

Example: “Regulatory options for a hydrogen transformation in the chemical industry (ROWaCh)”

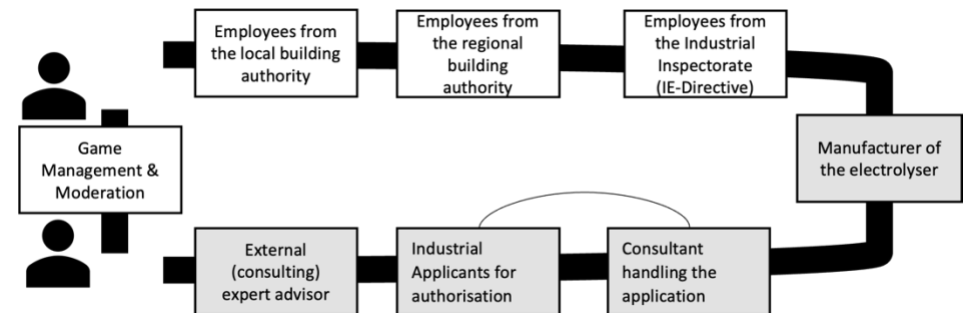
Schedule for the ROWaCh-Simulation Game (2 simulated cases)

Phase	Min.	Description of the Game Phase
Introduction	20	Game management introduces the participants to the topic, foreseeable regulatory changes, and the initial situation. The game team explains the changes in the legal situation. Participants have the opportunity to ask further questions.
Reading & Pre-Questionnaire	20	All participants have another opportunity to become familiar with their roles and read the role descriptions again. The game team distributes the prepared pre-questionnaire and asks participants to fill it out as thoroughly as possible.
Round 1a: Initial Discussion	25	The industrial project sponsors (applicants) and possibly application managers present the project to the responsible authority in a preliminary meeting and prepare the application creation. The authority formulates the meeting results, especially which approvals are needed. The project sponsor submits the application.
Round 1b: Completing Application Documents	10	The applicants read the prepared set of documents (including site plan, specifics of the facility) and check if they meet the legal requirements as interpreted by the authority. If necessary, the applicants supplement the application documents.
Round 2: Application Conference	25	The building authority leads the meeting to clarify which application documents are still missing (completeness check), which process steps are required/not required, and how the process will proceed. They agree on a rough schedule with the project sponsors. <i>In this round of the game, the game management plays in a change a in the fictive situation by introducing the option of ‘type approvals’.</i>
Round 3: Submitting Documents	20	The applicants consider what information is still missing based on the application conference results and commission external experts to develop the missing evidence for approval.
Round 4: Status Meeting	30	All participants come together to examine the project’s approval capability. Authorities formulate possible conditions; the engineering office and applicants respond. Applicants can submit additional documents, considering time and cost constraints. Adjustments are made through pre-agreed “addenda.” <i>Additional fictive incidents are played in by the game management: with the intention to evaluate potential design options for more effective authorization procedures</i>
Final Round & Final Questionnaire	15	Participants complete the final questionnaire on the simulation game. They consider where further optimization is needed. A brief feedback round summarizes the day’s key outcomes: a) Feedback on the regulatory situation. B) Feedback on the simulation games’ process.

Exemplary Role Description for the ROWaCh-Simulation Game

Role	Description of the role
Industrial Applicant [VHT]	<p>You are responsible for the preparation and processing of authorisation procedures at the project sponsor. In this role, you plan the construction and operation of a hydrogen production plant and must obtain the relevant authorisations from the responsible authorities. You can obtain technical data from the manufacturer of ‘your’ electrolyser. If necessary, you can also call on experts or a planning office that offers to take on the role of application manager.</p> <p>The budget for the project must be kept in mind. You have applied for funding. However, you have not yet received a binding funding decision; on the other hand, you must not yet have started realising the project if you want to take advantage of the funding. Against this background, you need to clarify the conditions under which it can be expected that the authorisation procedure can be completed quickly and smoothly, but also with legal certainty. After all, you need planning certainty for the next steps - also for your company management.</p>
Employees from the building authority	<p>According to § 59 NBauO, construction measures such as the erection or modification of a building generally require authorisation from the lower building supervisory authority. If the building project complies with public building law, there is a legal entitlement to authorisation. As an employee of the building authority, you are responsible for carrying out building authorisation procedures.</p> <p>To date, however, you have never been in charge of an authorisation procedure for an electrolyser. The associated technical issues are therefore new territory for you. You therefore need specialist support.</p>

Seating arrangements for the ROWaCh-Simulation-Game



"The simulation game and the outcomes are very helpful in practice and for the current political and regulatory discussion."

