ER 2023

42nd

Lisbon

ER 2023
Lisbon

IMPORTANT DATES   PROGRAM ▾   PROCEEDINGS ▾   CONFERENCE ▾   REGISTRATION AND VENUE

ER 2023

6-9 November 2023 - Lisbon, Portugal

THE 42ND INTERNATIONAL CONFERENCE ON CONCEPTUAL MODELING

The **International Conference on Conceptual Modeling** is the main international forum for discussing the state of the art, emerging issues, and future challenges in research and practice on **conceptual modeling**. Topics of interest span the entire spectrum of conceptual modeling, including research and practice in areas such as theories of concepts and ontologies, techniques for transforming conceptual models into effective implementations, and methods and tools for developing and communicating conceptual models.

ER 2023 will be held in **Lisbon, Portugal**, at the Congress Center of the **Instituto Superior Técnico** located in **Alameda**, in the heart of Lisbon.

REGISTRATION   PROGRAM OVERVIEW   ER 2023 PROCEEDINGS   WORKSHOPS PROCEEDINGS

Organization

inesc id lisboa
DEFINING TECHNOLOGY

TÉCNICO LISBOA

UNIVERSITY OF TWENTE.

Sponsors

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06 Nov.

06 Nov.	Auditorium	Room 01.1	Room 02.1	Room 02.2	Room 02.3
09:00					
09:30		workshop CMLS		workshop QUAMES	workshop SmartFood
10:00					
10:30					
11:00	...break (refreshments)...				
11:30	Tutorial 3 TT3	workshop CMLS	workshop OntoCom	workshop QUAMES	workshop SmartFood
12:00					
12:30					
13:00	...lunch (buffet)...				
13:30					
14:00	Tutorial 2 TT2	symposium SCME	workshop OntoCom	workshop EmPER	workshop JUSMOD
14:30					
15:00					
15:30	...break (refreshments)...				
16:00	Tutorial 2 TT2	symposium SCME	workshop OntoCom	workshop EmPER	workshop JUSMOD
16:30					
17:00					
17:30	Reception (drinks and snacks)				
...					

NOTE: (09:30 - 17:30) Doctoral Consortium – Building INESC-ID, Room 09

07 Nov.

07 Nov.	Auditorium	Room 01.1	Room 02.1	Room 02.2	Room 02.3
09:00	OPENING				
09:30	Keynote Daniel Jackson				
10:00					
10:30					
11:00	...break (refreshments)...				
11:30	ER2023 Papers ER1	Tutorial 1 TT1	Forum Papers FP1	Forum Papers FP2	
12:00					
12:30					
13:00	...lunch (buffet)...				
13:30					
14:00	Keynotes panel				
14:30					
15:00					
15:30	Posters pitch				
16:00	...break (refreshments)...				
16:30	ER2023 Papers ER2	Tutorial 1 TT1	Forum Papers FP3	Journal First Papers	
17:00					
17:30					
18:00					
18:30					

08 Nov.

08 Nov.	Auditorium	Room 01.1	Room 02.1	Room 02.2	Room 02.3
09:00	Keynote Maurizio Lenzerini				
09:30					
10:00					
10:30	...break (refreshments)...				
11:00	ER2023 Papers ER3		Forum Papers FP4	Forum Papers FP5	
11:30					
12:00					
12:30	...lunch (buffet)...				
13:00					
13:30					
14:00	Keynote Catia Pesquita				
14:30					
15:00					
15:30	...break (refreshments)...				
16:00	ER2023 Papers ER4		Forum Papers FP6	Doctoral Consortium Talks	
16:30					
17:00					
...					
20:00	Dinner ("Casa do Alentejo")				
...					

09 Nov.

09 Nov.	Auditorium	Room 01.1	Room 02.1	Room 02.2	Room 02.3
09:00	Keynote Walid S. Saba				
09:30					
10:00					
10:30	...break (refreshments)...				
11:00	ER2023 Papers ER5		ER2023 Papers ER6	Project Exhibition Px1	
11:30					
12:00					
12:30	...lunch (buffet)...				
13:00					
13:30					
14:00	ER2023 Papers ER7		Forum Papers FP7	Project Exhibition Px2	
14:30					
15:00					
15:30	...break (refreshments)...				
16:00	Industrial Panel				
16:30					
17:00					
17:30	CLOSING				

Keynotes

(7 November 2023 – 09:30) Daniel Jackson - Massachusetts Institute of Technology (MIT)
"Software Design, Concepts and AI"
Chair: João Paulo Almeida

We've known since the 1970s how important conceptual models are in the design of software. If a system's conceptual model is too complex to grasp, or isn't faithfully projected in the user interface, usability suffers. Despite lots of progress in conceptual modeling, two central aspects have not been addressed. First, we've often assumed that the conceptual model is given—defined by the problem domain or by an existing mechanism—when in fact it is usually explicitly designed. Second, although many representations have been proposed, none of them separated out the individual concepts, allowing them to be analyzed and reused in a modular way. In this talk, I'll explain a new approach to software design that centers on the design of individual concepts, which are composed together to form a system. I'll show how this allows usability problems to be diagnosed more effectively, stimulates new designs that work more effectively, and allows apps to be constructed with a more modular structure that has better separation of concerns and less coupling. I'll also explain how LLMs can be used synergistically in design by concept.

Daniel Jackson is a professor of computer science at MIT and associate director of CSAIL. For his research in software, he won the ACM SIGSOFT Impact Award, and the ACM SIGSOFT Outstanding Research Award and was made an ACM Fellow. He is the lead designer of the Alloy modeling language and author of Software Abstractions. He chaired a National Academies study on software dependability and has collaborated on software projects with NASA on air-traffic control, with Massachusetts General Hospital on proton therapy, and with Toyota on autonomous cars. His most recent book, Essence of Software, offers a fresh approach to software design and shows how thinking about software in terms of concepts and their relationships can lead to more usable and effective software.

(7 November 2023 – 14:00) Catia Pesquita - LASIGE, University of Lisbon
"True or False? The impact of negative knowledge in biomedical artificial intelligence"
Chair: José Borbinha

Most of our data is about positive facts: a patient has hypertension, the BRCA2 gene is related to breast cancer, Lisbon is the capital of Portugal.

In many applications, the assumption is made that everything that is not stated is false (the closed-world assumption), but for real-world and critical domains, such as those in biomedical research and healthcare, conflating what we don't know with what is false carries a high risk: patients with unreported symptoms can be given the wrong diagnosis, drugs with unknown interactions can be prescribed in tandem. Knowledge graph-based machine learning applications are a prime example of this mismatch between algorithms that operate under the closed-world assumption and real datasets that are open-world. In this talk, I will discuss the challenges faced by machine learning and artificial intelligence applications over knowledge graphs when the difference between a negative fact and an unknown fact is crucial. We will further explore what is negative knowledge, why it is important, how it can be harnessed, and what are we missing when we ignore it. The discussion will be supported by real use cases in biomedical research and healthcare.

