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EDITORIAL

Report on the State of the SoSyM Journal (2024 summary)

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Dear SoSyM readers,

We are delighted to present the first SoSyM issue of 2025! Traditionally, this first issue contains an editorial that provides the annual overview of the journal's current state. The past year has been highly productive, marked by the publication of numerous new SoSyM papers, the creation of a new SoSyM section dedicated to modeling tools, and the addition of new editors to our community. A key highlight, as always, was the MODELS 2024 community meeting held in Linz, Austria. This 27th instance of the conference brought enormous new insights. Below is a group photo of the MODELS 2024 participants.

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1 Changes at SoSyM

We bid farewell to two esteemed editors. Antonio Vallecillo has been a profoundly influential peer and friend to many in the software modeling community. Through his significant contributions to standardizations and software modeling analysis, his dedication to managing and editing papers on transformation approaches has been invaluable. Connie Heitmeyer, known for her work on formal methods and modeling, also retires from the editorial board. We extend our deepest gratitude to Antonio and Connie for their continuous and outstanding support over the years. Their contributions have been pivotal to the growth and success of SoSyM!

In 2024, we introduced a new section at SoSyM dedicated to modeling tools. We seek articles that describe and analyze innovative software tools and systems shaping the future of modeling and related fields. We believe tools are an essential contribution to our scientific and community practice, and deserve to be recognized as such. The description of this new section and the associated evaluation criteria of the tool papers are available online at https://www.sosym.org/tool_paper/. Long-time SoSyM Editor, Jordi Cabot, joins our newest Editor, Abel Gómez, in leading this new tool paper focus area.

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In 2024, we also amplified our visibility on various social media platforms, including the initiation of a LinkedIn account that we will rely on in the future to communicate about the journal. Judith Michael is our new Editor in charge of social media for SoSyM. Welcome Judith and Abel!

Judith Michael

Abel Gómez

2 Congratulations to SoSyM Associate Editor-in-Chief, Marsha Chechik!

At the time of our writing of this editorial, we learned that Marsha Chechik was just named an ACM Fellow! Congrats Marsha—we are so happy and excited for this well-deserved honor!

3 2024 Summary Statistics

The six SoSyM issues published in 2024 contained 19 Regular papers, 29 Special Section papers, 5 Theme Section papers, 7 Expert Voices, 7 Guest Editorials, and 2 Errata. This represents a collection of 69 papers (1,594 pages) published in volume 23. Compared to the 2,010 pages in 2023, the number of pages decreased. This decrease was caused by our efforts to reduce the backlog in previous years. We published more pages than Springer planned in the past few years. Thus, 2024 was the first year in which the backlog was low enough such that we published precisely the number of pages Springer planned (256 pages per issue). We are grateful to Elizabeth Cervini, our Springer Nature liaison, for her commitment and help in reducing the time to publication by processing papers expeditiously after acceptance.

The two-year Impact Factor (IF) for SoSyM is currently 2.0, which is the same as last year (previously at 1.910 in 2021 and 2.211 in 2022). The five-year IF also remained at 2.1, as in 2023. These numbers are encouraging because the flushing of the backlog presented a risk of a lower IF. Fortunately, this fear has not materialized. Furthermore, the overall trend of the IF has continued upward since the first IF in 2009. The h-5 Google Scholar ranking places SoSyM at #15 among all conferences and journals related to the category Software Systems (#13 in 2023). Further rankings can be found at https://www.sosym.org/.

Throughout 2024, SoSyM received 514 submissions—a very high increase when compared to 323 submissions in 2023. The number of downloads continued to increase over the last 6 years. At the end of 2024, there were 354,697 downloaded SoSyM articles during the calendar year (compared to 273,171 in 2022 and 354,238 in 2023).

The acceptance rate for 2024 was 26.45%, a slight increase from 22.22% in 2023. The average time from submission to the final decision (accept or reject) was reduced to 122 days (162 days in 2022 and 126 days in 2023).