(Listig at the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, 2024)

Enhancing the Inter- and Transdisciplinary Toolbox: Leveraging the Power of Simulation Games

Handout to the Session at ITD Conference 2024

by Prof. Dr. Martin Führ, Aaron Rittmeier, Anna Zeitler, Dr. Silke Kleihauer

Simulation Games as an Instrument for prospective Impact Assessment

The research group sofia, led by Prof. Dr. Martin Führ and Prof. Dr. Kilian Bizer, has utilized "Planspiele" (simulation games) to assess legislative impacts under new organizational and legal frameworks.

Participants assume **roles of real actors** in scenarios to simulate **real** communication, negotiation, and **decision-making processes** in a **risk-free environment** condensed into a **short timeframe**.

Thereby, these simulation games differ from "didactic simulation games" aiming on educating students and adults. Rather the formats are designed **to find solutions in different phases and application contexts of inter- and transdisciplinary projects**.

Game Design Considerations

Clear Objectives: Define clear goals for both research insights and participant learning. Encourage participatory design involving input from practical stakeholders for continuous improvement during the project.

Facilitation: A game leader introduces the topic, assigns roles, and provides necessary materials. Factors like participant expertise, number of participants, total roles, and possibly multiple role assignments are critical for effectiveness.

Role Specifics: Organizers must prepare clear and accessible role descriptions and essential background information, providing them exclusively to the assigned participants.

Dynamic Process: The game subject evolves, allowing participants or facilitators to add missing details in the materials provided.

Structured Rounds: The design should account for real process steps, expected interactions, and documentation needs, considering learning curves in the game's flow and duration.

Prepared Impulses: Facilitators prepare additional stimuli to a) introduce if the game stalls or if discussions lose realism or b) steer discussions towards a specific aspect relevant to the research insights.

Documentation and Feedback: Participants document actions and outcomes, with feedback loops included.

Benefits of simulation games

Explorative Nature: Simulates decision-making scenarios to test hypotheses and gather practical experience without risk.

Learning and Understanding: Encourages reflection and understanding of organizational and regulatory contexts.

Multi-Stakeholder Engagement: Facilitates understanding and collaboration through dynamic interactions and perspective shifts.

Interdisciplinary Applications: Effective in assessing societal impacts of organizational and legal frameworks.



Figures: KIF-Simulation Gamel 2018 © Landkreis Nienburg/Weser

Profiles of selected simulation games

Project	"Team Heat" Playfully exploring municipal heat planning			"Regulatory options for a hydrogen transformation in the chemical industry (ROWaCh)"		
Td research phase (Lang et al. 2012)	A - Collaboratively framing the problem and building a collaborative research team			B - Co-Creation of solution-oriented and transferable knowledge through collaborative Research		
(Problem)-Context Which problem did the simulation game address?	"Team Heat" addresses the urgent task of municipal heat to drive the heat transition by providing municipalities with an engaging and playful approach to tackle this complex challenge			Foreseeable innovations in the regulatory framework for the authorisation of electrolyzers shall undergo a practical test in a controlled environment		
Objective What were the intended outcomes?	<ul style="list-style-type: none"> - To facilitate a foundational understanding of heat planning through interactive learning (capacity building) - enabling participants to explore energy options collaboratively - visualize the pathways toward climate-neutral solutions for the respective municipality (based on city district maps) 			<ul style="list-style-type: none"> - Identify potential 'stumbling blocks' in the new 4authorisation process - Joint Development of regulatory, technical or planning design options - Assessment of foreseeable innovations to improve efficiency in the 4authorisation process 		
Scope Duration, number and role of participants (change of roles?)	Duration	Number of Participants	Role of Participants	Duration	Number of Participants	Role of Participants
	1,5 – 2 hours	4 – 29 (13 on average)	Real World Role	3,5 hours	20	Real World Role
Game Management Who lead and what was their role? (e.g. introduction, moderation, facilitation, interventions, ...)	Led by trained moderators, who <ol style="list-style-type: none"> a) introduce the concept of municipal heat planning b) introduce the playing card which represent components the heat supply system (e.g. energy sources, infrastructure, efficiency etc.) c) facilitate the small group & plenary discussions 			Two moderators with knowledge of 4authorisation practice, who <ol style="list-style-type: none"> a) Introduced to the topic and methodology of simulation games b) anchored in between the different game-phases (without involvement in discussions during game-phases) c) assured to stay on the time schedule d) played in fictive situations & additional information 		
Reflection Were there interim or final reflections by participants?	<ul style="list-style-type: none"> - Lightning round at the end 			<ul style="list-style-type: none"> - Preliminary Survey on on a) Feedback on the regulatory situation & b) Feedback on the simulation games' process. - Final survey & lightning round (impulsive feedback) at the end on a) the regulatory situation b) simulation games' process 		
Evaluation and Outcomes Did the simulation game achieve its intended outcomes? (If so, what factors contributed to this success?) (Were there any surprising or additional outcomes?)	<ul style="list-style-type: none"> - The game achieves its intended outcomes by enhancing understanding and readiness to engage in municipal heat planning. - The playful introduction motivates participants and imparts knowledge on what you have to consider when tackling the task of heat planning (which dependencies, which actors, ...) -> high level of engagement - Working with city plans makes it possible to propose concrete, site-specific solutions 			<ul style="list-style-type: none"> - Simulation games were successful - Upper mentioned goals were met - Simulation Game resulted in an article in a peer-reviewed law journal - Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection found the results & process very helpful 		
Challenges & Learnings for simulation game design What challenges did you face? What are learnings for the future?	<ul style="list-style-type: none"> - some wanted deeper focus on financial and feasibility aspects - In some small groups dominating speakers -> need for moderation in small groups to ensure balanced participation and diverse perspectives 			<ul style="list-style-type: none"> - High planning effort by the project team - Keep less involved participants engaged - Adequate introduction & getting all the participants to the level needed for the simulation 		