Catia Pesquita is an Associate Professor at the University of Lisbon, where she leads the Research Line of Excellence in Health and Biomedical Informatics at LASIGE. She is deeply interested in how artificial intelligence can be harnessed for scientific discovery, particularly in the life and health sciences. She has made significant contributions in data analytics, data integration and machine learning with ontologies and knowledge graphs, being recognized as a Top 2% most cited researcher in Artificial Intelligence (according to Scopus data). She is an Associate Editor at BMC Bioinformatics and has held General Chair, Program Chair and Track Chair roles at ESWC and ISWC conferences. Her multidisciplinary background has given her a unique perspective on the interplay between knowledge representation, artificial intelligence and the natural sciences, which inspires her research, teaching, and speaking roles.
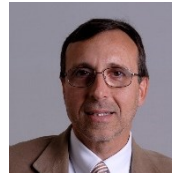
(8 November 2023 – 09:00) Maurizio Lenzerini - Department of Computer, Control, and Management Engineering of Sapienza Univ. of Rome
"Conceptual Modeling and Knowledge Representation: a journey from Data Modeling to Knowledge Graphs"
Chair: Jeff Parsons

While data constitute one of the most important components of an information system, many research efforts today focus on Machine Learning models and algorithms, with the properties of data feeding such algorithms playing a secondary role. Thus, shifting the attention to data has been recently proposed as one of the most timely topics in Data Analytics and Artificial Intelligence (AI) research, under the name of Data-Centric AI. Arguably, the field of Conceptual Modeling (CM), and in particular its connection to the area of Knowledge Representation and Reasoning (KRR), can provide important contributions towards shaping the research on Data-Centric AI. In this talk I will try to summarize the most important steps of the research done at the crossing between CM and KKR in the last decades, from the early work on Data Modeling and Semantic Networks to the investigation on ontologies and Knowledge Graphs.

Maurizio Lenzerini is a Professor of Data and Knowledge Management at the Department of Computer, Control, and Management Engineering of Sapienza University of Rome. His research interests lie at the intersection of Artificial Intelligence and Data Management, with emphasis on Conceptual Modeling, Knowledge Representation, Automated Reasoning, Knowledge Graphs, Ontology-based Data Access and Integration. He is the author of more than 300 publications on the above topics, and has delivered around 40 invited talks. According to Google Scholar he has an h-index of 82, and a total of 29806 citations (March 2023). He is a member of the Academia Europaea – The European Academy and the recipient of two IBM Faculty Awards, of the Peter Chen Award and of the ER (Entity-Relationship) Fellows Award. He is a Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA), of EurAI (European Association for Artificial Intelligence), of the ACM (Association for Computing Machinery) and of AAAI (Association for the Advance of Artificial Intelligence).

(9 November 2023 – 09:00) Walid S. Saba, Senior Principal Scientist, Experiential Institute for Artificial Intelligence, Northeastern University
"Reverse Engineering of Language at Scale: Towards Symbolic and Explainable Large Language Models"
Chair: Jelena Zdravkovic

Scientific explanation proceeds in one of two directions: by following a top-down strategy or a bottom-up strategy. For a top-down strategy to work, however, one must have access to a set of general principles to start with and this is certainly not the case when it comes to thought and how our minds externalize our thoughts in language. Lacking any general principles to start with, a bottom-up approach must be preferred in the process of discovering how language works. As such, we believe that the relative success of large language models (LLMs), that are essentially a bottom-up reverse engineering of language at scale, is not a reflection on the symbolic vs. subsymbolic debate but is a reflection on (appropriately), adopting a bottom-up strategy. However, due to their subsymbolic nature, LLMs are not really models of language, but statistical models of regularities found in language and thus whatever knowledge these models acquire about how language works will always be buried in billions of microfeatures (weights), none of which is meaningful on its own. Because they are incapable of maintaining the compositional structure of language, LLMs can never provide an explainable theory of how language works. To arrive at an explainable model of how language works, we argue in this talk that a bottom-up reverse engineering of language at scale must be done in a symbolic setting. Hints of how this should be done can be traced back to Frege, although it was subsequently and more explicitly argued for by Sommers (1963), Hobbs (1985) and Saba (2007).

Walid Saba is a Senior Research Scientist at the Institute for Experiential AI at Northeastern University. Prior to joining the institute in 2023, he worked at two Silicon Valley startups, focusing on conversational AI. This work included high-level roles as the principal AI scientist for telecommunications company Astound and CTO of software company Klangoo, where he helped develop its state-of-the-art digital content semantic engine (Magnet). Saba's career to date has seen him hold various positions in both the private sector and academia. His resume includes entities such as the American Institutes for Research, AT&T Bell Labs, IBM and Cognos, while he has also spent a cumulative seven years teaching computer science at the University of Ottawa, the New Jersey Institute of Technology (NJIT), the University of Windsor (a public research university in Ontario, Canada), and the American University of Beirut (AUB). He has published over 45 technical articles, including an award-winning paper that he presented at the German Artificial Intelligence Conference (KI-2008). Walid received his BSc and MSc in Computer Science from the University of Windsor, and a Ph.D in Computer Science from Carleton University in 1999.

Industrial Panel

How Models and Modeling Bring Value to Industry?
Chair: Pedro Sousa

Magda Cocco (Vieira de Almeida – VdA, Portugal)

Magda is Head of the Information, Communication and Technology practice at VdA and also head of the firm's aerospace sector. She has led multidisciplinary teams in different ICT projects and assisted Governments and Regulatory Entities in connection with the definition of regulatory policies and legislative drafting, having also advised various international organizations such as International Telecommunications Union, the World Bank and the European Investment Bank. She also advises clients on Data Protection & Cybersecurity in relation to governance, data related strategies, GDPR compliance, Cybersecurity threats, etc.. She has penned or co-authored several articles published in national and international specialized publications, was a featured speaker at various ICT conferences, and has been a visiting professor in national and international universities in her fields of expertise.

Mike Bennett (OMG and Hypercube, UK)

Mike Bennett is the Technical Director of the Object Management Group (OMG) and the Director of Hypercube Limited, a consultancy delivering ontologies and vocabularies for data governance, integration and knowledge graph development. Coming from a background of industrial software, he has over 20 years of financial industry experience and has delivered ontology solutions to major banks and industry bodies and to the legal services profession. Mike is the originator of the Financial Industry Business Ontology (FIBO), a standard repository for financial industry concepts and definitions from the EDM Council and the Object Management Group (OMG). As the Technical Director of the OMG, he is responsible for overseeing the processes for technology adoption and ensuring that these reflect the needs of the OMG community. Mike is active in the ontology community, where he has presented papers and published articles on ontology modeling, sits on the Board of Trustees of the Ontolog forum and heads up a think tank on ontology best practice.

