Special Issue - Computers in Industry

Digital technologies to support lifecycle management of smart product-service solutions

Objectives

While digitalisation is at the heart of the strong research stream on Factory of the Future and Industry 4.0, the convergence between digitalization and business innovations through servitization leads to a new and already very active area of research on *Digital Servitization*. Part of this transition are Product-Service-Systems (PSS), which have generated a large amount of research work over the past decade and which have recently evolved towards the '*smart PSS*' concept, by integrating artificial intelligence and digital supports. These new generation Product-Service-Systems are not only smart in terms of functionalities for the final users, but also smarter and smarter along most of the phases of their proper life cycle, thus providing added-value to most of the actors of the ecosystem in addition to the final user: smart at design time, smart for installation and delivery phase, smart for usage and maintenance, smart for end-of life. Digital Servitization opens opportunities for multi-dimensional and multi-actor value exchanges, increasing its strategical innovative impact for industrial companies.

This Special Issue is launched as an extension of the preliminary state of the art 'Digital technologies in product-service systems: a literature review and a research agenda' already published by Computers in Industry and currently available [1]. This literature review presents the key concepts, scope and issues of this Special Issue more extensively. It emphasizes a large research agenda on Digital Servitization at 3 levels : (i) Engineering challenges to develop, experiment and validate new engineering capabilities for smart PSS, (ii) Managerial issues to support firm's innovation strategies and (iii) Conceptual researches to build a theoretical background of research on Digital Servitization. This special issue is positioned on the first of these three levels: the deployment of the full potential of digitalization to support an integrated design and life cycle management of smart PSS. The potential of digital solutions to support value-creation is addressed in a broad sense: digitalisation is today mature to address distinct issues of PSS deployment, not only the *PSS solution* life cycle traceability, but also the collaborative *PSS delivery network* configuration and management, as well as the *PSS Ecosystem* perception and change management. The interoperability among various key technologies able to support smart PSS (Artificial Intelligence, IoT, Cyber-Physical-Systems, Digital Twin, Cloud Manufacturing, etc…) opens a large avenue to improve lifecycle management of integrated product-service solutions.

The call for papers is open to both theoretical and applied research papers, intending to gather scientific papers illustrating distinct complementary aspects of the added-value of digitalisation, when supporting life cycle management of smart Product-Service-Systems.

Topics

- Data-Driven PSS engineering and management
- IT-based decision making for smart PSS value network design and engineering
- Modelling frameworks and model-based integration of Product & Service Life Cycle management
- Digital solution for uncertainty and risk management along product-service value network's life cycles
- Digital solution, artificial intelligence and digital twins for PSS delivery configuration and management
- Data management & decision-making to support the delivery of Cyber-Physical System-based PSS
- Data management for Product-Service Ecosystems
- Digital technologies for knowledge management along the PSS lifecycle phases
- Data-based decision making and decision support system for Smart PSS operations
- Influence of a dynamic digitalized ecosystem and lifecycle on Smart PSS requirements and engineering
- New competence and new stakeholder roles along the life cycles of Smart PSS ecosystems
- Digital management of PSS solutions for XaaS (e.g. Manufacturing as a Service) models

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Guest editors

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Dead lines proposed

- **Submission : March 2021, 31st**
- **First notification of acceptance : July2021.**

Reference

[1] F.Pirola X.Boucher, S. Wiesner, G. Pezzotta, Digital technologies in product-service systems: a literature review and a research agenda, Computers in Industry 123 (2020) 103301.

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