Editorial Preface

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This 27th issue of the International Journal of Information Technology and the Systems Approach (IJITSA), contains ten papers from regular submissions, which were accepted after several rounds of the double-blind peer review procedure executed by at least blind-based peer-based 3 members of the Editorial Review Board of this journal, under the final supervision of the Senior Associate Editor of IJITSA for the corresponding research area of the paper.

The first paper is entitled "Automated System for Monitoring and Diagnostics Pilot's Emotional State in Flight" and is co-authored by Tetiana Shmelova, at the National Aviation University, Ukraine, Yuliya Sikirda, at the Flight Academy of National Aviation University, Ukraine, and Arnold Sterenharz, at EXOLAUNCH GmbH, Germany. In this paper, the authors report the design, implementation, and testing of a computer system for monitoring the emotional state changes of the Air Navigation System's human-operator in extreme situations. Their model was based on findings from previous related research. The lately aim is to count on an automatic monitoring-alerting system that proactively helps to reduce risks caused by pilots. Initial usability and performance tests are satisfactory. Thus, this research contributes to the System Engineering area with advances in the design of critical real-time risk monitoring-alerting systems in a relevant domain of application.

The second paper is entitled "PolyGlot Persistence for Microservices-Based Applications" and is co-authored by Harshul Singhal, Arpit Saxena, Nitesh Mittal, Chetna Dabas, and Parmeet Kaur, all of them at Jaypee Institute of Information Technology, India. In this paper, the authors report the design and proof of concept of an architectural framework for heterogeneous databases using the Polyglot approach fostered by Microservices architectures. The authors implement a proof of concept and evaluate six performance metrics derived from the ISO/IEC 25010 standard - Systems and software engineering—Systems and software Quality Requirements and Evaluation (SQuaRE)—System and software quality models -. Results are satisfactory regarding other competitive solutions. Thus, this paper contributes to the Software Engineering area with innovative research on Microservices issues related to the utilization of multiple heterogeneous types of databases for web applications.

The third paper is entitled "A Constrained Static Scheduling Strategy in Edge Computing for Industrial Cloud System" and is co-authored by Yuliang Ma, Yinghua Han, Jinkuan Wang, Qiang Zhao, all of them at Northeastern University, China. In this paper, the authors elaborate on a scheduling system for Edge Computing tasks in industrial environments. Their design approach is a static schedule represented for an integer non-linear programming model, that is solved heuristically by a multi-elites-based co-evolutionary genetic algorithm (MEB-CGA). Results outperform competitive greedy algorithms usually used for this scheduling task. Thus, this research contributes to the Systems Engineering area with innovative scheduling models for a relevant problem found in industrial settings using Edge Computing.

The fourth paper is entitled "An Empirical Study on Software Fault Prediction Using Product and Process Metrics" and is co-authored by Raed Shatnawi, at Jordan University of Science and Technology, Jordanian, and Alok Mishra at Atilim University, Turkey. In this paper, the authors propose a process metric scheme derived from measurements during the evolution of software products to predict fault-proneness. Several classifiers are reported and evaluated with five large open-source software projects. Comparisons between classifiers with product metrics and with process metrics added to them resulted in better results with the inclusion of the process metric scheme. Thus, this research contributes to the Software Engineering area with advances in the prediction of failures in software products through the process analysis of their evolutions.

The fifth paper is entitled "Towards Higher Software Quality in Very Small Entities: ISO/IEC 29110 Software Basic Profile Mapping to Testing Standards" and is co-authored by Alena Buchalcevova, at the University of Economics, Prague, Czech Republic. In this paper, the author identified the problem of insufficient coverage for software quality and testing issues, in the ISO/IEC 29110 standard for Very Small Entities (VSEs), Basic profile. Consequently, the author elaborates on a mapping of the current status of the ISO/IEC 29110 standard, with the ISO/IEC/IEEE 29119-2 and ISO/IEC 20246 testing standards, and the Testing Maturity Model integrated (TMMi). Conceptual results show the covered issues as wells as the deficiencies. Thus, this research contributes to the Software Engineering area advances on software quality and testing issues for standards oriented to VSEs.

