

## Title: Most recent results of EU R&D&I projects

**Chair: Dr. Botond Kádár**

**Time slot: 8<sup>th</sup> June, 15:45 – 18:00**

### Presentations

#### **15:45-16:05: DigiPrime**

Title of project: **DigiPrime "Digital Platform for Circular Economy in Cross-sectorial Sustainable Value Networks"**

Link: <https://cordis.europa.eu/project/id/873111>

Presenter: **Prof. Marcello Colledani**, Politecnico di Milano, project coordinator

#### **Abstract:**

DigiPrime has the mission to develop a new concept of Circular Economy digital platform overcoming current information asymmetry among value-chain stakeholders, in order to unlock new circular business models based on the data-enhanced recovery and re-use of functions and materials from high value-added post-use products with a cross-sectorial approach. DigiPrime will create and operate a federated model of digital platforms for cross-sector business in the Circular Economy. Nodes of the federation will offer interoperable functions and data, that can be accessed by other nodes, combined with local data and services, that are not exposed outside; connectors and open interfaces enable easy integration of new services, provided by third parties, that are not made accessible outside. Specific attention will be devoted to create trustable data sharing mechanisms, preserving the confidentiality of business-critical data. Security and Sovereignty of information are guaranteed by IDSA (Industrial Data Space Association)-based solutions for on-demand and controlled sharing of data among organizations, regulated by smart contracts and tracked by block-chain. DigiPrime will be thoroughly validated through 6 cross-sectorial pilots, further detailed in 20 pilot use-cases covering 5 different European industrial sectors (automotive, renewable energy, electronics, textile, construction), and by additional pilots in new sectors, funded through an Open Call mechanism.

#### **16:05-16:25: ASSISTANT**

Title of project: **ASSISTANT "leArning and robuSt deciSIon SupportT systems for agile mANufacTuring environments"**

Link: <https://cordis.europa.eu/project/id/101000165>

Presenter: **Prof. Alexandre Dolgui**, project coordinator

#### **Abstract:**

ASSISTANT aims to provide a set of AI-based digital twins system that helps process engineer and production planner to operate collaborative mixed-model assembly lines based on the data collected from IoT devices and external data sources. Such a tool will help planners to design the assembly line, plan the production, operate the line, and improve process tuning. In addition, the system monitors the line in real-time, ensures that all required resources are available, and allow fast re-planning when necessary. ASSISTANT aims to make cost-effective

decisions while ensuring product quality, safety and well being of the workers, and managing the various sources of uncertainties. The resulting digital twin systems will be data-driven, agile, autonomous, collaborative and explainable, safe but reactive.

#### **16:25-16:45: MAS4AI**

Title of project: **MAS4AI - Multi-Agent Systems for Pervasive Artificial Intelligence for assisting Humans in Modular Production**

Link: <https://cordis.europa.eu/project/id/957204>

Presenter: **Dr. Achim Wagner**, German Research Center for Artificial Intelligence, Department of Innovative Factory Systems

**Abstract:**

MAS4AI aims at developing and testing a distributed and interoperable AI architecture based on multi-agents technology in such a way that it contributes to hyper-agility of European factories through modular and flexible production while at the same time keeps the humans in control of the AI technology and creating impact by spreading the technology over large groups of European manufacturing companies. The concept and methodology illustrates how Multi-Agent-Systems can be incorporated for distributing AI components in different hierarchy layers based on a holonic approach. Thus, different types of AI agents and combinations them can be realized using knowledge-based representations, hierarchical planning of production processes and model-based machine learning techniques.

#### **16:45-17:05: DIH4CPS**

Title of project: **DIH4CPS - Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs**

Link: <https://cordis.europa.eu/project/id/872548>

Presenter: **Dr Gabor Vicze**, innomine Group

**Abstract:**

The initiative for Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs (DIH4CPS) help European enterprises overcome the innovation hurdles and establish Europe as a world leading innovator of the Fourth Industrial Revolution. DIH4CPS creates an embracing, interdisciplinary network of DIHs and solution providers, focused on cyber-physical and embedded systems, interweaving knowledge and technologies from different domains, and connecting regional clusters with the pan-European expert pool of DIHs. Within the presentation a successful CPS implementation will be presented at a Hungarian SME.

#### **17:05-17:25: CO-VERSATILE**

Title of project: **CO-VERSATILE - Adaptive and resilient production and supply chain methods and solutions for urgent need of vital medical supplies and equipment**

Link: <https://cordis.europa.eu/project/id/101016070>

Presenter: **Dr. Tamás Kiss**, University of Westminster

**Abstract:**

In the fight against COVID-19, manufacturing and distributing vital medical equipment became a major challenge. Unforeseen spikes in demand for essential medical supplies have been causing a greater urgency for supply chain optimisation and for deploying innovative approaches to scale up flexible and sustainable production methods. To protect European citizens and address the needs of the healthcare sector on short notice, the EU-funded CO-VERSATILE project aims to prepare Europe for managing pandemics by elevating the adaptability and resilience of the manufacturing sector. The goal is to offer manufacturing firms readily available and customisable solutions - accessible via a cloud-based marketplace, Digital Technopole - that enables them to boost the production of medical equipment and respond quickly in times of crises.

**17:25-17:45: STAR**

Title of project: **STAR "Safe and Trusted Human Centric Artificial Intelligence in Future Manufacturing Lines"**

Link: <https://cordis.europa.eu/project/id/956573>, : <https://star-ai.eu/>

Presenter: **Dr. John Soldatos**, INTRASOFT International, STAR Technical manager

**Abstract:**

The H2020 **STAR** project researches and integrates leading-edge AI technologies like active learning systems, simulated reality systems, explainable AI, human-centric digital twins, advanced reinforcement learning techniques and cyber-defence mechanisms, to allow the safe deployment of sophisticated AI systems in production lines. This talk will provide a brief overview of the STAR project with emphasis on its Trusted AI technologies. It will also shed light on how STAR uses Explainable Artificial Intelligence (XAI) for explaining AI outcomes to humans, data augmentation for supporting simulated reality, as well as the development of cyberdefence techniques against AI systems.

**17:45-18:00: AI-PROFICIENT**

Title of project: **AI-PROFICIENT, Artificial Intelligence for Improved PROduction effICIENCY, quality and maiNTenance**

Link: <https://cordis.europa.eu/project/id/957391>, <https://ai-proficient.eu/>

Presenter: . **Prof. Benoit IUNG**, project coordinator

**Abstract:**

The manufacturing and process industry can benefit from artificial intelligence (AI) technologies. By combining human knowledge with AI capabilities, the EU-funded AI-PROFICIENT project will develop proactive control strategies to improve manufacturing processes in terms of production efficiency, quality and maintenance. The overall goal is to increase the positive impact of AI technology on the manufacturing process as a whole, while keeping the human in a central position, assuming supervisory (human-on-the-loop) and executive (human-in-command) roles. By identifying the effective means for human-machine interaction, the project will assist Europe's manufacturing and process industry to improve production planning and execution.