Walid Saba (Institute for Experiential AI, USA)

Walid Saba is a Senior Research Scientist at the Institute for Experiential AI at Northeastern University. Prior to joining the institute in 2023, he worked at two Silicon Valley startups, focusing on conversational AI. This work included high-level roles as the principal AI scientist for telecommunications company Astound and CTO of software company Klangoo, where he helped develop its state-of-the-art digital content semantic engine (Magnet). Saba's career to date has seen him hold various positions in both the private sector and academia. His resume includes entities such as the American Institutes for Research, AT&T Bell Labs, IBM and Cognos, while he has also spent a cumulative seven years teaching computer science at the University of Ottawa, the New Jersey Institute of Technology (NJIT), the University of Windsor (a public research university in Ontario, Canada), and the American University of Beirut (AUB). He has published over 45 technical articles, including an award-winning paper that he presented at the German Artificial Intelligence Conference (KI-2008). Walid received his BSc and MSc in Computer Science from the University of Windsor, and a Ph.D in Computer Science from Carleton University in 1999.

Jan Voskuil (Taxonic, The Netherlands)

After his PhD in general linguistics in 1996, Jan Voskuil worked as a software engineer specializing in algorithmics and language processing. Later in his career, he worked at large consultancies, focusing on architecture, design, and modeling. He co-founded Taxonic in 2012 and started to work almost exclusively on semantic technologies and Linked Data. UFO and OntoUML are core aspects of many of the projects he is currently involved in. He is also involved in teaching and popularizing this methodology.

Journal First

Tue, 07 November, 16:30-18:30
Chair: Hasan Yasar

- **CoV2K model, a comprehensive representation of SARS-CoV-2 knowledge and data interplay**
  Tommaso Alfonsi, Ruba Al Khalaf, Stefano Ceri and Anna Bernasconi
- **Multi-level modeling: cornerstones of a rationale. Comparative evaluation, integration with programming languages, and dissemination strategies**
  Ulrich Frank
- **Model-Based Cybersecurity Analysis: Extending Enterprise Modeling to Critical Infrastructure Cybersecurity**
  Yuning Jiang, Manfred Jeusfeld, Jianguo Ding and Elin Sandahl
- **Urban Air Mobility Situation Awareness From Enterprise Architecture Perspectives**
  Raquel Hoffmann

ER Papers

The Conceptual Modelling Task
ER Papers 1 – Tue, 07 November, 11:30-13:00
Chair: Jolita Ralyté

- **A Survey of Ethical Reasoning Methods, their Metamodels, and a Theory on their Application to Conceptual Modelling**
Sergio España, Chris van der Maaten, Jens Gulden and Oscar Pastor
- **Use of Competency Questions in Ontology Engineering: a Survey**
Glaice Kelly Monfardini, Jordana Salamon and Monalessa Barcellos
- **How Inclusive is Conceptual Modeling? A Systematic Review of Literature and Tools for Disability-aware Conceptual Modeling**
Aylin Sarioglu, Haydar Metin and Dominik Bork

The Meta Level
ER Papers 2 – Tue, 07 November, 16:30-18:00
Chair: Steve Liddle

- **A Terminological and Semiotic Review of the Digital Object Concept**
Marcelo Jaccoud Amaral, Vânia Borges and Maria Luiza M. Campos
- **The Ontology for Conceptual Characterization of Ontologies**
Beatriz Franco Martins, Renata Guizzardi, José Fabián Reyes Román, Moshe Hadad and Oscar Pastor
- **ProMoTe: A Data Product Model Template for Industry**
Stefan Driessen, Willem-Jan van den Heuvel and Geert Monsieur

Model-Based Analysis and Implementation
ER Papers 3 – Wed, 08 November, 11:00-12:30
Chair: Dominik Bork

- **Using a Conceptual Model in Plug-and-play SQL**
Shubham Swami, Santosh Aryal, Sourav S. Bhowmick and Curtis Dyreson
- **Sanity-Checking Multiple Levels of Classification – A Formal Approach with a ConceptBase Implementation**
Thomas Kühne and Manfred Jeusfeld
- **A Safari for Deviating GoF Pattern Definitions and Examples on the Web**
Apostolos Zarras and Panos Vassiliadis

Process Mining and Abstraction
ER Papers 4 – Wed, 08 November, 16:00-17:30
Chair: Rik Eshuis

- **Object-Centric Alignments**
Lukas Liß, Jan Niklas Adams and Wil van der Aalst
- **Transforming Event Knowledge Graph to Object-Centric Event Logs: A Comparative Study for Multi-dimensional**

Process Analysis
Shahrzad Khayatbashi, Olaf Hartig and Amin Jalali

- **Ontology-Based Abstraction of Bot Models in Robotic Process Automation**
Maximilian Völker and Mathias Weske

Modeling Events and Processes
ER Papers 5 – Thu, 09 November, 11:00-12:30
Chair: Nicola Guarino

- **Shards of Knowledge – Modeling Attributions for Event-Centric Knowledge Graphs**
Florian Plötzky, Katarina Britz and Wolf-Tilo Balke
- **A Characterisation of Ambiguity in BPM**
Marco Franceschetti, Ronny Seiger, Hugo Andrés López, Andrea Burattin, Luciano García-Bañuelos and Barbara Weber
- **Dealing with the evolution of event-based choreographies of BPMN fragments: definition and proof of concept**
Jesús Ortiz, Victoria Torres and Pedro Valderas

Conceptual Modeling in Context
ER Papers 6 – Thu, 09 November, 11:00-12:30
Chair: Manfred Jeusfeld

- **Safety Analysis of Human Robot Collaborations with GRL Goal Models**
Marian Daun, Meenakshi Manjunath and Jeshwitha Jesus Raja
- **A Domain-Specific Visual Modeling Language for Augmented Reality Applications Using WebXR**
Fabian Muff and Hans-Georg Fill
- **An Ontology for Context Modeling in Smart Spaces**
Leonardo Nascimento and José Palazzo Oliveira

Applications of Conceptual Modeling
ER Papers 7 – Thu, 09 November, 14:00-15:30
Chair: Hans-Georg Fill

