



## Editorial of the Special Issue from WorldCIST'20

Inês Domingues<sup>1</sup>  · Ana Filipa Sequeira<sup>2</sup>

Published online: 1 April 2022

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

This Special issue encompasses seven papers representing extended versions of best works accepted at the 8th World Conference on Information Systems and Technologies (WorldCIST'20) held in Budva, Montenegro between the 7th and the 10th of April, 2020.

WorldCIST is a global forum for researchers and practitioners to present and discuss the most recent innovations, trends, results, experiences and concerns in the several perspectives of Information Systems and Technologies.

The validation of a process for the shared understanding construction in a problem-solving activity is presented in (Agredo-Delgado et al. 2021). The authors are motivated by collaborative work, which needs effective communication, which in turn needs a shared understanding within the group. The proposed process contains a set of phases, activities, tasks, roles, and work products. The use case consisted in the resolution of a problem related to software process lines and the process was applied to 45 students, while other 15 students served as the control group. Although the process was found to be feasible and partly useful, some aspects need to be improved. These include the reduction of the necessary cognitive load and the incorporation of elements to monitor and assist in the shared understanding construction.

Besides understanding each other, it is important for people to share knowledge. In this way, Xiong and co-workers, in (Xiong et al. 2021), touch upon a “taboo” topic, to acknowledge and share failure! Motivated by the fact that sharing experiences of failure can play an important role in reducing the likelihood of repeated failure of subsequent innovation, the authors try to incentivize it using gamification. In this way, employees that share innovation failure will be rewarded with an incentive fee. After building a theoretical incentive model of innovation failure knowledge sharing, some experiments are performed. Insights made possible from the model include that the incentive coefficient is positively related to the shareable rate and the transformation ability and negatively related to the sharing cost and

---

✉ Inês Domingues  
inesdomingues@gmail.com

<sup>1</sup> Instituto Superior de Engenharia de Coimbra (ISEC), Coimbra, Portugal

<sup>2</sup> INESC TEC - Institute for Systems and Computer Engineering, Technology and Science, Porto, Portugal

risk aversion. Organizations can now use this model to design better mechanisms to incentivize innovation failure dissemination.

Visualization of indicators and progress is also of great interest. Martins et al. (Martins et al. 2021) created a Business Intelligence (BI) platform, supported by a Data Warehouse (DW) solution. The BI platform has three views, to show detailed results on a daily, weekly, and monthly basis, thus allowing the possibility to compare the results between subcontractors and between the areas where the organization operates. The platform allowed to give visibility to employees and subcontractors of the results of a set of Indicators, as well as the evolution of the Monthly Bonus, to allow and offer the possibility to improve and evolve, strengthening the cohesion between internal and external collaborators, and maximizing the possibility of obtaining a positive return and high customer and subcontractor satisfaction.

The objective of the exploratory study presented in (Pereira et al. 2021) is to understand how Business process management (BPM) can be used to improve Information Technology Service Management (ITSM) processes. Data was gathered from documentation, archival records, interviews, and focus groups with a team involved in IT support service. Three best practices were identified from the gathered evidence as to the best suited for the improvement of the time performance of the incident management (IM) process, namely, activity automation, activity elimination, and integral technology. Using a simulation tool for business processes, it was revealed that the use of these best practices eliminates the effort required in the first support level and reduces in 10.7% the average processing time in the second support level.

Pereira, Carvalho, and Rocha (Pereira et al. 2021) try to evaluate the information systems (IS) present in Higher Education Institutions (HEIs). After concluding that there is no comprehensive maturity model that embraces all aspects of information management in HEIs, the authors challenge themselves to develop one. A multi-case study to interview a diverse group of seven IS managers from five Portuguese HEIs was adopted and a two-dimensional architecture is proposed for the maturity model. The horizontal dimensions relate to cross-cutting processes and activities in all vertical dimensions. In this way, eleven vertical and nine horizontal dimensions were identified and clearly characterized in the paper.

Concerns related with leadership in the context of University 4.0 are discussed in (Rocha et al. 2021). The provided thematic synthesis includes 224 papers published between 1981 and 2019. One of the observations is that since 2000, the number of publications has grown exponentially. The Bibliometrix package grouped the 74 selected manuscripts in 5 clusters, namely, (1) the importance of leadership in learning using ICT, (2) transformation of learning environment in higher education, (3) factors influencing the adoption of the technology, (4) transformation of the learning environment in higher education, and (5) teaching methods in higher education and its future impacts in professionals. The authors conclude that the interest in the topic is increasing, but there is still scope for further research.

