



# PRO-VE 2023

## 24rd IFIP/SOCOLNET Working Conference on Virtual Enterprises Resilient and Responsible Collaborative Networks

### PRO-VE 2023 Special Session

#### *Emerging approaches for enterprises and human integration towards Industry 5.0*

#### **Special Session Sponsored by**

IFIP WG 5.5 - Cooperation infrastructure for Virtual Enterprises and electronic business

IFIP WG 5.12 - Architectures for Enterprise Integration (*being requested*)

#### **Aim and Scope**

The digitalized industry resulting from the recent 4.0 transition is confronted with high integration challenges. In the increasingly adopted data-driven strategy, data-based, and environmentally aware economy, effective companies' management and control should more and more rely on the quality that many heterogeneous and distributed entities generate, transmit, store, access, consume, reason, learn, and take decisions upon massive volumes and often real-time data.

Newer geopolitical, societal, and environmental requirements have been pushing companies to an upper landing place: Industry 5.0<sup>1</sup>. It is basically grounded on three main dimensions: resilience, sustainability, and human centricity. In what enterprises integration is concerned, the integration of all computing, human, and physical 'assets' involved in all sorts of production and business transactions should be carried out with more flexibility and agility to cope with both the intrinsic needs of more dynamic supply chains, value chains, and virtual organizations, as well as the need to generate reliable data for economic, social, and environmental sustainability analyses and decision-making. Humans should be provided with working environments that put them at the centre of decisions, helped by cognitive systems supporting more symbiotic interfaces and new ways of interactions.

In order to support this, companies and networks must be properly integrated and interoperate, aligned to their business strategies and business models, also regarding issues such as human preparedness, integration and digitalization maturity and roadmaps, legal and technical regulations, ICT standards and cybersecurity, architectures scalability, open innovation and digital ecosystems, people and systems autonomies, and systems and technologies life cycles.

This means integrating companies' business processes (both intra and interorganizational, in vertical and horizontal transactions among different sectors and actors), systems, machines and production entities, and people (at all companies' levels), that should be able to efficiently communicate with each other respecting different QoS restrictions, different (tele)communication protocols and security schemas, different formats, data structures and semantics, different technologies from different generations and standards (including new human-machine interaction interfaces), and different computing and physical entities (as cloud, fog, edge, industrial networks, sensors, databases, workflow / orchestration systems, IoT devices, drones and logistics systems, smart devices and wearables, cyber-physical systems and reconfigurable manufacturing systems, digital twins, metaverse / immersive working environments, legacy and on-premise systems, service-oriented-based systems, and collaborative & remote human working computing environments). Besides that, it should consider that several systems are deployed in different platforms, portals, architectures, and cloud-based infrastructures (usually managed by third parties), accessed as SaaS and IaaS via multiple APIs from diverse digital ecosystems.

GDPR and governance issues impose tremendous care on where data is placed and how it can be legally captured, stored, kept, updated, deleted, secured, filtered, made available, and accessed by and exchanged between systems, machines, and humans in different situations, also considering different requirements depending on the involved domain areas (e.g., manufacturing, agribusiness, smart cities, healthcare, logistics, oil and gas, etc.).

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<sup>1</sup> Breque, M.; De Nul, L.; Petrides, A. Industry 5.0 - Towards a Sustainable, Human-Centric and Resilient European Industry; European Commission: Brussels, Belgium, 2021, in <https://op.europa.eu/en/publication-detail/-/publication/468a892a-5097-11eb-b59f-01aa75ed71a1/language-en>



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Designing enterprise integration strategies that can cope with all those mentioned requirements represents a very complex endeavour and more holistic approaches, at many dimensions. Classical Enterprise Architecture's approaches haven't been able to handle all that at all, including big obstacles to be easily adopted by SMEs. Next generation of enterprises must support higher levels of flexibility (architectural, business models, business processes, functional and non-functional aspects, responsibilities, and governance changes), agility, evolution, resilience, cost-efficiency, plug & play, and non-providers lock-in in their architectures. Yet, it should include better support to integrate humans and give human-machine teams proper and adaptive levels of autonomy for some tasks. This is a need for better Human-AI collaboration in the engineering of resilient and responsive collaborative systems.

The goal of this Special Session is to bring contributions and new visions from researchers and practitioners about new and emergent integration and interoperation strategies, approaches, models, methodologies, methods, architectures, technologies, and techniques focused when companies work in Collaborative Networks under a human-centric perspective.

### Session Organizers

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### Topics/ Keywords

Networks, companies, computing systems, business processes, cyber-physical systems, human integration and interoperation; human-centricity; Industry 5.0; Collaborative Networks; Autonomous, resilient, and evolving systems and architectures.

### Submission procedure and dates

Special sessions are included in the main Conference and follow the same reviewing process.  
Short abstracts submission (100-150 words): March, 27<sup>th</sup>, 2023  
Full papers submission: April, 24<sup>th</sup>, 2023  
Acceptance Notice: June, 5<sup>th</sup>, 2023  
Final version Submission: Jun 19<sup>th</sup>, 2023

Acceptance of papers is based on the **full paper** (from 8 to 16 pages). Each paper will be evaluated by three members of the International Program Committee.

Selected papers will be invited for a Special Issue of an international journal.

When submitting on the web site, please indicate the name of the special session.

Submission procedure via *EasyChair* is available on: <http://www.pro-ve.org>, with copy by email to the chairs of the special session.