- **A Reference Meta-Model to Understand DNA Variant Interpretation Guidelines**
Mireia Costa, Alberto García S., Ana León, Anna Bernasconi and Oscar Pastor
- **A Conceptual Modeling Approach for Risk Assessment and Mitigation in Collision-free UAV Routing for Beyond-the-Visual-Line-of-Sight Flights**
Gerrit Burmester, David Kugelmann, Dietrich Steinmetz, Hui Ma and Sven Hartmann
- **QuantumShare: Towards An Ontology for Bridging the Quantum Divide**
Julian Martens, Indika Kumara, Geert Monsieur, Damian Andrew Tamburri and Willem-Jan van den Heuvel

ER Forum

Tools & technology
ER Forum 1 – Tue, 07 November, 11:30-13:00
Chair: Catherine Faron

- **M2M Mapping and Transformation Tool for Labeled Property Graphs**; Pedro Guimarães, Ana León and Maribel Yasmina Santos
- **Impact of Read and Write Operations on NoSQL Schema Design: First Insights**; André Conrad and Uta Störl
- **Conceptual Model Interpreter for Large Language Models**; Felix Härer
- **A Language for Graph Database Evolution and its Implementation in Neo4j**; Dominique Hausler, Meike Klettke and Uta Störl

Towards… a challenge
ER Forum 2 – Tue, 07 November, 11:30-13:00
Chair: Sotirios Liaskos

- **Towards an Augmented Reality Approach to Build Use-Case Diagrams**; Ana Rebelo, João Araújo, João Seco and Rui Nóbrega
- **Towards a Conceptual Holistic Safety Planning Framework for Human-Robot Collaboration**; Fabian Schirmer, Philipp Kranz, Meenakshi Manjunath, Jeshwitha Jesus Raja, Chad G. Rose, Marian Daun and Tobias Kaupp
- **Toward a Phishing Attack Ontology**; Ítalo Oliveira, Rodrigo F. Calhau and Giancarlo Guizzardi

Models for purpose
ER Forum 3 – Tue, 07 November, 16:30-18:00
Chair: Sotirios Liaskos

- **Parallel Lives Diagrams for Co-Evolving Communities and their Application to Schema Evolution**; Fanis Giachos, Nikos Pantelidis, Christos Batsilas, Apostolos Zarras and Panos Vassiliadis
- **A General Domain Model of Distributed Ledger Technologies**; Simon Curty and Hans-Georg Fill
- **Enhancing Compatibility in QoS Communication for the Internet of Robotic Things**; Flavio Corradini, Sara Pettinari, Barbara Re, Luca Ruschioni and Francesco Tiezzi

Models in businesses
ER Forum 4 – Wed, 08 November, 11:00-12:30
Chair: David Aveiro

- **Information Gathering for Decisions in Business Processes**; Rik Eshuis
- **A Modeling Approach for Designing Explainable Artificial Intelligence**; Álvaro Navarro, Ana Lavalle, Alejandro Maté and Juan Trujillo
- **Extending Case Models to Capture Organizational Aspects and Time**; Anjo Seidel, Pierre Burghardt, Maximilian König and Mathias Weske
- **Multi-Instance Data Behavior in BPMN**; Maximilian König and Mathias Weske

Modelling with goals
ER Forum 5 – Wed, 08 November, 11:00-12:30
Chair: Renata Guizzardi

- **Stroke management: defining and assigning goals to stakeholders**; Anouck Chan and Thomas Polacsek
- **A goal-oriented method for FAIRification planning**; César Bernabé, Tiago Sales, Erik Schultes, Niek van Ulzen, Annika Jacobsen, Luiz Bonino, Barend Mons and Marco Roos
- **Assessing the value of incomplete deadlock verification in Model-Driven Engineering**; Felix Cammaerts and Monique Snoeck
- **Using Goal Modeling for Defining Digital Twins in Industry Automation**; Jeshwitha Jesus Raja, Meenakshi Manjunath, Philipp Kranz, Fabian Schirmer and Marian Daun

On the meta plateau
ER Forum 6 – Wed, 08 November, 16:00-17:30
Chair: Maribel Yasmina Santos

- **Toward a Universal Conceptual Modeling Language to Model Anything by Anyone**; Roman Lukyanenko, Binny Samuel, Jeffrey Parsons, Veda Storey and Oscar Pastor
- **The Journey of Conceptual Modeling: Paths from the Past to Present with Trajectories for the Future**; Jacky Akoka, Isabelle Comyn-Wattiau, Nicholas Prat and Veda C. Storey
- **A Model-driven Machine Learning Approach to Dynamic Workflow Scheduling**; Hui Ma, Sven Hartmann, Gang Chen and Yifan Yang
- **Inclusive Conceptual Modeling: Diversity, Equity, Involvement, and Belonging in Conceptual Modeling**; Roman Lukyanenko, Dominik Bork, Veda Storey, Jeffrey Parsons and Oscar Pastor

Analysing models
ER Forum 7 – Thu, 09 November, 14:00-15:30
Chair: Sérgio Guerreiro

- **Ontological Grounding of Accounting Frameworks**; Blums Ivars and Hans Weigand
- **Data-centric Goal Modeling for Knowledge-intensive Processes**; Anjo Seidel, Charlotte Balcke and Mathias Weske
- **Addressing Emergent System Behavior in a System Ontology**; Rodrigo F. Calhau, Tiago P. Sales, João Paulo A. Almeida and Giancarlo Guizzardi
- **Discovering High-Quality Process Models Despite Data Scarcity**; Jan Niklas Adams, Jari Peeperkorn, Tobias Brockhoff, Isabelle Terrier, Heiko Göhner, Merih Seran Uysal, Seppe Vanden Broucke, Jochen De Weerdt and Wil van der Aalst

Project Exhibitions

Processes and services
Project Exhibition 1 – Thu, 09 November, 11:00-12:30
Chair: João Araújo

- **PAIRS – Privacy-Aware, Intelligent and Resilient Crisis Management**; Sabine Janzen, Agbodzea Pascal Ahiagble, Lotfy Abdel Khaliq, Natalie Gdanitz, Prajvi Saxena, Prathvish Mithare, Denys Skrytskyi and Wolfgang Maass
- **Process Factory: Ready-to-Use Business Processes Templates for a Fast Setup**; Miguel Agostinho, Carolina Marques, Filipe Correia, Pedro Sousa and Sergio Guerreiro
- **QUASIM: Quantum Computing Enhanced Service Ecosystem for Simulation in Manufacturing**; Ankit Agrawal, Hannah Stein, Sascha Xu, Sabine Janzen and Wolfgang Maass

Modelling challenges
Project Exhibition 2 – Thu, 09 November, 14:00-15:30
Chair: Tiago Prince Sales