4 SoSyM's Ten-year Most Influential Paper Awards

With each year, we look back through the 10-year history of SoSyM to observe what contributions had the most impact and what topics emerged as most prominent over the decade. We identified the two papers (from the Regular and Theme Section areas) that had the most impact over the past decade since their publication. The selection is based on the ISI citation index among papers published in SoSyM, and a thorough review by the EiCs. The following two papers were identified and the corresponding authors had the opportunity to present reflections on their papers at MODELS 2024. We congratulate the authors for these "Most Influential" papers of SoSyM over the past decade! We are glad that they continue to be very active in the community. More information about the awards can be found at: https://www.sosym.org/awards/.

The **SoSyM 2024 "Ten-year most influential Regular paper award"** was presented to:

Vittorio Cortellessa, Antinisca Di Marco, and Catia Trubiani, “An approach for modeling and detecting software performance antipatterns based on first-order logics”, In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 13, Issue 1, pp. 391–432, Springer, February 2014. https://doi.org/10.1007/s10270-012-0246-z

The **SoSyM 2024 “Ten-year most influential Theme Section paper award”** was presented to:

Ulrich Frank, “Managing the evolution of data-intensive Web applications by model-driven techniques”, In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 13, Issue 3, pp. 941–962, Springer, July 2014. https://doi.org/10.1007/s10270-012-0273-9

5 SoSyM’s “Journal-First” Papers at MODELS 2024

In 2024, the well-established collaboration between SoSyM and the MODELS conference with the organization of the SoSyM “Journal-First” option continued. This collaboration enables authors of recent SoSyM Regular and Theme Section papers to present their work at MODELS (assuming the paper content has not been presented previously at any other conference). Through this collaboration, SoSyM authors have the opportunity to reach a broad audience to present their work. The 2024 collaboration led to seven “SoSyM First” papers presented at MODELS. We are very thankful to the MODELS 2024 “Journal-First” Chair (Silvia Abrahão), General Chairs (Alexander Egyed and Manuel Wimmer), Organizing Chair (Stefan Klikovits), and the PC Chairs (Marsha Chechik and Benoit Combemale) for their help in the integration of the SoSyM “Journal-First” papers into the general MODELS 2024 schedule. The SoSyM papers presented at MODELS 2024 included the following:

- Judith Michael and Volodymyr A. Shekhovtsov, "A model-based reference architecture for complex assistive systems and its application", In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 23, Issue 5, pp. 1247–1274, Springer, October 2024. https://doi.org/10.1007/s10270-024-01157-1
- Hossain Muhammad Muctadir, David A. Manrique Negrin, Raghavendran Gunasekaran, Loek Cleophas, Mark van den Brand, and Boudewijn R. Haverkort, "Current trends in digital twin development, maintenance, and operation: an interview study", In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 23, Issue 5, pp. 1275–1305, Springer, October 2024. https://doi.org/10.1007/s10270-024-01167-z
- Bentley James Oakes, Javier Troya, Jessie Galasso, and Manuel Wimmer, "Fault localization in DSLTrans model transformations by combining symbolic execution and spectrum-based analysis", In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 23, Issue 3, pp. 737–763, Springer, June 2024. https://doi.org/10.1007/s10270-023-01123-3
- Arianna Fedeli, Fabrizio Fornari, Andrea Polini, Barbara Re, Victoria Torres, and Pedro Valderas, "FloBP: a model-driven approach for developing and executing IoT-enhanced business processes", In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 23, Issue 5, pp. 1217–1246, Springer, October 2024. https://doi.org/10.1007/s10270-024-01150-8
- Thuy Nguyen, Imen Sayar, Sophie Ebersold, and Jean-Michel Bruel, "Identifying and fixing ambiguities in, and semantically accurate formalisation of, behavioural requirements", In: *Journal on Software and Systems Modeling (SoSyM)*, Volume 23, Issue 6, pp. 1513–1545, Springer, December 2024. https://doi.org/10.1007/s10270-023-01142-0
- Qusai Ramadan, Marco Konersmann, Amir Shayan Ahmadian, Jan Jürjens, and Steffen Staab, "MBFair: a model-based verification methodology for detecting violations of individual fairness", In this issue.https://doi.org/10.1007/s10270-024-01184-y
- Olav Bunte, Jasper Denkers, Louis C. M. van Gool, Jurgen J. Vinju, Eelco Visser, Tim A. C. Willemse, and Andy Zaidman, "OIL: an industrial case study in language engineering with Spoofax", In this issue. https://doi.org/10.1007/s10270-024-01185-x

More information about SoSyM’s Journal-First publication process can be found at: https://www.sosym.org/journal_first/.

