

Applying Concurrent Engineering to Remote Interdisciplinary Design: A Sustainable Tiny House Project

Original

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**2nd International Conference
Social Contexts of Science
Interdisciplinarity and Technology
Assessment**

12–13 May 2025

**BOOK OF
ABSTRACTS**



Wrocław University
of Science and Technology



Faculty of Management



International
conference on
Social Contexts
of Science



International
Staff Week

**2nd International Conference
Social Contexts of Science
Interdisciplinarity and Technology
Assessment**
organized in parallel with
**Erasmus+
International Staff Training Week (ISTW)**

12 and 13 May 2025

The conference was co-financed by
Wrocław Tech under the Rector's Initiative: "Support for Scientific Events 2025"



Wrocław University
of Science and Technology



Faculty of Management



International
conference on
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of Science



International
Staff Week

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Schedule

SCS Conference 2025 – Schedule

This schedule outlines the events for the 2nd International Conference on Social Contexts of Science and the International Staff Training Week (ISTW) 2025.

Note: In Scientific Sessions, the bolded author indicates the presenting author.

Day 1: Monday, 12 May 2025

Venue: Building H-14, Wrocław Tech Campus: Unless otherwise specified, all sessions, coffee breaks, and lunch on this day will take place in this building ([More Location Info](#)).

Time	Event / Title / ID	Speaker / Authors
09:00 - 10:00	Registration	
10:00 – 10:30	Welcome and Inauguration	
10:30 – 11:15	Keynote 1 / ISTW Intro-Lecture: <i>"Modelling Public Discourse: A Computational Approach to Polarisation, Radicalisation, and Truth Seeking Under Disinformation"</i>	Rainer Hegselmann
11:15 – 11:45	— <i>Coffee Break</i> —	
Conference/ISTW Scientific Session 1 <i>Theme: Computational Social Science, Modeling, Networks</i> Session Chair: Katarzyna Sznajd-Weron		
11:45–12:00	<i>'Phase Diagram' for Nowak–Szamrej–Latané Model of Opinion Dynamics</i> ID: SCS2025/2KMSPT	Malarz, K. ; Wołoszyn, M.
12:00–12:15	<i>Q-Voter Model With Weighted Social Influence to Study Consensus Building</i> ID: SCS2025/2PMQID	Mullick, P. ; Sen, P.
12:15–12:30	<i>An Interplay Between Noise and Temperature in a Simple Coupled Model of Opinion Dynamics</i> ID: SCS2025/2ACA00	Chmiel, A. ; Sienkiewicz, J.

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Day 1 Schedule Continued

Time	Event / Title / ID	Speaker / Authors
12:30–12:45	<i>Conformity and External Influence: Opinion Modeling on Various Lattices</i> ID: SCS2025/1MWCOS	Wołoszyn, M.
12:45–13:00	<i>The Origin of Inequalities in Early Societies: An ABM Model</i> ID: SCS2025/1PSTWA	Sobkowicz, P.
13:00–13:15	<i>Network Analysis of Parliamentary Voting: Uncovering Coalition Dynamics in the Polish Sejm</i> ID: SCS2025/2JSNTO	Szwabiński, J.; Gunia, K.
13:15–13:30	<i>Rigorous Agent-Based Modeling of Green Practice Diffusion: Analytical Approximations and Validation on Organizational Networks</i> ID: SCS2025/3AARAA	Abramiuk-Szurlej, A.; Sznajd-Weron, K.; Szurlej, M.
13:30 - 14:30	— <i>Lunch</i> —	
14:30 – 15:15	Keynote 2: <i>"A Daring Strategy for Fake News: No Bans, No Fact-Checking, but Sequestration"</i>	Serge Galam

Conference/ISTW Scientific Session 2

Theme: Technology in Society & Education, Social Context

Session Chair: Marta Rusnak

15:15–15:30	<i>Artificial Intelligence in Education: Innovation vs. Technostress and Technology Anxiety – Research Insights</i> ID: SCS2025/2NDATA	Demeshkant, N.; Trusz, S.
15:30–15:45	<i>Linked Open Data in Public Institutions - Lower Silesia (Poland) Case Study</i> ID: SCS2025/1ALLTL	Lamek, A.
15:45–16:00	<i>Political Engagement Approaches for Adoption of Complementary Currency in Complex Societal Settings</i> ID: SCS2025/4PBPCC	Budrytè, P.