- **CoMoDID: Combining Explainable Artificial Intelligence and Conceptual Modeling for Data Intensive-Domains Management**; Oscar Pastor, Diana Martínez Minguet, José Fabián Reyes Román, Alberto García Simón, Ana León, Mireia Costa Sánchez and Ferran Pla
- **A smart data holistic approach for context-aware data analytics (AETHER-UA)**; Oscar Pastor, Diana Martínez Minguet, José Fabián Reyes Román, Alberto García Simón, Ana León, Mireia Costa Sánchez and Ferran Pla

Posters

Posters pitch – Tue, 07 November, 15:30-16:00
Chair: Sergio de Cesare

1. **A Family of Natural Language Interfaces for Databases based on ChatGPT and LangChain**; Eduardo Roger Silva Nascimento, Grettel Monteagudo Garcia, Wendy Zuloaga Victorio, Melissa Lemos, Yenier Torres Izquierdo, Robinson Luiz Souza Garcia, Luiz André Portes Paes Leme and Marco Antonio Casanova
2. **Tool support for modeling and reasoning with decision theoretic goal models**; Sotirios Liaskos
3. **Ontology Patterns for Function Modeling with GFO**; Patryk Burek, Frank Loebe and Heinrich Herre
4. **Decoding Resilience: A Graph-based Approach for Organizational Resilience Assessment**; Sabine Janzen, Amin Harig, Natalie Gdanitz, Hannah Stein, Nurten Öksüz and Wolfgang Maaß
5. **Towards Augmented Reality Applications for IT Maintenance Tasks based on ArchiMate Models**; Sophie Crevoiserat, Fabian Muff and Hans-Georg Fill
6. **KAOS Modeling Editor: A Tool for Semi-Automated Goal Modeling**; Keitaro Watanabe, Hiroyuki Nakagawa and Tatsuhiro Tsuchiya
7. **Towards model-driven generation of secure workflow designs using patterns**; Sotirios Liaskos, Ibrahim Jaouhar and Shakil Khan

Doctoral Consortium

(Monday, 06 November)
Chair: Sofia Pinto

- **A framework for data specification modeling in complex domains**; Štěpán Stenchlák
- **Dealing with the evolution of event-based choreographies of BPMN fragments**; Jesús Ortiz
- **Privacy-Compliant Software Reuse: A Framework for Considering Privacy Compliance in Software Reuse Scenarios**; Jenny Guber
- **Strategy practices to respond to organizational challenges with the lens of strategic design and strategy- as-practice**, Paulo Rubens Gomes Torquato

SCME - The SCME23: 7th Symposium on Conceptual Modeling Education

Monday, November 6

Program Detail
- **14:00** – Introduction
- **14:10** – Keynote: *What does really matter? Lessons learned from +20 years of teaching conceptual modeling*; By Prof. Dr. Monique Snoeck
- **15:30** – Coffee break
- **16:00** – Meenakshi Manjunath, Jeshwitha Jesus Raja and Marian Daun; How Teaching Conceptual Modeling to Robotics Students Changes their Perception of Software Engineering
- **16:20** – Elena Tiukhova, Charlotte Verbruggen, Bart Baesens and Monique Snoeck; Learning Analytics tells: Know your basics and go to class
- **16:40** – Pavani Vemuri, Stephan Poelmans, Estefanía Serral Asensio and Monique Snoeck; Teaching Conceptual Modeling leveraging Formative Assessments and Adaptive Release paths
- **17:00** – Robert Andrei Buchmann and Ana-Maria Ghiran; Teaching Knowledge Graphs: the Journey from Logic to Web Development and Semantics-driven Engineering

Keynote by Prof. Dr. Monique Snoeck

- **Bio**: Monique Snoeck is a full professor at the Research Center of Management Informatics at KU Leuven and visiting professor at the UNamur. Her research focuses on conceptual modelling, requirements engineering, software architecture, model-driven engineering, and e-learning technology. She has published over 30 journal papers and many more refereed conference papers.

- **Title**: What does really matter? Lessons learned from +20 years of teaching conceptual modeling.

- **Summary**: In the early 2000s, the use of online modeling tools, online lectures and automatic feedback was rare. Today, teachers have many different tools and teaching methods (online, blended, hybrid, …) to choose from. In this talk, I'll review my experiences of teaching CM, the evolution of my research on teaching CM, and draw some lessons about what really matters in helping students acquire CM competence.

Tutorials

Tutorial 1 – "Combining BPMN with Artefact-Centric Business Process Modeling"

Tuesday, 07 November, 11:30-13:00 + 16:00-17:30 (duration: 180 min)

Conceptual data modelling and process modelling have evolved as two separate domains with little cross-overs. The tutorial addresses the need for a cross-over between the two domains and will present a way to combine artefact-centric modelling and process modelling in a consistent way. The tutorial thus addresses data-aware process modelling, combining object-oriented domain modelling with BPMN and offers valuable insights for developing object-centric process mining.

The goals of the tutorial are:

- To provide an overview of the state of the art in combining process modelling with domain modelling and pinpointing the gap to be addressed in future research.
- To illustrate how domain modelling and process modelling can be combined in a genuine multi-modelling approach that makes use of existing standard modelling languages to ensure its usability.

The specific objectives of the tutorial are:

- To provide attendees with an overview of the state of the art in data-aware and artefact-centric business process modelling.
- To make attendees aware of the open problems with existing approaches.
- To identify rules on how to combine several modelling languages, each addressing a particular viewpoint consistently and harmoniously.

Monique Snoeck is full professor at the KU Leuven, Research Center for Management Informatics (LIRIS), Belgium, and visiting professor at the UNamur, Belgium. Her research focuses on conceptual modelling, enterprise modeling, requirements engineering, model-driven engineering and business process management and the teaching and learning of these topics. Previous research has resulted in the Enterprise Information Systems Engineering approach MERODE, and its companion e-learning and prototyping tools MERLIN and MERLIN Prototyper. In the domains of Smart Learning environments and Technology enhanced learning she focuses on intelligent feedback provisioning and learning analytics with the aim of defining features predictive for learner success and learner engagement. She has (co-)authored over 130 peer reviewed papers, half of which peer-reviewed journal papers. She is involved in numerous conferences in the domains of Information Systems such as CAiSE, PoEM, ER, EMMSAD, etc.

Charlotte Verbruggen is a PhD student in business economics at the Research Center for Management Informatics (LIRIS), KU Leuven. Her research topics are in conceptual modeling, software architecture, model-driven engineering and business process modelling.

