow a path for VSEs future growth and standards adoption (Laporte et al., 2008).

Although commercial process improvement models have not been widely adopted by small and very small organizations and their influence in the software industry therefore remains more at a theoretical than practical level. There is now a substantial body of research evidence (Basri & O'Connor, 2010; Coleman & O'Connor, 2008; Larrucea et al., 2016) that the majority of small software and systems organizations were not adopting existing systems and software engineering standards because they perceive the international standards as being orientated towards large organizations. Studies have shown that small firms' negative perceptions of process model standards are primarily driven by negative views of cost, documentation and bureaucracy and their lack of expertise in adapting existing life cycle standards to meet their needs. In addition, it has been reported that SMEs find it difficult to relate standards to their business needs and to justify the application of the international standards in their operations.

Accordingly, there was a need to help such organizations understand and use the concepts, processes and practices proposed in the ISO/IEC JTC1/SC7's international engineering standards. The recently published systems and software engineering ISO/IEC 29110 standard (ISO, 2011) "Lifecycle profiles for Very Small Entities" is aimed at addressing the issues identified above and addresses the specific needs of VSEs.

The special issue starts with the invited paper *The Evolution of the ISO/IEC 29110 Set of Standards* which outlines the history and evolution of the ISO/IEC 29110 standard from its initial concept and requirements, to publication and future development.

The second paper by Veeraporn Siddoo and Noppachai Wongsai (Prince of Songkla University Phuket Campus) is titled *Factors Influencing the Adoption of ISO/IEC 29110 in Thai Government Projects: A Case Study*. This paper presents the views of four Thai government organizations who

had been awarded ISO/IEC 29110 Basic Profile Certification, and explores the success factors and barriers involved.

The third paper titled *Getting the Best out of People in Small Software Companies: ISO/IEC 29110 and ISO 10018 Standards* by Mary-Luz Sánchez-Gordón (Universidad Carlos III de Madrid). It discusses human factors from a ISO 10018 perspective and outline initial steps to enhance implementation of the ISO/IEC 29110 standard.

The fourth paper by Alena Buchalcevova (Prague University of Economics) is titled *Methodology for ISO/IEC 29110 Profile Implementation in EPF Composer*. This paper deals with the usage of ISO/IEC29110 Deployment Package assistance implemented in an open source content management tool, the Eclipse Process Framework (EPF) Composer.

The fifth paper titled *An Objective Compliance Analysis of Project Management Process in Main Agile Methodologies with the ISO/IEC 29110 Entry Profile* by Sergio Galvan-Cruz et al, compliance issue of the three main agile software development methodologies of SCRUM, XP and UPEDU with the Process Management process of the ISO/IEC 29110 standard.

The last paper by Jussi Kasurinen (Lappeenranta University of Technology) and Kari Smolander (Aalto University) is titled *Defining an Iterative ISO/IEC 29110 Deployment Package for Game Developers*. In this paper the authors present their study of game development organizations, and describe the ISO/IEC 29110 deployment package "Highly Iterative Software Processes" which combines the Entry-level model with the industry-specific requirements.

We would like to express our sincere gratitude to the paper contributors and the reviewers whose comments and suggestions helped to improve the papers. We are very grateful also for the guidance and cooperation in the preparation of this special issue to Prof. Dr. Manuel Mora, Editor in Chief of IJITSA and to Mr. Sam Hoffmeister and the editorial staff of IGI Global.

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Ricardo Colomo-Palacios
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REFERENCES

Basri, S., & O'Connor, R. (2010). Understanding the perception of very small software companies towards the adoption of process standards. In Riel et al. (Eds.), *Proceedings of the Systems, Software and Services Process Improvement, CCIS* (Vol. 99, pp. 153-164). Springer-Verlag. doi:10.1007/978-3-642-15666-3_14

Coleman, G., & O'Connor, R. (2008). Investigating software process in practice: A grounded theory perspective. *Journal of Systems and Software*, *81*(5), 772–784. doi:10.1016/j.jss.2007.07.027

International Organization for Standardization (ISO). (2011). ISO/IEC TR 29110-1:2011 Software engineering -- Lifecycle profiles for Very Small Entities (VSEs) -- Part 1: Overview, Geneva. Retrieved from http://standards.iso.org/ittf/PubliclyAvailableStandards/index.html

Laporte, C. Y., Alexandre, S., & O'Connor, R. (2008). A software engineering lifecycle standard for very small enterprises. In R. O'Connor, et al. (Eds.), Proceedings of EuroSPI, CCIS (Vol. 16, pp. 129–141). Springer-Verlag doi:10.1007/978-3-540-85936-9_12

Larrucea, X., O'Connor, R. V., Colomo-Palacios, R., & Laporte, C. Y. (2016). Software Process Improvement in Very Small Organizations. *IEEE Software*, *33*(2), 85–89. doi:10.1109/MS.2016.42

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