Project	Municipal Inner Development Fund – Transdisciplinary Research and Implementation Program		
Td research phase (Lang et al. 2012)	B - Co-Creation of solution-oriented and transferable knowledge through collaborative Research & C - (Re-)Integrating and Applying the Co-Created Knowledge		
(Problem)-Context Which problem did the simulation game address?	Establishment of a new financing model for the inner development of municipalities. Voluntary participation in the new model, therefore solidarity and trust between the municipal stakeholders is important, which was built up through the simulation game.		
Objective What were the intended outcomes?	<ul style="list-style-type: none"> – Building trust among the participants and in the functioning of the new financing model – Improvement and application of an evaluation system for selecting policy measures to be funded by the new financing model – Preparation of political decisions to transfer the fund into reality after the simulation game 		
Scope Duration, number and role of participants (change of roles?)	Duration	Number of Participants	Role of Participants
	1,5 days / 12 hours	24	Real World Role
Game Management Who lead and what was their role? (e.g. introduction, moderation, facilitation, interventions, ...)	3 moderators with knowledge of the application and evaluation process of the new model a) Introduction to the topic and the methodology of simulation games b) Moderation between the different game-phases (no involvement in discussions during game-phases) c) time planning d) play in of prepared stimuli		
Reflection Were there interim or final reflections by participants?	<ul style="list-style-type: none"> – Interim evaluation and final evaluation via questionnaire - survey on a) Feedback on the selection and evaluation system of the municipal projects to be implemented with the new funding & b) Feedback on the simulation games' process. – Lightning Round at the end - Impulsive feedback on a) the advantages of the new financing model and the possible implementation & b) simulation games' process 		
Evaluation and Outcomes Did the simulation game achieve its intended outcomes? (If so, what factors contributed to this success?) (Were there any surprising or additional outcomes?)	<ul style="list-style-type: none"> – The financing instrument for municipal inner-city development projects tested in the simulation was subsequently implemented in reality and has since provided financial support to municipalities in the development of their centers. – The simulation game has therefore led to a major political success that no one would have previously thought possible, as the simulated financing instrument is based on voluntary action and solidarity 		
Challenges & Learnings for simulation game design What challenges did you face? What are learnings for the future?	<ul style="list-style-type: none"> – Very time-consuming – High planning effort – It is sometimes difficult to react to the spontaneous change requests of the participants 		

Conclusion by Dario Gödecke on *Municipal Inner Development Fund* simulation game

“Simulation games can prepare political decisions and produce new political solutions that would probably not have been implemented or would have been implemented less well without the use of the method.”

Key readings & Supporting Literature of this session

1. Simulation games in the Regulatory Impact Assessment – Simulation of the implementation of the EIA Amending Directive 2014/52/EU
Führ, M./Balla, S./Dopfer, J./Bunge, T. et al., elni Review 2018, 1: 17-24; <https://doi.org/10.46850/elni.2018.004>
https://www.elni.org/fileadmin/elni/dokumente/Archiv/2018/Heft_1/elni_2018-01_Fuehr.pdf
2. Simulation Games in Impact Assessment for Law – Part 2 – Recommendations from Selected Simulation Games (in german)
Führ, M./Balla, S./Dopfer, J./Bunge, T. et al., UVP-Report 2018, 32 (2): 79-86
<https://www.uvp.de/de/uvp-report/jg32/jg32h2/1079-uvp-report-032-10>
3. Simulation games as a method of joint goal setting and instrument development [translated title]
Gödecke, D. 2022, in Jan Abt et al. (eds.). Von Beteiligung zur Koproduktion. Springer 2022: 465-492.
4. Simulation games in regulatory impact assessment - approval procedure for electrolyzers [translated title]
Rittmeier, A // Führ, M / Führ, P / Bizer, K / Lesch, A; to be published by 12/2024 via <https://www.sofia-darmstadt.de/veroeffentlichungen/sofia-diskussionsbeitraege>