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

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27 November 2026

# 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 Social Contexts 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:** *"Modelling Public Discourse: A Computational Approach to Polarisation, Radicalisation, and Truth Seeking Under Disinformation"* | **Rainer Hegselmann** |
| 11:15 – 11:45 | — *Coffee Break* — | |
| | **Conference/ISTW Scientific Session 1** | |
| | *Theme: Computational Social Science, Modeling, Networks* | |
| | **Session Chair: Katarzyna Sznajd-Weron** | |
| 11:45–12:00 | *'Phase Diagram' for Nowak–Szamrej–Latané Model of Opinion Dynamics* ID: SCS2025/2KMSPT | **Malarz, K.**; Wołoszyn, M. |
| 12:00–12:15 | *Q-Voter Model With Weighted Social Influence to Study Consensus Building* ID: SCS2025/2PMQIO | **Mullick, P.**; Sen, P. |
| 12:15–12:30 | *An Interplay Between Noise and Temperature in a Simple Coupled Model of Opinion Dynamics* ID: SCS2025/2ACAOO | **Chmiel, A.**; Sienkiewicz, J. |

*Continued on next page*

**Day 1 Schedule Continued**

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

**Conference/ISTW Scientific Session 2**

*Theme: Technology in Society & Education, Social Context*

**Session Chair: Marta Rusnak**

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

*Continued on next page*

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

# 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:** *"Technology Assessment In and For the Digital Transformation"* | **Armin Grunwald** |

**Conference/ISTW Scientific Session 3**

*Theme: AI Applications, Sustainability, Circular Economy*

**Session Chair: Yash Chawla**

*Continued on next page*

**Day 2 Schedule Continued**

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

*Continued on next page*

**Day 2 Schedule Continued**

| Time | Event / Title / ID | Speaker / Authors |
|---|---|---|
| 12:45–13:00 | *Interdisciplinarity for Stable Future of Our Planet*<br>ID: SCS2025/1BKITI | **Knosala, B.** |
| 13:00–13:15 | *Interdisciplinary Approach to Building Local Communities' Resilience in Crisis Conditions*<br>ID: SCS2025/1NSIIS | **Skorobogatova, N.** |
| 13:15–13:30 | *Processors and Sensors or Paper and Clay? Low-Tech Games in Neuroarchitecture*<br>ID: SCS2025/1MRPTN | **Rusnak, M.** |
| 13:30–13:45 | *The Significance of Language Education at Technical Universities*<br>ID: SCS2025/1ALTTM | **Licznerska, A.** |
| 13:45–14:00 | *The Capacity of Volunteer Networks for Sustainable Social Innovation in Ukraine*<br>ID: SCS2025/3OVTSV | **Voropai, O.**; Chala, N.; Pichyk, K. |
| 14:00 - 14:45 | — *Lunch* — | |
| 14:45 – 15:30 | **Keynote 5:** *"Becoming an Academic Discipline in Germany: TA From Policy Advice to Problem-Oriented Research"* | **Bettina-Johanna Krings** |
| 15:30 – 16:30 | **Panel Discussion** on *Social Context of Science* | Panel Details |
| 16:30 - 16:45 | Closing | |
| 19:00 – 21:30 | **Gala Dinner**<br>Location: Hotel Wodnik<br>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

**Elzbieta Komarzynska-Swiesciak[1], Karolina Urszula Laszczyk[2], Elisa Costamgna[3], Michal Zoltowski[2], Andrzej Kaczmarek[4], Matteo Carollo[2], Kristina Remic[5], Jan-Peter Ceglarek[5], Reinhold Bertrand[5]**

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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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