

Editorial: 11th Simulation Workshop 2023 special issue

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The OR Society Simulation Workshop 2023 (SW23) was held at the National Oceanography Centre in Southampton between 27-29 March. The previous edition had been online due to the COVID-19 pandemic, and it was great to be back for an in-person event this time. The conference was the largest OR Society Simulation Workshop to that point, and attracted a good mix of academics and practitioners.

The programme covered various aspects of simulation, from the theory of modelling and simulation to its many applications. The conference also included the new feature of an industrial case study, inviting practitioners to come and give a presentation without the need for a full paper. In total, the conference consisted of two keynote speakers (Professors Susan Howick and Raghu Pasupathy), five tutorials, twenty full papers, five industrial case studies, fourteen posters and a panel session. The papers discussed the range of activities involved in the simulation life cycle, from the core conceptual modelling and project quality/validation aspects through to the more technical statistical input modelling, output analysis and optimisation. All modelling paradigms, discrete-event simulation, agent-based simulation, systems dynamics and hybrid simulation, were covered. The applications were equally broad, considering the traditional healthcare settings, such as modelling the discharge of hospital patients and long-term demand-capacity modelling, and supply chains to sustainability, CO₂ emissions and carbon budgets. The impact of simulation in helping to manage the COVID-19 pandemic was also a common theme. The conference closed with a panel session in memory of Professor Ray Paul, someone whose contributions greatly shaped the UK simulation research community over many decades, both in his research and his support for activities such as the Journal of Simulation and the Simulation Workshop itself.

After a packed conference, we were delighted that a number of the authors decided to extend their work for this special issue. A total of 13 papers were submitted, out of which five papers were accepted. The papers submitted for this special issue also represent the broad range of simulation as research topic. Each underwent the full review process, consistent with the peer-review process followed by the Journal of Simulation.

The first paper in this special issue is “Towards Sharing Tools and Artefacts for Reusable Simulations in Healthcare”, where [Monks et al. \(2025\)](#) present a new framework to improve the reusability, reproducibility, and accessibility of healthcare simulation models. STARS (Sharing Tools and Artefacts for Reusable Simulations) sets out a number of essential and optional components that simulation modellers can use to make their simulation models more open, shareable, and usable by various audiences (for example healthcare researchers, clinicians, and managers). The paper demonstrates the usefulness of the STARS framework through three case studies, which use various open-source simulation tools such as SimPy and Ciw ([Palmer et al., 2019](#)). The benefits of this approach include improved model reuse, transparency, and accessibility for non-technical users.

In the second paper, [Robinson and Brooks \(2025\)](#) explore the role of “Assumptions and Simplifications in Discrete-Event Simulation Modelling”. The authors point out that there is a clear lack of guidance for assumptions and simplifications in the literature, and fill this gap by developing a new systematic framework. The framework includes steps on how to explicitly document assumptions and simplifications, assess their level of validity, and evaluate their potential impact on model results. It is then demonstrated through a real-world industrial case study at a Ford engine assembly plant, where it helped to improve model transparency, stakeholder communication, and confidence in simulation outputs.

In “Using Simulation for Long-term Bed Modelling in Critical Care”, [Lentle et al. \(2025\)](#) present a discrete event simulation model to support long-term planning of a new hospital facility at the Critical Care facility at University Hospital of Wales. The aim of this study was to estimate the number of intensive care and post-anaesthesia care beds required to safely meet future demand until 2040. The model also demonstrates how hospital-wide constraints such as discharge timing can impact access to critical care. The simulation model has already been used to inform decision-making at the hospital, and demonstrates the value of discrete event simulation in the strategic design of healthcare facilities.

In “Uncertainty Quantification Using Simulation Output: Batching as an Inferential Device”, [Jeon et al. \(2025\)](#) discuss output analysis, and specifically batching. The authors present batching as a generic tool that can be used in a wide range settings for simulation output analysis. They show batching is able to estimate bias, variance or quantiles of the simulation-based estimator and provide confidence regions as a measure of error on a simulation estimator. The authors provide theoretical analysis on the consistency of proposed estimators, resulting in practical advice on considerations such

as choosing the number of batches and how they overlap.

For a simulation project to have impact, it is very important that everyone has confidence in the model. In the final paper of this issue, “Simulation Project Quality and Validation Profiling”, [Arthur and Winch \(2025\)](#) argue that going beyond a statistical model validation that focuses on model accuracy, and considering the whole process, is essential for measuring the full quality of a project. Through a reflective practice approach, the authors propose a scorecard that accounts for other aspects such as client interaction and how the model will be used. They suggest that this could be particularly useful to help evaluate quality in projects where the precise output of the simulation model is not the focus, such as in educational or exploratory uses of simulation.

We want to thank all the authors for their contributions and engagement with the process, all the reviewers for their detailed and constructive comments that helped in improve the papers, and the current and former JOS editors for the support and advice in the processes of putting this special issue together. We hope you will find these papers insightful and that they give a good flavour of SW23.

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