

Programme – Day 1 10:30-11:30

Introduction [Martin Bauer, NEC Laboratories Europe]

Gerhard Kahmen, IHP

Introduction by the Host [15]

Krzysztof Piotrowski, IHP

Introduction of SmartRiver² project [10]

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]



**Alliance for AI, IoT and Edge
Continuum Innovation**

AIOTI Workshop on Semantic Interoperability for Digital Twins – 24/25 March 2026

Goals and Overview of the Workshop

Martin Bauer

NEC Laboratories Europe

Semantic Interoperability Focus Group: What do we do?

- Semantics often perceived as “difficult”, “academic”, “for experts only”
- We are a group of experts from standardization & research
 - **Bring together and help the semantic community**
 - **Provide information and tools supporting semantic interoperability**
 - **Lower barrier for implementing semantic systems**

Goals of the Workshop

- Provide a forum for the community to discuss relevant topics about **Semantic Interoperability**
- Broad topic → as last year, domain focus on **Digital Twins**
- Important aspect: **Reuse and compliance → Manifesto**
- General developments: **Relation to generative AI**

Lessons learnt from 1st Workshop Edition in 2025 (1)

- Generally, it was very well received → 2nd Workshop Edition
- **Critical Feedback:**
 - Avoid “Death by Powerpoint” – too many presentations, too many topics, not enough time for discussion
 - Focus more, give more time to present key topics and dig deeper
 - Form smaller groups to solve issues, have breakout sessions
 - Have fewer remote presentations

Lessons learnt from 1st Workshop Edition in 2025 (2)

Actions taken

- Limit the [scope of the main sessions](#) to the key topics: [digital twins](#), [reuse and compliance](#), [relation to generative AI](#)
- Allow breadth through [lightning talks and posters](#), giving interested participants the opportunity to also dig deeper into other topics
- Have more interactive elements: [panels](#), [fish bowl session](#), [card game as tutorial](#)
- Work on [Ontology Manifesto](#) – breakout session to work out and refine manifesto

Programme – Day 1 09:30-10:30

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10:30 - 11:00 Coffee Break

Programme – Day 1 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 Garcia-Castro, Universidad Politécnica de Madrid

On the need for ontology hub interoperability [15+5]

Amelie Gyrard & Henon Mengistu Lamboro facilitators, Trialog

Members of panel: Cornelis Bouter, Mahda Noura, Raul Garcia, Martin Serrano

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

Programme – Day 1 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 [20]

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]

Martin Serrano, DSI-University of Galway

“Query Languages and Digital Twins: The Good, The Better and The Best” [10]

Cornelis Bouter, TNO

LLMs for Ontology Engineering Whitepaper [10]

Panel Semantic Interoperability and AI [20]

Panelists: Dave Raggett, Lionel Beneteau, Piotr Sowiński, Cornelis Bouter, Martin Serrano

Programme – Day 1 16:00-17:00

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

15:30 - 16:00 Coffee Break

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]

Programme – Day 1 17:00-18:00

Session 4 - Fishbowl [Cornelis Bouter, TNO]

- A Fishbowl session is a dynamic, participatory discussion format for medium-to-large groups that features a small, central "inner circle" of a few speakers discussing a topic, surrounded by an "outer circle" of observers.
- After having made their point, speakers leave the inner circle and make space for people from the outer circle to enter the discussion.
- It breaks from traditional presentations by allowing observers to join the discussion in the centre, promoting active listening and equitable dialogue.
- A moderator prepares discussion topics that are often "hot" or "controversial."

20:00 Dinner

Dinner

- **19:30 Meeting Point in Frankfurt, City Centre**

Old Post Office
Lindenstraße 2,
15230 Frankfurt (Oder)

- **20:00 Restaurant Villa Casino Słubice (Poland), not far from the bridge**

Villa Casino Słubice
Mickiewicza 11,
69-100 Słubice, Poland

- **Dinner choice** (already made at on-site registration)

- **Viennese-style Schnitzel (pork)** with chips and a mixed raw vegetable salad
- **Chicken breast** with chips and a mixed raw vegetable salad
- **Vegetarian:** Sweet potato steak coated in nuts, served with a salad of fresh vegetables, spinach, and chickpeas, accompanied by chimichurri sauce

Programme – Day 2 09:00-10:30

Parallel Sessions

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.

Session 5.2 (parallel) Semantic Modelling of Digital Twins in and across Application Domains [Krzysztof Piotrowski, IHP] → next page

Programme – Day 2 09:00-10:30

Parallel Sessions

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] (remote)

Antonio Jara, Libelium

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

Franziska Rudolph, Sasha Coelho

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

Programme – Day 2 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

Martin Serrano, DSI-University of Galway

Securing Digital Twins and Data Spaces: Because Data Protection is not Optional when Enabling Semantic Interoperability

All Poster Presenters



Programme – Day 2 12:00-14:00

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

Anders Andersen, UiT The Arctic University of Norway

DART: Digital Arctic Twins

Ala-Laurinaho Riku, Aalto University

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Programme – Day 2 14:00-15:45

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.

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]

Programme – Day 2 16:15 - 17:30

15:45 - 16:15 Coffee Break

Session 9 - Conclusions and Approval of Manifesto [Antonio Kung, Trialog]

- 17:30 Closing of the Workshop



Thank you for listening

Any questions?

You can email me at martin.bauer@neclab.eu

For information about AIOTI in general, contact Valentina Peniche at sg@aioti.eu