The simulation of the spread of the COVID-19 disease in a community is made in (Balsa et al. 2021). In technical terms, the authors applied the Monte Carlo method to a Susceptible-Exposed-Infective-Recovered (SEIR) stochastic epidemic model. The method allows to simulate the spread of COVID-19 in a medium-sized

community (20 000 individuals) and to study the effect of preventive measures such as quarantine and vaccination. Vaccination acts directly on the compartment of the susceptibles, reducing its number. As a result, there will be fewer people infected. Quarantine acts only on infectious ones, isolating them and thus preventing them from infecting others. The results show that an effective combination of vaccination with quarantine can prevent the appearance of major epidemic outbreaks, even if the critical vaccination coverage is not reached.

As can be seen, this Special Issue is very much focused on the development of techniques and methods to improve workflows in companies. These works include important topics such as the improvement of communication between workers (Agredo-Delgado et al. 2021), visualization of Key-Performance Indicators (Martins et al. 2021), optimization of workflows in IT (Pereira et al. 2021), and the sharing of failed experiences (Xiong et al. 2021). The works in (Pereira et al. 2021) and (Rocha et al. 2021) are concerned with the academic environment. In (Pereira et al. 2021) the design stage of a maturity model is developed according to the Mettler methodology while in (Rocha et al. 2021) a systematic literature review on leadership within University 4.0 is made. Finally, a health problem is studied in (Balsa et al. 2021), where COVID-19 is modeled and guidelines for the enforcement of quarantine are provided.

## References

- Agredo-Delgado V, Ruiz PH, Mon A, Collazos CA, Moreira F, Fardoun HM (2021) Applying a process for the shared understanding construction in computer-supported collaborative work: an experiment. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-021-09326-z>
- Balsa C, Lopes I, Guarda T, Rufino J (2021) Computational simulation of the COVID-19 epidemic with the SEIR stochastic model. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-021-09327-y>
- Martins A, Abbasi M, Martins P, Sá F (2021) BigData oriented to business decision making: a real case study in constructel. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-021-09330-3>
- Pereira RH, de Carvalho JV, Rocha Á (2021a) Architecture of a maturity model for information systems in higher education institutions: multiple case study for dimensions identification. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-021-09342-z>
- Pereira R, de Vasconcelos JB, Rocha Á, Bianchi IS (2021b) Business process management heuristics in IT service management: a case study for incident management. *Comput Math Organ Theory* 27(3):264–301. <https://doi.org/10.1007/s10588-021-09331-2>
- Rocha Á, Gonçalves MJA, da Silva AF, Teixeira S, Silva R (2021) Leadership challenges in the context of university 4.0. A thematic synthesis literature review. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-021-09325-0>
- Xiong Z, Wang P, Wu C (2021) How to encourage innovation failure knowledge sharing in virtual research organization: an incentive mechanism based on game theory. *Comput Math Organ Theory*. <https://doi.org/10.1007/s10588-020-09323-8>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Inês Domingues** graduated in Applied Mathematics in the School of Sciences at the University of Porto in 2004, completed a Masters degree in Electrical and Telecommunications Engineering at Aveiro University in 2008 and finished the PhD in Electrical and Computer Engineering in the School of Engineering at the University of Porto in 2015 (Cum Laude). She is currently an Assistant Professor (Professor Adjunto) at DEIS-ISEC and Researcher at Centro de Investigação do Instituto Português de Oncologia do Porto (CI-IPOP). She teaches across the domain of Artificial Intelligence, is part of the jury for accreditation of competences in the Informatics Engineering degrees (LEI, LEI-PL and LEI-CE), and of the commission for the characterisation of DEIS-ISEC. She is also president of APRP (Associação Portuguesa de Reconhecimento de Padrões) and Associate Editor of IEEE Access and Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization.

**Ana Filipa Sequeira** holds a PhD in Electrical and Computing Engineering obtained from the Engineering Faculty of University of Porto, Portugal in 2015. Ana also holds a Master degree in Mathematical Engineering and a 5-years degree in Mathematics, both obtained from the Mathematics Department of the Science Faculty of the University Of Porto, Portugal. Ana collaborated as a researcher at INESC TEC, a R&D institute affiliated to the University of Porto, within the Visual Computing and Machine Intelligence Group (VCMI) during her PhD studies. The post-doctoral research was pursued at the University of Reading, UK. Currently, Ana is back at INESC TEC as a Research Assistant. Throughout her research activity, Ana developed expertise not only in computer vision/image processing topics but also in the application of diversified machine learning techniques, from classic to deep learning methodologies.