

Invited Session on “**Proactive-reactive methods of maintaining production and development in crisis periods**”

Special session identification code: _____

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Session Chairs:

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Objectives:

The increasing adaption of methods from computational intelligence, biologically inspired computing, and optimization in engineering disciplines such as mechatronics, production or logistics enables the development of a new class of approaches allowing to prototype the proactive-reactive operation scenarios of manufacturing systems. This kind of scenarios are distinguished by the endogenous adaption of objectives as reaction to changing influences and the resulting autonomous adjustment of parameters or structure and consequently of the system's behavior.

The objective of this Invited Session is to develop crucial possible scenarios for self-healing company in the in cases of the unexpected occurrence of the crisis and next, using artificial intelligence methods and tools to build intelligent simulation models showing possible scenarios of conduct in crisis situations under given conditions. In that context it focuses on:

- the process of a fully automated acquiring data, information and expert knowledge within a manufacturing, then formalizing and transferring it.
- building and application of data-based models for data intelligence in production.
- simulation models showing possible scenarios of conduct in crisis situations under given conditions.
- modeling and implementing interoperability in the cyber-physical manufacturing systems.

Scope:

The session covers all theoretical and application oriented aspects of intelligent manufacturing systems. Topics of interest include, but are not limited to:

- Self-organizing systems and emergent behavior.
- Self-configuration and self-diagnosis IoT methods for manufacturing shop floors
- Self-optimization models for scheduling and sequencing manufacturing shop floors
- Self-healing systems and preventing errors before they occur.
- Health-aware systems preventing a premature failure of their components.
- Smart maintenance with predictive and prescriptive capabilities.
- Collaborative and sustainable business models for production systems.
- Digital twins for decision making in Industry 4.0 era.
- Control algorithms for smart part logistics.
- Smart & collaborative product-service systems.
- Collaborative e-services for sustainable networks.
- Crisis modelling and crisis recovery methods.
- Agility, resilience and sustainability of networked organization.
- Risks, performance, and disruptions in collaborative networked systems.
- Smart and resilient supply, production, or distribution networks.
- Collaborative energy systems, manufacturing and factories of the future.
- Mobility networks and autonomous vehicles.
- Proactive-reactive planning for dynamic environment.
- Intelligent support systems for manufacturing decision making.
- Smart maintenance with predictive and prescriptive capabilities.
- Bio-inspired manufacturing, theory of complexity, swarm intelligence, and self-adaptation.

Contributions containing of both: the theoretical and practical results obtained in this area are welcome.

Submission:

All papers must be submitted electronically using the IFAC PaperPlaza conference manuscript management system: www.ifac.papercept.net. Submissions must be prepared according to IFAC format, see: ifac.papercept.net/conferences/support/support.php Please submit your contribution online by 31 October, 2023. Submission details are available on the conference website. All submissions must be written in English.

All papers that conform to submission guidelines will be peer-reviewed by IPC members. The corresponding author submits the paper online (pdf format) as **an invited session paper**. Submission as an invited paper requires the **invited session code**.

Important dates:

October 31, 2022	Draft manuscript submission
February 21, 2023	Notification of acceptance/rejection
March 31, 2023	Deadline for the final submission