Tutorial 2 – "Accounting as Knowledge Graphs – Ontological Lessons for your Teaching and Research"

Monday, 06 November, 14:00-15:00 + 16:00-17:00 (duration: 120 min)

This tutorial covers material from a recently released American Accounting Association Research Monograph entitled "The Resource-Event-Agent (REA) Accounting Model as an Accounting and Economic Ontology" by William McCarthy, Guido Geerts, and Graham Gal. REA is a semantic enterprise model whose origin dates back to a seminal 1982 paper in The Accounting Review, the top research journal in the accounting field. Material related to REA was presented at the Entity-Relationship Research Conferences in 1979, 1981, and 1997, and its basic tenets have been incorporated in ISO standards (15944-4 in 2015 and 15944-21 in 2023) and in the Workday ERP system.

I assume no prerequisites except for a familiarity with data modeling and simple accounting ideas. The overall goal for this tutorial is to familiarize MIS and CS professionals with the Resource-Event-Agent accounting and economic ontology in a very general fashion. Members of the ER modeling community should be aware of semantic modeling concepts from accounting and economics. REA is a long-established knowledge representation scheme whose most recent projects have incorporated advanced ideas from economics and information technology. However, the presentation of REA ideas has not occurred recently at the ER conferences. Publication of the AAA research monograph on REA represents an opportunity for conference attendees to immerse themselves in this body of research and to see how its concepts can be used in both undergraduate and graduate teaching. Slides will be distributed as well an REA modeling tool written in EXCEL.

William McCarthy is a Professor of Accounting and Information Systems at Michigan State University. Professor McCarthy's research interests center on the application of knowledge-based systems, object orientation, and database theories to the problems of building better accounting systems. McCarthy has been presented with the MSU "Distinguished Faculty Award" and he was honored in 2008 with the AAA's "Outstanding Accounting Educator Award," the highest honor given to accounting professors internationally. In 2019, he was awarded the "Cook Prize" from the AAA for being the top graduate accounting teacher in the USA.

Tutorial 3 – "Semantic Enrichment & Digital Twins based on Conceptual Modeling: the Bee-Up Tool"

Monday, 06 November, 11:30-13:00 (duration: 90 min)

This tutorial presents an approach to semantic enrichment and digital twins based on conceptual modeling, demonstrated through specific features of the Bee-Up multi-language modeling tool which expands the value of conceptual models beyond their traditional functions. Bee-Up supports modeling with several established languages – e.g. BPMN, EPC, ER, UML, Petri Nets. The goal of the tutorial is to highlight how Bee-Up facilitates knowledge externalization and mediation for the "digital-first era" – firstly, in RDF format as it enables several layers of semantic enrichment towards a specific flavor of model-driven Knowledge Graphs; secondly, by interoperating with cyber-physical devices towards a specific-flavor of Digital-Physical Twin binding. Such features are showcased during the tutorial, while also discussing the metamodeling approach that is under the hood of Bee-Up's model processing capabilities.

The tutorial provides insight about innovative possibilities of processing models, advocating that they should be treated as knowledge structures and abstraction mediators. The attendees learn about the capabilities provided by the chosen environment – Bee- Up – through showcases that focus on the design-time semantic enrichment of visual models and on their run-time treatment in a Digital Twin context.

Robert Andrei Buchmann occupies a Professor position at Babeș-Bolyai University, Romania, in the Faculty of Economics and Business Administration. He is the Scientific Director of the Business Informatics Research Center and coordinator of the OMiLAB Node in his host university, where his team is investigating opportunities of interplay between Knowledge Graphs and Domain-specific Enterprise Modeling. He has worked in numerous research projects involving these topics. During 2012-2015, he occupied a postdoctoral research position at the University of Vienna, specializing in the framework of Agile Modelling Method Engineering and semantics-oriented systems engineering.

Patrik Burzynski is a computer scientist, currently working as part of the OMiLAB team, developing applications using cloud services. His interests include programming and meta-modeling. During his study of Business Informatics at the University of Vienna he was involved in several international research projects (e.g., plugIT, ComVantage). After finishing his master's degree he worked at the University of Vienna for the Research Group Knowledge Engineering as a university assistant where he worked on the Bee-Up tool, later moving on to join the OMiLAB NPO.

Wilfrid Utz received his PhD from the University of Vienna, Research Group Knowledge Engineering in the field of metamodel design and conceptual structures. He has been involved in international research and innovation projects and gained experience in the field of modeling method conceptualization, meta-model design, and implementation of modeling tools using ADOxx in various application domains. His research and professional interest relate to knowledge representation using metamodeling concepts and platforms. He is currently a managing director of OMiLAB NPO, which fosters the OMiLAB Community of Practice focusing on conceptual modeling methods and the value of models.

Workshops

CMLS – Mon, 06 November, 09:30-13:00
4th International Workshop on Conceptual Modeling for Life Sciences
http://www.bioinformatics.deib.polimi.it/cmls2023

The fourth edition of the **Workshop on Conceptual Modeling for Life Sciences** aims to be a meeting point for Information Systems (IS), Conceptual Modeling (CM), and Data Management (DM) researchers working on health care and life science problems. It is also an opportunity to share, discuss and find new approaches to improve promising fields, with a special focus on Genomic Data Management (how to use the information from the genome to better understand biological and clinical features) and Precision Medicine (giving to each patient an individualized treatment by understanding the peculiar aspects of the disease).

Program
- 09.45-10.00 - Welcome and introduction to the CMLS workshop
- 10.00-10.20 - Sipan Arevshatyan, José Fabián Reyes Román, Elisa Caballero Calabuig, Mari Carmen Plancha, Alejandra Abella, Pedro Abreu and Óscar Pastor. *Integrating Nuclear Medicine and Radiopharmacy Data: A Conceptual Model for Precision Medicine and Enhanced Patient Care.*
- 10.20-10.40 - Mireia Costa, Alberto García, Ana León and Oscar Pastor. *Comprehensive Representation of Variation Interpretation Data via Conceptual Modeling.*
- 10.40-11.00 - Lidia Contreras-Ochando, Pere Marco Garcia, Ana León, Lluís F. Hurtado, Ferran Pla and Encarna Segarra. *Enhancing Precision Medicine: An Automatic Pipeline Approach for Exploring Genetic Variant-Disease Literature.*
- *11.00-11.30 Coffee Break*
- 11.30-11.50 - Yasmine Anchén, Edelweis Rohrer and Regina Motz. *An Ontology for Breast Cancer Screening.*
- 11.50-13.00 - **Invited keynote talk by Prof. Stefano Ceri**, Politecnico di Milano. *Data Modeling in life sciences, from theory to applications.*

EmpER – Mon, 06 November, 14:00-17:30
6th International Workshop on Empirical Methods in Conceptual Modeling
https://emper-workshop.github.io/2023

Conceptual modeling has enjoyed substantial growth over the past decades in fields ranging from Information Systems Analysis to Business Process Engineering. A plethora of conceptual modeling practices (languages, frameworks, methods, etc.) have been proposed, promising to facilitate activities such as communication, design, or decision-making.

