ER 2025

Companion Proceedings of the 44th International Conference on Conceptual Modeling: Industrial Track, ER Forum, 8th SCME, Doctoral Consortium, Tutorials, Project Exhibitions, Posters and Demos

Poitiers, France, October 20-23, 2025

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Preface

The 44th International Conference on Conceptual Modeling (ER 2025) was held on 20–23 October 2025 in Poitiers / Futuroscope, France. ER is the premier venue for research and practice on conceptual modeling, providing a vibrant forum to discuss foundations, emerging challenges, and the pivotal role of conceptual models in diverse application domains.

This companion volume includes prefaces and materials for the ER Forum, Posters & Demos, Industrial Track, Tutorials, Doctoral Consortium, SCME, and Project Exhibitions. We thank the respective chairs and their committees for their dedication, as well as all authors and reviewers for their contributions to the success of ER 2025.

We hope this volume serves as a lasting reference for the ideas presented and the community that gathered in Poitiers.

Poitiers, October 2025

ER 2025 Organization

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Industrial Track

The industry track of ER aims at the presentation of works from academia and industry for the Research and Innovation session. Two peer-reviewed papers were presented during the 2025 edition, covering topics around analytical modeling and Knowledge-Centric Systems Engineering.

Industrial Track Chairs

Thomas Polacsek	ONERA, Toulouse, France
Kamalakar Karlapalem	IIIT, Hyderabad, India

ER Forum

The ER Forum constitutes an essential and stimulating venue for presenting and discussing innovative, diverse, and emerging contributions in the field of conceptual modeling. As a complement to the main ER conference track, it provides an opportunity to showcase early-stage research results, novel applications, experience reports, and follow-up studies that expand the scope and impact of conceptual modeling. The Forum particularly encourages submissions that introduce original ideas, bold visions, and promising directions of inquiry, even when such work has not yet achieved full maturity. Its goal is to promote interaction, reflection, and constructive dialogue among researchers, practitioners, and participants.

For its 2025 edition, the ER Forum invited three distinct categories of contributions. The first category comprised regular forum papers reporting on novel research in conceptual modeling that may still be in progress but demonstrates originality and potential for significant impact. Such papers also included innovative industrial applications and visionary statements describing exploratory or conceptual phases of new research initiatives. The second category encompassed vision papers, which placed particular emphasis on anticipating future developments in conceptual modeling, identifying new challenges, and outlining opportunities for future exploration. Finally, follow-up notes offered reflections and new insights derived from previously published work, including studies first presented at the ER conference or other venues.

In total, twenty-one (21) papers were submitted to the ER Forum 2025. Among these, four (4) had initially been reviewed for the main ER 2024 track and were transferred for consideration within the Forum. The remaining seventeen (17) were submitted directly. All papers underwent a rigorous peer-review process conducted by a program committee consisting of seventeen members. Following this evaluation, six (6) papers were not included in the Forum program, in accordance with the event's objectives and quality standards. The final program featured thirteen (13) regular forum papers and two (2) vision papers, covering a broad range of topics, from methodological and analytical tools to domain-specific modeling contributions and conceptual innovations.

The ER Forum 2025 Chairs wish to express their sincere gratitude to all authors, reviewers, and participants for their invaluable efforts and engagement, as well as to the ER 2025 Conference Chairs for their continuous support. Their joint contributions played a crucial role in the success of this year's Forum. We hope that this edition has provided an enriching and productive environment for scholarly exchange and will inspire further advances in conceptual modeling research.

ER Forum Chairs

Stéphane Jean	Poitiers University, France
Hongzhi Wang	Harbin Institute of Technology, China

Program Committee

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Hongzhi Wang	Harbin Institute of Technology, China
Manuel Wimmer	Johannes Kepler University Linz, Austria

Symposium on Conceptual Modeling Education

The 8th Symposium on Conceptual Modeling Education (SCME 2025) is aimed at providing a forum for discussing (1) the education and teaching of aspects related to conceptual modeling, (2) methods and tools for developing and communicating conceptual modeling techniques for transforming conceptual models into effective implementations, and (3) case studies and experience of interesting projects on conceptual modelling education. Topics of interest include all those that discuss the teaching and learning of any conceptual modeling topic. The Symposium is collocated with the 44th International Conference on Conceptual Modeling (ER2024), October 20-23, 2025, Poitiers, France. Four papers were submitted to the symposium. The authors of the submitted paper represented six countries. The papers underwent scrupulous evaluation by the members of the international Program Committee, and three papers were selected as the result single-blind review process.