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Day 1 Schedule Continued

Time	Event / Title / ID	Speaker / Authors
16:00–16:15	<i>Enhancing Engagement and Accessibility With Linktr.ee in Education</i> ID: SCS2025/1GGEIS	Gutu-Robu, G.
16:15–16:30	<i>Teacher Digital Skills in Online Language Teaching and Learning</i> ID: SCS2025/3GVTTL	Valunaite Oleskeviciene, G.; Mockiene, L.; Tamosiuniene, L.
16:30–16:45	<i>Teaching Excellence Seminars – The Approach to Present New Methods for Teaching and Learning</i> ID: SCS2025/5KLTTT	Laszczyk, K.; Poturaj, H.; Licznerska, A.; Krysiak, J.; Kijaszek, W.
16:45–17:00	<i>Consumer Buying Behavior and Purchase Decision-Making in the Apparel Industry - A Study of Saurashtra Region in India</i> ID: SCS2025/1AJKCC	Jayesh Katrodia, A.
17:00–17:15	<i>The Remote Student Concurrent Interdisciplinary Project for the Tiny and Sustainable House</i> ID: SCS2025/9KLTTT	Urszula Laszczyk, K.; Komarzynska-Swiecik, E.; Costamagna, E.; Zoltowski, M.; Kaczmarek, A.; Carollo, M.; Remic, K.; Ceglarek, J.; Bertrand, R.
17:15 – 19:15	Wrocław City Walking Tour	<i>Starting Point: Building H-14</i>

Day 2: Tuesday, 13 May 2025

Venue: Building H-14, Wrocław Tech Campus: Unless otherwise specified, all sessions, coffee breaks, and lunch on this day will take place in this building ([More Location Info](#)).

Time	Event / Title / ID	Speaker / Authors
09:00 – 09:45	Keynote 3: <i>"Technology Assessment In and For the Digital Transformation"</i>	Armin Grunwald

Conference/ISTW Scientific Session 3

Theme: AI Applications, Sustainability, Circular Economy

Session Chair: Yash Chawla

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Day 2 Schedule Continued

Time	Event / Title / ID	Speaker / Authors
09:45–10:00	<i>The Use of Large Language Models in Qualitative Text Analysis: A Comparative Study of AI and Traditional Methods...</i> ID: SCS2025/2AUTTL	Uss-Lik, A. ; Dyczek, B.
10:00–10:15	<i>Considerations on the Opportunity to Implement Specific "Smart" Agriculture Initiatives Into Action</i> ID: SCS2025/3SGCLA	Gavrilas, S. ; Tigan, E.; Brinzan, O.
10:15–10:30	<i>Empowering Circular Economy Through Effective Waste Segregation Awareness: An Innovation-Driven Approach to Sustainable Public Engagement</i> ID: SCS2025/1JBEIC	Bhanderi, J.
10:30–10:45	<i>Exploring the Potential of Smart Packaging in Circular Economy Strategies</i> ID: SCS2025/4MFETS	Fiałkowska-Filipek, M. ; Wangwacharakul, P.; Karpavičė, J.; Chawla, Y.
10:45–11:00	<i>Bridging Strategy and Operations for Circularity: Regional Collaboration in Post-Consumer Used Textile Collection and Sorting</i> ID: SCS2025/2PWBT	Wangwacharakul, P. ; Laurence Esguerra, J.
11:00–11:15	<i>Assessing the Confluence of Sustainability and Business Models in the Mobile App Development Industry in Poland: An Investigation into Company Strategies and User Perceptions</i> ID: SCS2025/2JCAIB	Cieślak, J. ; Chawla, Y.