Success in adopting a conceptual modeling practice is, however, predicated on convincingly demonstrating that it indeed successfully supports these activities. Furthermore, the way individuals and groups produce and consume models gives raise to cognitive, behavioral, organizational, or other phenomena, whose systematic observation may help us better understand how models are used in practice and how we can make them more effective. At the same time, the act of building conceptual models is ideally informed by empirical evidence that is nowadays abundant in the form of digital data. This overabundance of data, combined with the advent of advanced data analysis and artificial intelligence (AI) techniques, introduces major opportunities and challenges in an empirically-informed conceptual modeling practice.

This workshop aims at bringing together researchers with an interest in the empirical investigation of conceptual modeling practices, as well as with the study of a data-driven, evidence-based conceptual modelling practice.

Program
Session 1: 14:00 - 15:30

- 14:00 – 14:10: Opening
- 14:10 – 14:35: Jenny Guber, Iris Reinhartz-Berger and Marina Litvak. Empirical Exploration of Open-Source Issues for Predicting Privacy Compliance.
- 14:35 – 15:00: Emilia Lenzi, Emanuele Pucci, Federico Cerutti, Maristella Matera and Letizia Tanca. Human-Centred Conceptual Modelling for Re-Designing Urban Planning .
- 15:00 – 15:15: Isadora Valle Sousa, Tiago Prince Sales, Eduardo Guerra, and Giancarlo Guizzardi. The pain points of modeling (short research presentation).
- 15:15 – 15:30: Anouck Chan and Thomas Polacsek. Refining strategic objectives into goals that actors are able to address (short research presentation).

Session 2: 16:00 - 17:30

- 16:00 – 16:25: Robson A. Campêlo, Alberto H. F. Laender and Altigran Soares da Silva. Using Knowledge Graphs to Generate SQL Queries from Textual Specifications.
- 16:25 – 16:50: Sergio Guerreiro and Pedro Sousa. A Systematic approach to Generate TOGAF artifacts founded on Multiple Data Sources and Ontology.
- 16:50 – 17:15: Dadhichi Shukla, Sebastian Eresheim, Alexander Buchelt and Eugen Lindorfer. Bridging the Gap: Conceptual Modeling and Machine Learning for Web Portals.
- 17:15 – 17:30: David Aveiro, Vitor Freitas, Dulce Pacheco and Duarte Pinto. Multi-sector Empirical Studies on Users' Perceived Quality and Functionality of DEMO's Process and Fact Models (short research presentation).

JUSMOD – Mon, 06 November, 14:00-17:30
2nd International Workshop on Digital Justice, Digital Law and Conceptual Modeling
https://jusmod2023.github.io

The **JUSMOD 2023** workshop aims to be a meeting place for a variety of researchers involved in digital justice and digital law, creating a rich community that crosses different disciplines beyond informatics, such as law, legal informatics, management, economics, philosophy, and social sciences. The workshop will provide an opportunity to share, discuss and identify new approaches and solutions for modeling, analyzing, formalizing and interpreting legal data and related processes. Our purpose, therefore, is to build a bridge between IT and Law professionals.

Program
- 14:00 - Welcome and introduction
- 14:05 - Keynote from João Paulo Almeida on **Conceptual Modeling of Legal Relations**
- **Session 1. Legal knowledge extraction**
- 14:45 - *Marco Billi, Thiago Raulino Dal Pont, Isabela Cristina Sabo, Francesca Lagioia, Giovanni Sartor and Aires José Rover*. Supervised Learning, Explanation and Interpretation from Pretrial Detention Decisions by Italian and Brazilian Supreme Courts
- 15:00 - *Alfio Ferrara, Sergio Picascia and Davide Riva*. Few-Shot Legal Text Segmentation via Rewiring Conditional Random Fields: a Preliminary Study
- 15:15 - *Catherine Sai, Anastasiya Damaratskaya, Karolin Winter and Stefanie Rinderle-Ma*. Identification and Visualization of Legal Definitions and Legal Term Relations
- **Session 2. Legal ontologies: design, reuse, applications, experiences**
- 16:00 - *Amedeo Santosuosso, Stefano D'Ancona and Emanuela Furiosi*. New-generation templates facilitating the shift from documents to data in the Italian judiciary
- 16:15 - *Antonella Calo, Antonella Longo and Marco Zappatore*. Comparative analysis of disinformation regulations: A preliminary analysis
- 16:30 - *Roberto Nai, Emilio Sulis and Laura Genga*. Public procurement analysis with process discovery techniques and event log enrichment
- 16:45 - *Lisa Trigiante, Domenico Beneventano and Sonia Bergamaschi*. Privacy-Preserving Data Integration for Digital Justice (short paper)
- 16:55 - *Chaminda Liyanage, Tharaka Ilayperuma, Jeewanie Jayasinghe Archchige and Faiza A. Bukhsh*. Formalizing Legal Domain Knowledge from Ontological Perspective : A Case of Sri Lankan Civil Appellate Court Domain (short paper)
- 17:05 - Discussion and closing

OntoCom – Mon, 06 November, 11:30-13:00 + 14:00-17:30
9th International Workshop on Ontologies and Conceptual Modeling
https://ontocomworkshops.github.io/OntoCom2023

The **International Workshop on Ontologies and Conceptual Modeling (OntoCom)** is an academic workshop that focuses on the practical and formal application of ontologies to conceptual modeling. The importance of conceptual modeling has grown over the years and it is now common to find examples of conceptual models being developed and used in a range of diverse disciplines not related to computing including, for example, biology, business, construction and engineering. Among the reasons for this disciplinary expansion is also the increasing digitalisation of all aspects of modern life as well as the increased complexity that such digitalisation entails

in terms of emerging needs and requirements. The natural consequence is a proliferation of conceptual models of multiple real-world domains which sooner or later require data and systems to interoperate and/or integrate. In this emerging scenario ontology-driven conceptual modeling becomes even more fundamental to modern life due to its intrinsic ability to represent reality in a theoretically and semantically consistent manner. Foundational (or upper ontologies) have the potential to resolve the difficult problems that derive from a lack of a consistent and sound ontological theory. The benefits that can derive from the application of a foundational ontology include improved mapping to the real world domain, increased level of communication and understanding among stakeholders, model reuse, semantic integration and interoperability and increased overall efficiency and effectiveness of information systems development and evolution. Foundational ontologies can also assist in overcoming the inscrutable nature of most mainstream artificial intelligence methods (i.e. neural networks and machine learning). Contributions in the form of research, research-in-progress papers and practitioner reports are welcome.