SCME Chairs

Stephen W. Liddle	Brigham Young University, USA
Janis Grabis	Riga Technical University, Latvia
Jolita Ralyté	University of Geneva, Switzerland

Program Committee

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Dominik Bork	TU Wien, Austria
Marcela Ruiz	Zurich University of Applied Sciences, Switzerland

Doctoral Consortium

This doctoral consortium brings together four texts from PhD students that explore how traditional modeling paradigms adapt, evolve, or even reinvent themselves in an AI-driven world. Can AI enhance creativity in modeling, or does it risk obscuring the very clarity these models are meant to provide? The works presented in these proceedings reflect a new generation of researchers grappling with such challenges—bridging theory and practice, rigor and innovation. We are honored to showcase these contributions, which collectively push the boundaries of what conceptual modeling can achieve in the age of AI. We hope the discussions will shape not only the future of the field but also the responsible and meaningful integration of intelligent systems into our modeling practices. Welcome to a conversation that matters.

Doctoral Consortium Chairs

João Paulo A. Almeida	Federal University of Espírito Santo, Brazil
Isabelle Comyn-Wattiau	ESSEC Business School, Cergy Pontoise, France
Geert Poels	Ghent University, Belgium

Tutorials

These proceedings feature two tutorial papers from ER 2024 and three tutorial papers from ER 2025.

Two tutorials were held during the 2024 edition. The first tutorial, titled “A Deep Dive Into Benchmarking Ontology Reasoners: Techniques, Tools, and Insights”, was presented by Gunjan Singh and Raghava Mutharaju. This tutorial guided participants through key performance metrics, experimental design strategies, and data considerations required for effective benchmarking Ontology-based reasoners, equipping them with the knowledge to evaluate and enhance the capabilities of these reasoners.

The second tutorial, titled “Data Fabric Technologies, Modeling and Applications – A Review”, was presented by Radha Krishna Pisipati, Kamalakar Karlapalem, and Satyanarayana R Valluri. This tutorial presented a holistic view of data fabric technologies and addressed the importance of understanding the interconnections among source data systems, data fabric, domain, and application, focusing on metadata and application development. For metadata, an ER model solution to provide an overall conceptual data landscape for the underlying data systems for a data fabric is envisaged.

This year’s tutorials are characterized by interdisciplinarity as they will bring together different communities for their mutual benefit. The first tutorial is titled “Multi-Level Modeling and Language Engineering Promoting Reuse, Integrity, and Flexibility of Languages, Models and Software Systems” by Ulrich Frank and Tony Clark. It covers multi-level modeling and corresponding multi-level language architectures, and discusses reusability, integrity and adaptability of languages, models and software systems, and new software architectures that feature a common representation of models and programs. The second tutorial is titled “Discover Discovery Rules for your Modeling Language” by Ilia Bider. The tutorial introduces a new concept – discovery power – that can be used to characterize an enterprise modeling language. The concept is defined as "the degree of help provided by the structure of an enterprise modeling language to expand a partly built model or fill gaps in it". The tutorial illustrates how this concept is realized by discovery rules that are different across modeling languages. The last tutorial is titled “Entity/Relationship Modeling for Property Graphs” by Philipp Skavantzos and Sebastian Link. The main question it addresses is “What is a methodology for designing property graph schemata that can process workloads and maintain data integrity efficiently on each of their graph instances?” It shows what Entity/Relationship modeling can do for graph data, and what graph data can do for Entity/Relationship modeling.

Tutorial Chairs

Veda Storey	Georgia State University, USA
Sihem Amer-Yahia	IMAG, Grenoble, France
Carlos Ordonez	University of Houston, USA
Juan Carlos Trujillo Mondéjar	University of Alicante, Spain

Project Exhibition

The ER 2025 Project Exhibitions track, in line with previous editions, provides a platform for contributors to present emergent project concepts, preliminary and intermediate outcomes, to discuss with diverse academic and professional audiences, and receive valuable feedback for taking their research forward. For audiences, the track opens a window on the unfolding future of research and development in conceptual modelling and its many manifestations, offering a format arranged around networking and making inter-disciplinary connections, and finding partners.

The 2025 edition of Project Exhibitions has accepted two project submissions, each focused on a popular application of conceptual modelling, (i) Agentic AI, LLM and KG, and (ii) explainable AI, machine learning and precision medicine. As track chairs, we would like to extend our gratitude to the program committee and reviewers for their valuable comments on the projects, to the authors for their preparation of such excellent submissions, and to the ER 2025 organisers for their tireless dedication to the realization of this year's conference.

Project Exhibitions Chairs

Maribel Yasmina Santos	University of Minho, Portugal
Greta Adamo	Free University of Bozen-Bolzano, Italy

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Jolita Ralyté	University of Geneva
Jānis Grabis	Riga Technical University
Alessandro Mosca	Institute for Cognitive Sciences and Technologies (ISTC-CNR)
Xavier Franch	Universitat Politècnica de Catalunya

Posters and Demos

The ER 2025 Posters and Demos track is aimed at showcasing emerging research ideas and work-in-progress as well as demonstrating novel methods and tools in any area related to conceptual modeling. The Posters and Demos track required the significant efforts of many people. We would like to thank the authors of all submitted papers, program committee members, reviewers, the ER 2025 general chairs, program chairs, and the local organizing committee.

Posters and Demos Chairs

Jeffrey Parsons	Memorial University, Canada
Hui Ma	Victoria University of Wellington, New Zealand