11:15 – 11:45 — *Coffee Break* —

11:45 – 12:30 **Keynote 4:** *"The Ethics of Paying Research Participants: A Moral Obligation or a Necessary Evil?"* **Joanna Różyńska**

Conference/ISTW Scientific Session 4

Theme: Ethics, Interdisciplinarity, Social Context/Innovation

Monika Małek-Orłowska

12:30–12:45	<i>A Tanzanian Maternal and Neonatal Healthcare Dataset Compliant With Federated Learning: Privacy, Fairness, and Compliance</i> ID: SCS2025/3JMAIM	A. Mwakatobe, J. ; F. Michael, K.; Nyambo, D.
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Day 2 Schedule Continued

Time	Event / Title / ID	Speaker / Authors
12:45–13:00	<i>Interdisciplinarity for Stable Future of Our Planet</i> ID: SCS2025/1BKITI	Knosala, B.
13:00–13:15	<i>Interdisciplinary Approach to Building Local Communities' Resilience in Crisis Conditions</i> ID: SCS2025/1NSIIS	Skorobogatova, N.
13:15–13:30	<i>Processors and Sensors or Paper and Clay? Low-Tech Games in Neuroarchitecture</i> ID: SCS2025/1MRPTN	Rusnak, M.
13:30–13:45	<i>The Significance of Language Education at Technical Universities</i> ID: SCS2025/1ALTMM	Licznarska, A.
13:45–14:00	<i>The Capacity of Volunteer Networks for Sustainable Social Innovation in Ukraine</i> ID: SCS2025/30VTSV	Voropai, O.; Chala, N.; Pichyk, K.
14:00 - 14:45	— <i>Lunch</i> —	
14:45 – 15:30	Keynote 5: <i>"Becoming an Academic Discipline in Germany: TA From Policy Advice to Problem-Oriented Research"</i>	Bettina-Johanna Krings
15:30 – 16:30	Panel Discussion on <i>Social Context of Science</i>	Panel Details
16:30 - 16:45	Closing	
19:00 – 21:30	Gala Dinner Location: Hotel Wodnik Na Grobli 28, 50-421 Wrocław	View Map



Session II

Technology in Society & Education,
Social Context

Applying Concurrent Engineering to Remote Interdisciplinary Design: A Sustainable Tiny House Project

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Jan-Peter Ceglarek⁵, Reinhold Bertrand⁵

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Abstract

The increasing complexity of sustainable building design requires effective interdisciplinary collaboration, yet traditional methods often rely on sequential workflows, leading to inefficiencies and fragmentation between disciplines. This paper explores Concurrent Engineering (CE) as a novel approach to interdisciplinary architectural and engineering design, emphasizing its potential to revolutionize the way professionals from diverse fields collaborate in the built environment sector. While CE has been successfully applied in aerospace and manufacturing, its adoption in building design and construction remains in its early stages. This study presents an innovative implementation of Concurrent Engineering in an academic setting, applied to the development of a Tiny Sustainable House with a closed water cycle and an autonomous IoT-based environmental management system. Conducted within the framework of the UNITE! Alliance, the project engaged students from architecture, mechatronics, mechanics, and environmental engineering across Wroclaw University of Science and Technology, Politecnico di Torino, and TU Darmstadt. By working in a remote, concurrent digital environment, participants integrated expertise from multiple disciplines in real-time, employing CE principles to ensure optimal efficiency, sustainability, and circular economy strategies in the design process. The study provides critical insights into the role of Concurrent Engineering in interdisciplinary building design, identifying both its advantages—enhanced knowledge exchange, reduced iteration times, and improved integration of technical and sustainability aspects—and challenges, such as digital coordination barriers and decision-making complexities in virtual settings. Findings suggest that CE has the potential to transform interdisciplinary collaboration for an architectural design that includes the rainwater purification and wastewater treatment, power supply for electricity and heat as well as manageable smart home system, fostering a more synchronized, data-driven, and self-sufficient approach to building development. By bridging the gap between Concurrent Engineering and building design, this paper contributes to the broader discourse on interdisciplinary methodologies, demonstrating how technology-driven, parallel collaboration models can significantly improve both educational outcomes and real-world architectural and engineering practices.

Keywords

Concurrent engineering, Interdisciplinary collaboration, Sustainable building design, Self-sufficient building design, IoT in architecture and construction

Current status of the research is: Work-in-progress



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