European Competence Centre

Synesis

IEC-61499

European Competence Centre for IEC-61499

Launch event, 18-19 October 2016, Milan

LaGare Hotel | Via G.B. Pirelli 20

Building a digital platform to foster a European ecosystem for distributed automation.

Program

Tuesday 18 October: "Technological enablers for a distributed automation digital platform"

09:00 – 09:30	**Registration**

09:30 – 09:45	**Welcome and opening**

09:45 – 10:15	**Keynote Speech "Daedalus Initiative and the European Competence Centre for IEC-61499"**

Creating an ecosystem for industrial automation, based on the new technologies for distributed intelligence coming from the ICT domain, means being capable of bringing into the market the awareness of how such solutions can foster opportunities for revolutionary applications.

Understanding and accepting the major issue of attracting users into a digital platform, Daedalus' answer is the creation of a European Competence Centre to push the envelope of IEC61499-based CPS as a disruptive innovation and become the catalyser to accelerate its widespread acceptance at European level, hosting and incubating its Digital Marketplace.

- ▪ Franco A. Cavadini, Chief Technical Officer, Synesis, Italy

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10:15 – 13:00	**Panel on "Distributed and scalable control solutions for flexible and reconfigurable manufacturing systems"**

The panel will be moderated by Valeriy Vyatkin, Chaired Professor of Dependable Communications and Computations at Luleå University of Technology and Chair of the IEEE Technical Committee on Industrial Informatics.

Panel summary:

The core conceptual idea launched at European level by the German "Industrie 4.0" initiative is that embedding intelligence into computational systems distributed throughout the factory should enable vertical networking with business process at management level, and horizontal connection among dispersed value networks. But how should the transition from legacy PLCs be managed? How the IEC-61131 languages are evolving? In distributing intelligence within shop floors, can real-time become an issue?

The discussion will cross the main topics of relevance for deploying reconfigurable manufacturing systems based on distributed automation, explaining the choice of Daedalus in focusing on IEC-61499.

- Gernot Kollegger, Head of R&D, nxtControl, Austria;
- Horst Mayer, Managing Director, nxtControl, Austria;
- Giuseppe Montalbano, Head of R&D, Synesis, Italy

| 13:00 – 14:30 | Networking lunch |

14:30 – 16:30   Panel on "Simulation and Control of hierarchical systems of CPS"

The panel will be moderated by Andrea Ballarino, head of "Machine and Manufacturing Control Systems" research group in CNR-ITIA, Institute of Industrial Technologies and Automation, he is expert in methodologies and tools for distributed automation systems design and development, open control solutions, adaptive automation systems, model predictive control and hybrid control system.

Panel summary:

It is common understanding that the full adoption of the CPS paradigm relies on how its connection and, most of all, extension into the cyber-world is managed and exploited to augment the overall functionalities of that manufacturing system. Enabling seamless integration between the automation platform and external modelling and simulation tools is therefore essential to facilitate model-based design, testing and validation of CPS. In fact, when dealing with the hierarchies of aggregated CPS envisioned by Industrie 4.0, locally focused and "greedy" controls fail to achieve the full utilization benefits that they could enable if conceived under the more effective concept of optimizing the overall behaviour of the plant

This panel will focus its discussion on how an appropriate usage of modelling, simulation and advanced control techniques– in a shop floor governed by a CPS-based distribution of intelligence – can lead to a new generation of "self-aware" devices and systems. Synergies with other complementary research initiatives will be explored.

- Alessandro Brusaferri, R&D Manager, CNR-ITIA, Italy
- Luca Gambardella, Director, SUPSI-IDSIA, Switzerland
- Diego Rovere, Head of R&D, TTS, Italy

| 16:30 – 17:00 | Coffee Break |

17:00 – 18:30   Panel on "Transforming a technological platform into an ecosystem for industrial automation"

The panel will be moderated by Paolo Pedrazzoli, Head of the Sustainable Production System Lab, SUPSI – DTI, he holds the chair of "Simulation and modelling of manufacturing system" and he is active in research activities, where he has been coordinator of several EU-funded projects, most notably of the Pathfinder road-mapping initiative and the MAYA Horizon 2020 project on multi-disciplinary simulation.

Panel summary:

Ensuring success of Daedalus initiative is not just a matter of scientific excellence, but requires comparability of project results with what is already on the market, as much as broad applicability of its outcomes thanks to a wide comprehension of industry-driven requirements. By involving explicitly an interest group of scientific and technical experts, both from the research and the industrial world, as external committee to the project and through active support to standardization efforts of IEC-614999, Daedalus will push forward at European level its platform as one of the reference.