6 SoSyM Welcomes a New Conference

The International Conference on Engineering Digital Twins (EDTconf) was initiated in 2024 at Linz, co-located with the MODELS conference. The inaugural EDTconf was organized by Loek Cleophas, Judith Michael, and Andreas Wortmann. In the future, the EDTconf will seek to unite researchers and practitioners from academia and industry to collaboratively shape the future of systematically designing, developing, validating, deploying, operating, evolving and maintaining digital twins. As discussed in earlier editorials, a digital twin to a large extent shares the characteristics of a model of its physical twin. Thus, SoSyM is looking forward to intensively assisting this new conference series! The

first edition of the conference leveraged the conference proceedings to invite submitted extensions of the best papers to an annual theme section at SoSyM about the engineering of digital twins. We will also investigate the publication of the proceedings at SoSyM in the future.

7 With Appreciation to our 2024 Reviewers

The vitality of a research community is anchored in the selfless contributions of volunteers acting as reviewers. Our software and systems modeling community has consistently answered the call to assist SoSyM with remarkable enthusiasm. We are immensely thankful for the support rendered by all reviewers in aiding the modeling community. Additionally, we are excited to extend our deep appreciation to those selected as SoSyM's Best Reviewers of 2024. This distinction, awarded for their exceptional technical insights and comprehensive feedback to authors throughout the past year, is a testimony to their dedication. Congratulations to each recipient, who has been honored with a certificate of recognition:

> Moussa Amrani, Anthony Anjorin, Simona Bernardi, Alexander Bock, Dominik Bork, Istvan David, Andrea Delgado, Victoria Döller, John Fitzgerald, Sybren Kinderen, Alexander Knapp, Lucas Lima, Vince Molnár, Paula Muñoz, Adam Petz, Jeremy Sproston, Daniel Strüber, Juan Manuel Vara, Martin Vassor, and Janis Voigtländer.

The list below represents the names of all reviewers who contributed their expertise by reviewing one or more papers for the journal in 2024. We extend our heartfelt gratitude for their reviews and commend their dedication to the SoSyM community. Their invaluable service plays a crucial role in maintaining the quality and integrity of our publications! For a comprehensive directory of all reviewers, we invite you to visit our website at https://www.sosym.org/reviewers/.