The sixth paper is entitled "Impact of the Learning-Forgetting Effect on Mixed-Model Production Line Sequencing" and is co-authored Qing Liu and Ru Yi, both of them at China Jiliang University, China. In this paper, the authors study the Learning-Forgetting effect, a relevant work behavior factor, experienced from production line workers on an MMPS. Experimental simulation-based methods were used for authors, and they identified that a small and balanced MPS was found to be effective for the mixed-model production to minimize the effect of learning and forgetting. The authors also found that the learning effect was associated with the number and similarity of the models in the MMPS, whereas the forgetting effect was associated with the number and similarity of the models in the interruption interval. Thus, this paper contributes to the Systems Engineering area with advances in worker behavioral effects on MMPS.

The seventh paper is entitled "Implementation of a Service Management Office Into a World Food Company in Latin America" and is co-authored by Teresa Lucio-Nieto at Universidad Iberoamericana, Mexico, and Dora Luz Gonzalez-Bañales at Instituto Tecnológico de Durango - Tecnológico Nacional de México, Mexico. In this paper, the authors report a Case Study conducted in a large international food company on the planning, implementation, operation, and evolution of a Service Management Office (SMO). The authors describe the contextual company situation, the SMO characteristics, the challenges and problems found, as well as generated benefits. Given the scarce empirical research on the IT Service Management domain, despite the high relevance, this paper thus contributes to the Information Systems area with valuable empirically-derived insights on the implementation of SMOs in large international companies.

The eight paper is entitled "Optimization of Cyber Defense Exercises Using Balanced Software Development Methodology" and is co-authored by Radek Ošlejšek, and Tomáš Pitner, both at Masaryk University, Czech Republic. In this paper, the authors analyze the problem of an inefficient process for producing Cyber Defense Exercises (CDXs), that are relevant for training purposes. The authors map this CDXs production problem with the software development process, and, adapt a balanced (plan-driven and agile) software development process from the SPEM standard meta-model, to guide more efficiently the elaboration of CDXs. Thus, this research contributes to the Software Engineering area with an innovative solution for elaborating valuable cybersecurity training materials.

The ninth paper is entitled "A CSP-Based Approach for Managing the Dynamic Reconfiguration of Software Architecture" and is co-authored by Abdelfetah Saadi, and Youcef Hammal, both at the University of Science and Technology Houari Boumediene, Algeria, and Mourad Chabane at the University of Nantes, France. In this paper, the authors address the problem of dynamic reconfiguration of distributed software components. The authors use a meta-model concept for reconfiguration structural checking modeled with a Constraint Satisfaction Problem (CSP) language, and the FDR model checking tool for the verification of reconfiguration behavioral consistency. The findings based on the implemented proof of concept tool suggest evidence of satisfactory results on architectural consistency and correct run-time software architectural behavior. Thus, this paper contributes to the Software Engineering area with advances in dynamic software architecture reconfiguration methods.

Finally, the tenth paper is entitled "Team Characteristics Moderating Effect on Software Project Completion Time" and is co-authored by Niharika Dayyala, and Kent A Walstrom, both at Illinois State

University, USA, and Kallol K. Bagchi, at The University of Texas at El Paso, USA. In this paper, the authors report an empirical survey study on the effects of several human factors -team turnover, team heterogeneity, and team member work experience – on the duration of software projects developed in diverse CMM levels. The authors used datasets from the International Software Benchmarking Standard Group. The authors found moderation effects on the studied independent variables on the software project duration. Thus, this research contributes to the Software Engineering area with relevant findings on the importance of human factors for the successful completion of software projects in the context of CMM levels.

Hence, we consider that this 27th IJITSA issue contributes –as all published past issues- to advance our scientific and practical knowledge of structures, mechanisms, and plausible solutions on relevant theoretical and real problems found in the fields of Information Technology, Software Engineering, Systems Engineering and/or Philosophy of System Sciences, from an interdisciplinary systems paradigm (Mora et al., 2008). High-quality research papers that contribute to this aim are welcome in this journal. Finally, we (Editor-in-Chief and Associate Editors of IJITSA) express our sincere gratitude to the paper's authors, reviewers, and IGI editorial staff, for their valuable participation and assistance. Finally, we recognize the invaluable academic contribution and support received by the IJITSA co-founder, Prof. Ovsei Gelman Muravchik, who regrettably passed away during the editorial processing of this IJITSA issue.

REFERENCES

Mora, M., Gelman, O., Frank, M., Paradice, D. B., Cervantes, F., & Forgionne, G. A. (2008). Toward an Interdisciplinary Engineering and Management of Complex IT-Intensive Organizational Systems: A Systems View. *International Journal of Information Technologies and Systems Approach*, *1*(1), 1–24. doi:10.4018/jitsa.2008010101