The discussion of the panel will explore how to exploit this opportunity, proposing a digital marketplace for the diffusion of applications and software components based on the IEC-61499 technologies.

- Arnold Kopitar, Managing Director, nxtControl, Austria
- Marco Colla, Director, ISTePS-SUPSI, Switzerland
- Valeriy Vyatkin, Chaired Professor, Luleå University of Technology, Finland

18:30 – 20:00   **Networking aperitif**

Wednesday 19 October: "Competence Centre, showcases and ecosystem"

09:00 – 09:15   **Registration and welcome**

09:15 – 10:00   **Keynote Speech "The issues of technology transfer, the reasons for a Competence Centre"**

"Industry 4.0", independently from where it originated as a definition, means that we are on the verge of a new industrial revolution, where manufacturing paradigms will be reshaped thanks to the chances offered by ICT technologies. Daedalus proposes a technological platform, based on IEC-61499, that has required many years of innovation effort, but now its uptake depends on the effectiveness in fostering ideas directly within the market.

How can this be reached? Which role should the Competence Centre play? How does this relate to the technological foundation of Daedalus?

- Franco A. Cavadini, Chief Technical Officer, Synesis, Italy
- Enrico Callegati, R&D Funding Manager, CRIT-Research, Italy

10:00 – 13:00   **Five Daedalus showcases to incubate reference application scenarios**

One of the main strengths of Daedalus is that it will not only propose the implementation of the Digital Platform, but it will support an embryonal stage of the Automation Ecosystem it envisions, involving explicitly future Complementors through the deployment of five proof-of-concepts applications of the platform.

The rationale for the selection of these testbeds has taken into account the need of covering a sufficiently wide diversity of use-cases of industrial automation applications development, representative of a significant spectrum of dynamics of involvement of the corresponding Complementors.

This session will thus explore Daedalus' showcases:

- Device level: "Complex automation devices transformed into IEC61499-compliant CPS", QBRobotics, Italy
- Agent level: "IEC-61499 encapsulation of AGVs to become mobile agents", Bluebotics, Switzerland
- Equipment level: "Distributed robotic picking to optimize intralogistics tasks", ACT-OR, United Kingdom;
- Plant level: "An industrial pilot plant for de-manufacturing optimized and re-configurable in real-time", CNR-ITIA, Italy;
- Factory level: "IEC-61499 'Factory-in-a-room': integration of industrial, building and grid automation in a single framework", Luleå University of Technology, Finland.

13:00 – 14:30   **Networking lunch**

14:30 – 17:00   **Panel on "IEC-61499 Ecosystem: fostering innovation within the market"**

The panel will be moderated by Alexander Nussbaumer, Head of Sales&Marketing at nxtControl, and Giuliano Ceseri, CEO at Prometeo.

Panel summary:

The strength of an innovative industrial platform such as that proposed by Daedalus Initiative is directly proportional to the scope of the ecosystem that decides to support its adoption within the market. This means that the success or failure of the IEC-61499 standard and technologies depend on the capability of demonstrating to companies that this approach is the answer to their needs of Industry 4.0 solutions.

In this final open panel of Daedalus Conference, relevant representatives from international Companies will propose their point of view on this opportunity, fostering discussion among key industrial automation stakeholders such as Schneider Electric, HMS Industrial Networks, Schunk, SCM Group, and many other keynote speakers and participating partners.

17:00 – 17:30 **Keynote Speech "Call for ideas and creation of an industrial interest group"**

The explicit involvement of companies, developers, research centres and other potential market innovators is essential to guarantee the success of Daedalus platform for distributed automation. If providing access to the project showcases with a completely open philosophy is a first step in the right direction, other initiatives must follow to generate interest around the platform and foster relevant opportunities.

The two-day event therefore paves the way for the incoming proposals of the Competence Centre, towards an ever increasing market presence of IEC-61499.

- Franco A. Cavadini, Chief Technical Officer, Synesis, Italy

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17:30 – 18:30 **Conference closure and networking aperitif**

Credits and Contacts

The Daedalus initiative and the creation of its Competence Centre is the result of a long path of research and innovation of its feeding partners coordinated by Synesis and supported by the European Commission FoF – Factory of the Future PPP.

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- N° 314805, Factory-Ecomation
- N° 637245, EFFECTIVE
- N° 723248, DAEDALUS

For any further information about the initiative or the Competence Center, you can refer to:

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