Preface for Joint Proceedings of Posters, Demos, Workshops, and Tutorials of SEMANTiCS 2025

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1. Introduction

This is a companion proceeding volume to the 21st International Conference on Semantic Systems, SEMANTiCS 2025, which took place from September 03-05, 2025, in Vienna. It collates all accepted posters, demos, and tutorials, as well as the proceedings from the eight workshops co-located with SEMANTiCS 2025. SEMANTiCS is the annual meeting place for professionals who make semantic computing work, understand its benefits, and encounter its limitations. Every year, SEMANTiCS attracts information managers, IT architects, software engineers, and researchers from organizations ranging from research facilities and NPOs through public administrations to the largest and/or most innovative companies in the world. Conference participants learn from top researchers and industry experts about emerging trends and topics in the wide area of semantic computing. The SEMANTiCS community is highly diverse; attendees have responsibilities in interlinking areas such as Artificial Intelligence, knowledge discovery and management, bigdata analytics, e-commerce, enterprise search, technical documentation, document management, business intelligence, and enterprise vocabulary management. In Section 2 we discuss the accepted posters and demos, whereas in Section 3 we briefly introduce the co-located tutorials and workshops. Finally, in Section 4 we present the program committee of the posters and demos track.

2. Poster and Demos

The Posters and Demos track serves as a platform for presenting ongoing research, innovative applications, prototypes, and early-stage results. This track enables participants to share novel concepts and obtain feedback in an interactive environment. In 2025, the SEMANTiCS conference accepted 11 posters and 9 demos. The accepted submissions represent a diverse range of current research in knowledge graphs, semantic technologies, and foundational models. The program includes papers on the automatic construction and generation of knowledge graphs from domain-specific datasets, including Internet of Things (IoT) platforms, renewable energy systems, and configuration data. These works emphasize the integration of scalable and interoperable knowledge. Additional themes include semantic enrichment and data governance, with research focusing on change management in vocabularies, the FAIR data principles, and digital product passports. Several papers examine the intersection of knowledge

graphs, large language models, and artificial intelligence methods, focusing on hybrid approaches, retrieval-augmented generation, and cognitive complexity frameworks to enhance reasoning and information retrieval. Usability and exploration are also addressed through semantic search engines, ontology visualization tools, and user interfaces for SPARQL endpoint and graph query interaction. The collection also features research on infrastructure and performance optimization, including edge–cloud orchestration, declarative API generation, query rewriting for security, and evaluations of graph engines. Domain-oriented applications include energy co-simulations, archival data curation, and agroforestry research. Collectively, these contributions demonstrate a balance between foundational research, applied innovation, and system-level engineering within the semantic technologies community.

3. Workshops and Tutorials Track

The workshops and tutorials track allow any organization or project to promote any of the 2025 SEMANTiCS research topics and gain increased visibility. 2025 workshops and tutorials are incubators for industrial and scientific communities that form and share a particular research and development agenda, and they provide a forum for presenting contributions and findings to a diverse and knowledgeable community. This year SEMANTiCS accepted eight workshops and two tutorials as part of the conference program. We briefly describe them below:

- The **Semantics for Transport (Sem4Tra25)** workshop aims to advance the Mobility and Logistics Data Space using Semantic Web, Linked Data, and Knowledge Graph techniques. Use cases include trip planning, booking logistics, and supply chain insights. Ideal for researchers and practitioners transforming passenger and freight transport operations.
- The **Second Knowledge Graphs and Neurosymbolic AI (KG-NeSy) Workshop** explores the synergy between symbolic Knowledge Graph approaches and Neurosymbolic AI/ML. Contributions on graph construction, learning, interpretability, and hybrid AI systems are invited.
- The **Developers Workshop (SemDev)** is designed to bridge academia and industry in semantic software development. Participants will present tools, showcase live demos, and discuss open implementation and research problems.
- The **Symbolic & Generative AI for Science (SymGenAI4Sci) Workshop** investigates how generative and symbolic AI models can support scientific discovery from hypothesis formation to data interpretation, while addressing interpretability, reproducibility, and ethical concerns.
- **NeXt-Generation Data Governance Workshop (NXDG)** focuses on privacy-aware data spaces, compliance with EU regulations (GDPR, Data Act, AI Act, etc.), and semantic policy frameworks like ODRL and DPV. Key for technical, legal, and societal stakeholders in the data economy.
- The **Semantics for Transparency in Industrial Systems (SENTIS) Workshop** targets the growing complexity of industrial systems at the IT–OT–AI intersection. Showcases the role of semantic models in enhancing explainability and transparency in distributed, software-driven ecosystems.
- The **Workshop on Users and Knowledge Graphs (UKG)** centers on the human side: how users interact with, perceive, and understand knowledge graphs. Topics include usability, query interfaces, user evaluation methods, and enhancing KG accessibility.
- The **Scaling Knowledge Graphs in Industry: LLMs meet KGs (SKGI) Workshop** Examines industrial applications at the intersection of Large Language Models (LLMs) and Knowledge Graphs. Themes include Graph-based RAG, scalable KG creation, energy-efficient AI, and explainable, user-centered KG systems.

As for tutorials, SEMANTiCS 2025 included the following:

- **Making Knowledge Graphs AI-Ready: Quality Assessment & Improvement in GraphRAG** is a hands-on tutorial focused on evaluating and enhancing knowledge graph quality for reliable GraphRAG pipelines. The tutorial will cover failure patterns, modeling pitfalls, and criteria to ensure semantic reliability and retrieval effectiveness.

- **Streaming & Cross-Environment Pipelines with RDF-Connect** is an interactive tutorial on using RDF-Connect to build multilingual, provenance-aware, streaming data pipelines. Participants will build an example pipeline (e.g. a knowledge graph from weather forecasts) across Python, JavaScript, and Java, with transparent provenance tracking via the W3C Provenance Ontology (PROV-O).

4. Program Committee of the Poster & Demo Track of SEMANTiCS 2025

Josemaria	Alvarez-Rodriguez	Carlos III University of Madrid
Maria	Maleshkova	Helmut-Schmidt-Universität / Universität der Bundeswehr Hamburg
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Vaios	Papaioannou	University of Patras
Fatme	Danash	Université Paris Saclay, CEA, LIST
Ondřej	Zamazal	Prague University of Economics and Business
Fajar J.	Ekaputra	Vienna University of Economics and Business (WU)
Rohit	Deshmukh	Fraunhofer FIT
Stefano	De Giorgis	University of Bologna
Zeyd	Boukhers	Fraunhofer FIT
Lingxiao	Kong	Fraunhofer FIT
Alexander	Graß	Fraunhofer FIT
Kossi	Amouzouvi	Technische Universität Dresden
Christoph	Quix	Fraunhofer FIT
Brenda	Thomson	Rensselaer Polytechnic Institute
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Jean-Paul	Calbimonte	University of Applied Sciences and Arts Western Switzerland HES-SO
Valentina	Pasqual	Università di Bologna, /DH.arc
Francesco	Osborne	KMi, The Open University
Cyril	Ray	Arts et Metiers Institute of Technology, Ecole Navale, IRENav
Markus	Schröder	DFKI GmbH
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András	Micsik	SZTAKI
Herminio	García-González	Kazerne Dossin
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Holger	Stenzhorn	University of Tübingen