CMOMM4FAIR – Integrated in OntoCom
3rd Workshop on Conceptual Modeling, Ontologies and (Meta)data Management for Findable, Accessible, Interoperable and Reusable (FAIR) Data
https://cmomm4fair.github.io/

In order to improve findability, accessibility, interoperability and reusability of different types of digital objects at scale, the FAIR principles focus on machine actionability. Therefore, a critical aspect to achieve this machine actionability is semantics. Proper semantic descriptions should be available to make "intelligible" for computational agents the elements of a FAIR data ecosystem such as data policies, data management plans, identifier mechanisms, standards, FAIRification processes, FAIRness assessment criteria and methods, data repositories and supporting tools.

The goal of the workshop on **Conceptual Modeling, Ontologies and Metadata Management for FAIR Data** is to discuss challenges, solutions and impact of, for one side, the use of conceptual modeling and metadata and data management to support the improvement of FAIRness in digital objects and, for the other side, the adoption of the FAIR principles to guide improvements in conceptual modeling.

Program
11:30 - 13:00: Introduction and Research Paper Presentations
- Introduction to the Workshop (15 minutes)
- euFAIR: a digital tool for assessing the FAIR principles (25 minutes); Matteo Lia, Davide Damiano Colella, Antonella Longo and Marco Zappatore - From the Workshop on 3rd Workshop on Conceptual Modeling, Ontologies and (Meta)data Management for Findable, Accessible, Interoperable and Reusable (FAIR) Data (CMOMM4FAIR)
- Towards Semantics for Abstractions in Ontology-Driven Conceptual Modeling (25 minutes); Elena Romanenko, Oliver Kutz, Diego Calvanese and Giancarlo Guizzardi
- Misalignments of Social and Numerical Identity - an Ontological Analysis (25 minutes) Birger Andersson, Maria Bergholtz and Paul Johannesson

13:00 - 14:00: Lunch
14:00 - 15:30: Research Paper Presentations

- Using an Ontology for Defining Semantics of Fractal Enterprise Model (25 minutes) Ilia Bider and Erik Perjons
- One Model to Rule Them All A demonstration of ontology-driven minimum viable product development for a local tourism platform (25 minutes) Thomas Derave, Frederik Gailly, Tiago Princes Sales and Geert Poels
- Enhancing Requirement-Information Mapping for Sustainable Buildings: Introducing the SFIR Ontology (15 minutes) Karim Farghaly and Kell Johnes
- On the use of ChatGPT for classifying domain terms according to upper ontologies (25 minutes) Fabrício Rodrigues, Alcides Lopes, Nicolau Santos, Luan Garcia, Joel Carbonera and Mara Abel

15:30 - 16:00 Break
16:00 - 17:30 **Keynote by Nicola Guarino (2023 Peter P. Chen Awardee)**

SmartFood – Mon, 06 November, 09:30-13:00
1st Workshop on Controlled Vocabularies and Data Platforms for Smart Food Systems
https://sites.google.com/view/smartfoodworkshop

SmartFood is a forum meant to bring together researchers, industry workers (e.g. logistics, health, etc.), and consumer organizations that are concerned about the future of food-related systems and processes. More specifically, we hope to gather people that believe that Semantic technologies, such as controlled vocabularies and ontologies, Data platforms, and consumer behavior-based models are at the core of the solutions targeting this field. On the other hand, this forum aims to attract discussion on sustainable business models in data-driven agri-food.

Program
9h30-11h - Session 01 - Keynote Speech and Discussion: "A FAIR-compliant distributed analysis platform for smart food systems"
- 9h30 - Opening
- 9h40 - Keynote Speech by Luis Olavo Bonino
- 10h30 - Interactive Brainstorming

11h-11h30 - Coffee Break
11h30-13h - Session 02 - Technical Papers
- 11h30 - *Gayane Sedrakyan, Anand Gavai and Jos Van Hillegersberg.* Design implications towards human-semantic recommenders for sustainable food consumption
- 12h00 - *Cristhian Figueroa, Nadia Yacoubi Ayad, Nicolas Audoux and Catherine Faron.* CoffeeWKG: A Weather Knowledge Graph for Coffee Regions in Colombia
- 12h30 - *Filipi Soares, Ivan Bergier, Maria Carolina Coradini, Ana Paula Ferreira, Milena Telles, Benildes Maculan, Maria de Cléofas Alencar, Bibiana Almeida, Victor Simão, Debora Drucker, Sérgio Serra and Márcia Vieira.* Unveiling major Knowledge Organization Systems' artifacts for Agriculture with network graphs

QUAMES – Mon, 06 November, 09:30-13:00
4th International Workshop on Quality and Measurement of Model-Driven Software Development
https://pros.webs.upv.es/sites/quames_2023

Model-driven development (MDD) is a widely adopted paradigm that automates software generation by means of model transformations and reuse of development knowledge. The MDD advantages have motivated the emergence of several modeling proposals and MDD tools related to different application domains and stages of the development lifecycle. In MDD, the quality of conceptual models is critical because it directly impacts the final software systems' quality. Therefore, it is essential to evaluate conceptual models and predict the software products' relevant characteristics. Additionally, MDD project management must be adapted to take into account that programming effort is being replaced by a modelling effort at an earlier stage. Hence, measuring models is crucial to support cost estimation and project management.

To address these challenges, **QUAMES** aims to attract research on methods, procedures, techniques, and tools for measuring and evaluating the quality of conceptual models that can be used in MDD environments. Its primary goal is to enable the development of high-quality software systems by promoting quality assurance in the modeling process.

Program
- 9:30-11:00 – Opening and Keynote
- 9:30 - Opening and welcome to the QUAMES workshop
- 9:45 - Keynote by Isabel Brito: Cyber Physical Systems - Putting
- Sustainability in the Loop
- 11:00-11:30 - Coffee Break
- 11:30-13:00 - Session 2 – Selected papers
- 11:30 - Rosa Velasquez, Claudia Negri-Ribalta, Rene Noel and Oscar
- Pastor. Exploring Understandability in Socio-Technical Models for Data
- Protection Analysis: Results from a Focus Group
- 12:00 - Cristhian Figueroa, Nadia Yacoubi Ayad, Nicolas Audoux and
- Catherine Faron. FlowTGE: Automating Functional Testing of Executable Business Process Models Based on BPMN
- 12:30 - Álvaro Navarro, Javier Sanchis, Alejandro Maté and Juan
- Trujillo. An Approach Aligned with Model Driven Development to
- Evaluate the Quality of Explainable Artificial Intelligence

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