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Leibniz Institute
for High
Performance
Microelectronics



Alliance for AI, IoT and Edge Continuum Innovation

Programme of the 2nd AIOTI Annual Workshop on Semantic Interoperability for Digital Twins

Venue: IHP GmbH - Leibniz-Institut für innovative Mikroelektronik, Im Technologiepark 25
15236 Frankfurt (Oder)
Closest Airport: Berlin

Dates: Tuesday 24, and Wednesday 25 March 2026 (full days)

Acknowledgements

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Day 1 - 24 March 2026

08:30 - 09:30 Registration

09:30 - 10:30 **Introduction [Martin Bauer, NEC Laboratories Europe]**

Gerhard Kahmen, IHP
Introduction by the Host [15]

Krzysztof Piotrowski, IHP
Introduction of SmartRiver² project [5]

Martin Bauer, NEC Laboratories Europe
Goals of the Workshop [15]

Cornelis Bouter, TNO
Overview of AIOTI and Semantic Interoperability Group with its activities [10]

Martin Bauer, NEC Laboratories Europe
Overview of ETSI TC Data and its activities [10]

10:30 - 11:00 Coffee Break

11:00 - 12:30 **Session 1 - Manifesto for Reusable Ontologies [Antonio Kung, Trialog]**

María Poveda-Villalón, Universidad Politécnica de Madrid
Towards a FAIR-by-design ontology development framework [15+5]

Raúl García-Castro, Universidad Politécnica de Madrid
On the need for ontology hub interoperability [15+5]

Amelie Gyrard & Henon Mengistu Lamboro facilitators, Trialog
Panel: Cornelis Bouter, Mahda Noura, Raul Garcia, Martin Serrano, Zehor Hounas
Panel on Manifesto [50]

The panel session will bring together perspectives from academia, standardisation bodies, and industry. A high-level orientation on why we need such a manifesto will be discussed, and the viewpoint from the energy domain will also be provided.

12:30 - 13:30 Lunch Break

13:30 - 15:00 **Session 2 - Semantic interoperability and AI [* Dave Raggett, W3C/ERCIM, Martin Bauer (Moderator)]**

* Dave Raggett, W3C/ERCIM
Keynote: Bridging the gap between language and deterministic processing [25] (remote)

Lionel Beneteau, SLB
Ontology-Enabled Synthetic Digital Twins for Agile Development [15+2]

Piotr Sowiński, NeverBlink
Streaming knowledge graph-based digital twin for biodiversity restoration [15+2]

Cornelis Bouter, TNO
LLMs for Ontology Engineering Whitepaper [10]

Panel [20]

15:00 - 15:30 Visit to the IHP Cleanroom (max. 25 people)

15:30 - 16:00 Coffee Break

16:00 - 17:00 **Session 3 - Semantic Modelling of Digital Twins (1) [Martin Bauer, NEC]**

Robert David / Vladimir Alexiev, Graphwise

DPP Modeling: Ontologies, AAS, and Convergence [15+5]

Fernando Cassola, INESC TEC

From Manifests to Orchestration: SHACL Contracts and RDF Choreographies for Federated Digital Twins [15+5]

Marco Amaro Oliveira, INESC TEC

Extending Semantic Interoperability to Executable Workflows in Digital Twin Systems [15+5]

17:00 - 18:00 **Session 4 - Fishbowl [Cornelis Bouter, TNO]**

The idea is that a handful of participants start the discussion, and that they leave the fishbowl-circle to give the floor to other participants. The session is moderated by someone who injects discussion points and summaries other points.

Possible topic (Andreas Neumann, Freelance Catalyst): "Are the existing standards sufficient or are new standards for semantic interoperability needed?"

20:00 Dinner in Villa Casino, Slubice, Poland

Day 2 - 25 March 2026

09:00 - 10:30 **Session 5.1 (parallel) Towards the Manifesto for Reusable Ontologies [Trialog]**

Amelie Gyrard & Henon Mengistu Lamboro facilitators, Trialog

The breakout session will enable participants to make suggestions to help finalise the list of principles in order to reach an agreement. Relevant stakeholders from different communities will be invited to participate in the breakout session.

09:00 - 10:30 **Session 5.2 (parallel) Semantic Modelling of Digital Twins in and across Application Domains [Krzysztof Piotrowski, IHP]**

* Somayeh Abedian, Ludwig Boltzmann Institute for Digital Health and Prevention **Role of Interoperability Standards in Enabling Healthcare Digital Twins [15+5]**

Antonio Jara, Libelium

Data Modelling in the Digital Twin of Madrid City: from asset management to observability [15+5]

Franziska Rudolph, Sasha Coelho, Fraunhofer IWU

A Hybrid Ontology Modeling Approach for State Regulatory Documents [15+5]

Cristian Martin, University of Malaga

A Federated Data Management Model for Scalable Digital Twins [15+5]

10:30 - 11:00 Coffee Break

11:00 - 12:00 **Session 6 - Introduction to afternoon slots & Lightning Talks**[Cornelis Bouter]

Introduction

- SAREF Card Game
- Lightning Talks

* Syed Ashque Khaled, International Islamic University Malaysia

Advancing Aerial Swarms: Intelligent Task Allocation, Trajectory Planning, and Hardware Optimization (remote)

Anders Andersen, UiT The Arctic University of Norway

DART: Digital Arctic Twins

Ala-Laurinaho Riku, Aalto University

Semantic interoperability as a key enabler for digital twin interconnectivity and collaboration

Sucharitha Kalpa Udara Perera Kandawalage, Digital Twin Lab, Aalto University

Motor Winding Process Ontology for Interoperability Between Manufacturing Systems

All Poster Presenters

12:00 - 14:00 Lunch and **Poster and Demo Session**

14:00 - 15:00 **Session 7 - Serious Card Game as a SAREF Tutorial** [Cornelis Bouter, TNO]

The interactive session demonstrates a card game that can be used to explain the SAREF and underlying SOSA/SSN ontologies to users.

15:00 - 15:45 **Session 8 - Semantic Modelling of Digital Twins (2)** [Eric Lambert, EDF]

Antonio Jara, Libelium

Semantics and data modelling in the EU LDT Toolbox - Data Platform tool [15+5]

Niels Hoffmann, Geonovum

nLDT Testbed results with DCAT-AP and OGC API's [15+5]

15:45 - 16:15 Coffee Break

16:15 - 17:30 **Session 9 - Conclusions and Approval of Manifesto** [Antonio Kung, Trialog]

17:30 Closing of the Workshop

*** remote**

All sessions in D1, except 5.1 - Seminarraum