Han van der Aa, Sara Abbaspour, Samy Abbes, Vlad Acreţoaie, Mehdi Adda, Ademar Aguiar, Iván Alfonso, Shaukat Ali, Syed Juned Ali, Andrew Allen, Joao Paulo Almeida, Hakam Alomari, Sanaa Alwidian, Nuno Amalio, Vasco Amaral, Elvio Gilberto Amparore, Moussa Amrani, Daniel Amyot, Amal Anda, Anthony Anjorin, Joao Araujo, Kousar Aslam, Colin Atkinson, Joanne Atlee, Christian Attiogbe, Jakob Axelsson, Aren Babikian, Torsten Bandyszak, Mohan Bansal, Yuyan Bao, Olivier Barais, Mikhail Barash, Souvik Barat, Luciano Baresi, Konstantinos Barmpis, Balbir Barn, Malak Baslyman, Ali Asghar Bataleblu, Grzegorz Bazydlo, Iris Beerepoot, Meriem Ben Chaaben, Nelly Bencomo, Luca Berardinelli, Simona Bernardi, Maicon Bernardino, Marcello Bersani, Lorenzo Bettini, Dominique Blouin, Ilona Bluemke, Alexander Bock, Sherrene Bogle, Luiz Olavo Bonino da Silva Santos, Dominik Bork, Artur Boronat, Jalil Boudjadar, Erwan Bousse, Achim Brucker, Jean-Michel Bruel, Julien Brunel, Hugo Bruneliere, Alessio Bucaioni, Antonio Bucchiarone, Robert Buchmann, Thomas Buchmann, Erik Burger, Lola Burgueño, Michael Butler, Jordi Cabot, Daniel Calegari, Gustavo Callou, Javier Luis Canovas Izquierdo, Gustavo Carvalho, Martin Chapman, Michel Chaudron, David Chemouil, Boqi Chen, Thomas Chiang, Rath Chouhan Kumar, Antonio Cicchetti, Federico Ciccozzi, Robert Clarisó, Manuel Clavel, Marco Comuzzi, Javier Criado, Giancarlo Dalle Ave, Fabiano Dalpiaz, Marian Daun, Istvan David, Nancy Day, Juan de Lara, Marne de Vries, Victoria Degeler, Andrea Delgado, Joachim Denil, Massimiliano Di Penta, Juri Di Rocco, Davide Di Ruscio, Amleto Di Salle, Claudio Di Sipio, Remco Dijkman, Juergen Dingel, Victoria Döller, Paul Drews, Mikael Ebrahimi Salari, Alexander Egyed, Martin Eisenberg, Mathias Ekstedt, Ghizlane El Boussaidi, Mohamed El-Attar, Carsten Ellwein, Romina Eramo, Rik Eshuis, Arianna Fedeli, Peter Fettke, Kathrin Figl, Hans-Georg Fill, Fabrizio Fornari, Sophie Fortz, Mo Foughali, Xavier Franch, Ulrich Frank, Mattia Fumagalli, Kelly Garces, Antonio García-Domínguez, Antonio Garmendia, Eduardo Geraldo, Sebastien Gerard, Sepideh Ghanavati, Silvia Ghilezan, Marco Giunti, Mario Gleirscher, Martin Glinz, Cláudio Gomes, Pablo Gómez-Abajo, Cristian Gomez-Macías, Martijn Goorden, Tomasz Górski, Jānis Grabis, David Granada, Iwona Grobelna, Heerko Groefsema, Katharina Großer, Georg Grossmann, Alicia Grubb, John Grundy, Rong Gu, Esther Guerra, Renata Guizzardi, Jens Gulden, Mohammad Hamdaqa, Thomas Hartmann, Jameleddine Hassine, Oystein Haugen, Xiao He, Jose Antonio Hernández López, Celso Hirata, Nico Hochgeschwender, Ta'id Holmes, Jennifer Horkoff, Li Guo Huang, Amjad Ibrahim, Petros Iliadis, Ludovico Iovino, Luis Iribarne, Amin Jalali, Manfred A. Jeusfeld, Jean-Marc Jezequel, Matthieu Jimenez, Christian Johansen, Einar Broch Johnsen, Robbert Jongeling, Jürgen Jung, Eduard Kamburjan, Gabor Karsai, Anureet Kaur, Hendrik Kausch, Timo Kehrer, Wael Kessentini, Sybren Kinderen, Kathrin Kirchner, Stefan Klikovits, Alexander Knapp, Simon Koch, Shekoufeh Kolahdouz Rahimi, Dimitris Kolovos, Agnes Koschmider, Jens Kosiol, Anne Koziolek, John Krogstie, Srdjan Krstic, Hongyu Kuang, Burcu Kulahcioglu Ozkan, Géza Kulcsár, Evgeny Kusmenko, Leen Lambers, Kevin Lano, Théo Le Calvar, Yves Le Traon, Sander Leemans, Henrik Leopold, Maurizio Leotta, Timothy Lethbridge, Sotirios Liaskos, Lucas Lima, Peter Linington, Igor Linkov, Malte Lochau, José Antonio López, Jinzhi Lu, Giovanni Lugaresi, Roman Lukyanenko, Qin Ma, Suvodeep Majumder, Amel Mammar, David Manrique Negrin, Luciano Marchezan, Tiziana Margaria, Beatriz Marín, Julio Marino, Stefan Marksteiner, Salvador Martinez, Kristóf Marussy, Antonio Mastropaolo, Raimundas

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We extend our warmest wishes to the SoSyM community for a joyful and prosperous New Year filled with exciting scientific discoveries and fascinating new contributions! We hope you thoroughly enjoy the articles featured in this edition as we eagerly anticipate the wealth of new publications scheduled for 2025. Additionally, we invite you to delve into the extensive SoSyM article archive, which spans over two decades of groundbreaking research and scientific advancements (available at https://link.springer.com/journal/10270)—a true testament to the enduring impact and excellence of our community.

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